QUARKS

Fundamentally unique Fundamentally different

A magazine from the undergrad school of IISc
Volume 2 Issue 1 August 2013

ART LITERATURE DESIGN PHOTOGRAPH
LIFESTYLE FOOD CULTURE SPORTS
EDUCATION MUSIC DANCE INTERVIEWS

IISc UG LABS
ARE THE BEST IN COUNTRY
HEAR IT FROM OUR
INSTRUCTORS

90% PEOPLE*
WISH FOR
24 HOURS ACCESS TO
MAIN LIBRARY

BEHIND
THE SCENES OF
PRAVEGA
2014

AN INTERVIEW
WITH 2012
NOBEL LAUREATE
DAVID J. WINELAND

IISc UG
WINS
MIMAMSA
AGAIN

*Undergraduates

EXCLUSIVE
SNEAK PEAK OF
AMARCHITRAKATHA
IN THIS ISSUE

a leap ahead

FIRST BATCH GETS THEIR FIRST CHOICE

READ MORE IN THIS grey EDITION

PLUS 20 COMMENTS ON FOOD CORNERS OF IISc FROM THE UNDERGRADUATES!

Quarks
Fundamentally different Fundamentally unique
A Magazine from the undergrad school of IISc

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Editor in chief and Executive Manager:
Pratibha Mahale

Co-editors:
Aditi Mishra, Amogh Anil Kinikar, Anamay Chaturvedi, Ankush Sood, Apaar Shanker, Aravind Rao Karanam, Ben Johns, Milind Hegde, Mohsina, Rhine Samajdar, Rohit R, Siddharth Kankaria, Suhas M, Sunandha Srikanth, Sushant Bangru, Tapan Goel.

Co-managers:
Aditi Mishra, Amogh Anil Kinikar, Apaar Shanker, Milind Hegde, Tapan Goel

Design clan:
Head designer: Naveen Sendhilnathan
Co-designers: Kanad Ghosh
: Pavan Malagimani
Vector Artist: Dipan Ghosh

Photography clan:
Head Photographers: Abhinav Jain
: Naveen Sendhilnathan
Co-Photographers: Siddharth Kankaria
: Utkarsh Vijay

Arts Clan:
Illustrators: Amogh Kinikar (*Co-ordinator*), Naveen Sendhilnathan, Richa Jain, Shinjini Biswas, Terrence George.
Members: Kaivalya Molugu, Shalaka Shinde, Tanmoy Pal, Vrujen Andhare.

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Sasank Amavarappu (*Head*), Vikas Jangid.

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Representatives:
S. Athmanathan, Janhavi Kolhe, Praveer Tiwari, Sabareesh.R, Sahana Rao, I.Sowmya.

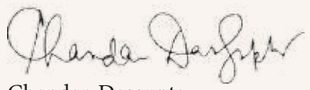
QUARKS acknowledges the active contribution of the following people:
Kamalnath Kadirvel, Sriram Chandramouli, Sri Vamsi Matta, Pavan Malagimani.

Dean's ink

It gives me great pleasure to introduce to you the second volume of "QUARKS", the magazine brought out by the undergraduate students enrolled in the 4-year BS course of IISc. The first volume of this magazine was published last year by the inaugural batch of 83 students who joined this programme in August 2011. The second batch of 116 students joined the BS course in August 2012, so that we now have about 199 students in the undergraduate programme. 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 Ph.D. students 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 qualities of the first volume of QUARKS were highly appreciated by all readers. The second 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 for the creativity of our undergraduate students. It also promises to provide glimpses of all aspects 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 programme and the students enrolled in it.

Happy reading!



Chandan Dasgupta
Dean, Undergraduate Programme, IISc ■

Editor's thoughts

1 non-leap year. 12 months. 365 days. 8760 hours. 525600 minutes. 31536000 seconds is undoubtedly a sufficient duration for a lot of things to happen—for seasons to change, for a foetus to develop, for governments to switch, for the crime rate to increase, for two semesters to complete, for the share market to crash or rise and undoubtedly, a lot more. The Undergraduate programme at IISc is not an exception and follows both natural and manmade trends. In the time span of a year (1st Aug 2012 to 1st August 2013), while you waited patiently for Quarks Volume 2, many eventful changes were witnessed and welcomed by UGs at IISc. Although all of them are noteworthy, two of them are very prominent.

One came swinging by, in the beginning of the academic year, in August 2012. A batch of 116 young enthusiastic students from different parts of the country joined the UG programme at IISc. The impacts, influences and consequences of this eventful change are reflected in every aspect of IISc and UG life. The second significant transition came along with the year 2013 in January, namely, the selection of major subjects by the first batch (2011 batch) of undergraduates at IISc. With this development, the UG programme has taken a leap ahead towards its goal. The cover page of Quarks Issue 2 is dedicated to highlight this significant development, along with a detailed coverage of the event in the exclusive story: *The Major Decision*.

The first change that increased our total number to 199 has had effects in diverse arenas which are clearly noticeable in the increase of the number of the Quarks team members, establishment of new clubs by UGs, full-fledged participation of UGs in cultural shows, Spectrum and Notebook Drive, among numerous other activities. It is also echoed by various national competitions as IISc undergraduates continue to grab the *numero uno* position. Above all, the idea of a national science and cultural fest, hosted by IISc and organised by UG, took a tangible shape as 199 hands came together.

We, at Quarks, have made special efforts to capture the spirit of all such activities and achievements in the *UG Life* section. The Quarks team has also attempted to get our readers an exclusive, behind-the-scenes account of the preparations for our fest—Pravega. With dropped jaws and eyes agape, you will feel proud as you read through and feel the motivation, enthusiasm, courage, togetherness and organisation of the youngest members of the IISc family.

In this duration of one year, as the clock ticked, UGs also found time to contemplate, write and express themselves. The three sections—*Expressions, Contemplation* and *Social,* present some of these masterpieces that took shape from their abstract forms. You will find compositions in which the authors converse with themselves (*The Devil within, Aatmavimershe*) and also discuss the behaviour and characteristic traits of society (Feminism, Manidhanin sirippu). Moreover, in *Expressions*, you will also come across the interviews of two very renowned personalities in the world of science—Nobel Laureate, David J. Wineland and Rajesh Gopakumar. Their words and views are enlightening. ▶

A remarkable trait observed by the Quarks team while collecting the masterpieces is that the UGs are tremendously fond of FOOD. So, without any hesitation, we have introduced a unique section, *Connoisseurs,* defining each and every characteristic of this fondness, including 20 special comments about the various food corners of IISc.

This Issue also has a few pages under the section entitled *Connection*. This uncommon and distinct section binds a set of literary and artistic work that somehow or the other conveys an existence of a connection; a feeling of belonging. We have also grouped some written material as *Campus talk*. As is evident from the title, it comprises of comments and views about the campus life and campus activities in general, such as appreciation of the Namma Cycle initiative in the campus and an appeal for 24-hour access to the JRD Tata Library by the UGs.

In each of these seven sections you will come across 14 exclusive articles (Pravega, UG labs, Hometown and UG clubs, to name a few) brought out by the Quarks team. Our team has made stupendous efforts in writing and designing these stories which have a strong connection with a significant aspect of the UG or IISc environment and life.

Like last time, we have incorporated articles and poems in different languages. Some of our readers can enjoy reading literary works in their mother tongue.

As you swiftly turn the pages, you shall also feel the passion of an artist embracing the pages of the magazine through his colours and brushes in the imaginative and aesthetic art works.

Akin to the fundamentally different and fundamentally unique nature of its namesake particle, this time, Quarks Issue two gives you an insight into the working and making of Quarks from the perspective of the various departments. You will be amazed to know how all the 6 departments contribute significantly in the process.

Like last year, the journey of the making of Quarks, comprising of brainstorming sessions, interviews, collective writing, designing, photograph sessions and editing rounds has indeed been a memorable one. The credit of this undoubtedly goes to our entire team which has infused thrill, motivation and fun in this journey and has successfully presented the second Issue.

The timely support and magnanimous guidance of our Honourable Director has been a prime factor that has enabled us to connect with our readers again. On behalf of the Quarks team, I also extend my warm thanks to the Chairman and all the members of Archives and Publication cell. We are also thankful to the Dean of the Undergraduate programme and the entire UG department for their support. A big vote of thanks must be extended to our respected professors, especially Professor Umesh Varshney, for their invaluable guidance. We would also love to thank you all, our dear readers, for accepting and receiving Quarks wholeheartedly.
As you hold the second Issue of Quarks:
Read between the lines,
See through the designs,
Hear out what the colours say,
Feel the real moments captured in photographs,
Become nostalgic, Become emotional, Become contemplative, Become aware,
Get inspired, Get informed, Get creative, Get artistic and Get ready to appreciate!

Pratibha Mahale
Editor-in-chief, QUARKS ■

!nsight

Understanding the working and making of QUARKS

As a unique effort, we here introduce you to new and unfamiliar aspects of making and functioning of QUARKS. Understand the designs of QUARKS which makes you hold your breath in its full technical depth from our very own Design head: Naveen Sendhilnathan. Look into the deeper working of Digitizing team from its head: Sasank Amavarappu. Also, get a brief preview of dynamic process of the editorial department from one of the editorial members: Milind Hegde.

Digitizer's type

Digitising at first looks like the most easy and most monotonous job to many. But, believe me, it is equally interesting and challenging. Developing a digital copy of the literary pieces in languages you don't even know using an advanced software needs a little more effort than imagined. But it's equally fun cracking the poet's/author's writings, at times needing the skills of a handwriting expert… ;)

In a nutshell, we enjoy being that one link that promotes Quarks in electronic media and bridges the gap between the digital and hardcopy.

Sasank Amavarappu
Head Digitizer, QUARKS ■

Editorial Member's *words*

You now have a finished copy of the second edition of our UG magazine, Quarks, in your hands. I hope you have flipped through the pages, and read a few of the features, admiring the design and writing on display throughout. It is probably difficult for you to imagine the amount of work, determination, and effort that went into the making of this issue—over 6 months of it, with the active participation of an impressive fraction of both batches of undergraduates—which is by no means a small achievement.

Working for Quarks, at least for me, was a lot like programming—there were some bursts when you did huge amounts of work, and other lulls when it was just lingering at the back of your head. It was a wonderful experience throughout—because from the very first meetings where we were trying to get new ideas and a direction for the issue, to the urgent last minute proofreading and typesetting details, there was a feeling that this was our magazine, our hard work; it had to be good, and in every way possible.

I loved the many, many ways to contribute to Quarks. People wrote stories and poems, suggested and conducted interviews, created artwork, helped in designing and sometimes simply gave ideas. Literally everyone was able to be a part of the magazine in some form.

It was interesting to note that so many of the poetry submissions we received, such as My Wandering Mind, Redemption, and Aur, were on surprisingly related topics and used similar tones, while some others, such as The Last Tread, used a very unique writing style. Reading and discussing each of them was memorable.

Interviews, which in some ways are the most interesting features to work on, were conducted with many, many personalities—both on campus and off, in person as well as over email. The interviews gave us the chance to explore and hear their views first-hand. It was inspiring to realize how eager the interviewees were to meet us too.

In parallel with the story creation process was, of course, the editorial work. This was where the Quarks editorial team really came together—in the discussions and meetings. The sheer number of discussions and attention to detail was amazing; doubly so with the fact that most of the work was done online.

Apart from the more "predictable" editorial work was the associated duty of collecting statistics for stories, finding and talking to professors to help with aspects of the magazine, giving inputs to the design team about the "feeling" of the article, and many more small but no less important jobs. Editorial work was never just sitting with an article in front of a laptop.

While writing this, I was reminded of a quote by Steve Jobs: "There is a classic thing in business, which is the second-product syndrome … with the second product, [company's] ambitions grow … [and] they fail." It struck me that, while our ambitions grew with this issue, what we wanted was never in doubt. I think our "second product" is worthy, and I hope you do too—if you don't agree (or even if you do, everyone is welcome), join us next year and help make it better!

M Hegde

Milind Hegde
Co Editor, QUARKS ■

Photo Credits: Naveen Sendhilnathan

Designer's *Sketch*

Those of you whose right brain feels it can't be tamed inside the skull forever would surely need a different way of looking at the same old text. As Shakespeare would say, "words words words!" could make even an interesting piece of text into a dull boring one. To start, the text requires a capturing visual, moulded into an imaginative design, with different levels of polishing. We at the design team, decided to let out some of the secrets which went behind the scenes in making QUARKS happen.

The original idea of the team was always to kick off from the traditional and conventional ideas and designs. But these had to wait since a lot could not be readily grasped from enculturation from the scientific community. Therefore it was made a strict practice in the design team to do a lot of homework on designs: vintage, commercial, graphic, fashion and everything else on the list. For example, the convention for any article related to food would be to have a design with a tongue sticking out or stroking different food items on a wide spread. But we chose to deal with things differently. Giving the geographical location of different food centers of IISc sounded quite unconventional, yet effective. The team had to work hard to get the map as you see on spread 54–55 as they were rendered on 3D graphic software. While working with four Adobe softwares simultaneously gives you a feeling of working in a molecular biology lab, (Yeah! The computer gets stuck and you end up staring at the screen or finish your novel for 90% of your working time!) imagine working with 3D software!

We at the design lab, (I call my room that because I am still a scientist!) could explore details and platters of designing for any given story written by QUARKS (my editorial friends are always malleable with their text) while we mostly shut down when given articles and poems. There was a period, I recall where we continuously received poems over poems, most of which, you could now see as listed under "*Contemplation*". Since the theme was very similar, it was very difficult to make sure that each design was uniquely different from the other. Making several versions for each poem and filtering the best was always fun. Since most of these poems were either on judging self (*Aatmavimarshe, My wandering mind*) or discovering self (*Reflections in the moonlight*) or unclear about self (*The last tread, Aur…*), we couldn't intro- ▶

duce colours more than black and white in these designs, for reasons we often called this issue as the "grey edition".

As for the rest of the stories and articles, decision of the theme colour was quite challenging at times. Although we have every colour on the colour wheel to be explored, we had to plainly neglect those which are so common so that they would not bore the reader. In some stories like *Namma Cycle @ Namma Campus*, the theme colour would obviously be yellow, without a doubt, but for others like the special example of *Diverse String Marathon,* where we had to interview a professor in person as a team, we made safe assumptions and choose red as the theme colour. To make the theme even more pronounceable, we made the entire team dress in red as you can see on page 197.

Working with colours was not enough alone. Applying textures which could bring out the soul of the text was also crucial. We could immediately sense that articles like *Feminism*, *Dessertilicious*, and *Clubs of the Undergraduates* were desperate for multiple coatings with appropriate textures.

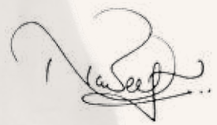
Strict efforts were made to approach each textual material with a different design. Different approaches to design like a scrapbook way of designing as you would observe in *Clubs of the Undergraduates,* and newspaper cutout designing for *The major decision* story were practiced. Special efforts were made to incorporate, secretly, a poster-like page for each major article or story or feature. New forms of designing, which we were previously completely unfamiliar with, like 3D graphic designing (*20 comments on food corners*), infographics (*Library, The major decision*) were understood and used for articles when needed. While exploring different styles of designing, very common aspects of designing such us word clouds, collages were nevertheless completely neglected.

Personally, I do not prefer drawing a line between my team and the professional designers, but situations get arrested and fed with thoughts when the time quits so easily.

The colours, the textures, the patterns alone cannot make a true designer in QUARKS. The designer should know what would truly complement the text. When the design fails, as in certain poems, requirement of arts from the art team was indispensable. *Reflections in the moonlight*, and *The last tread* are just few of the examples where this was true. An interest in fashion could help sometimes. If the text desires to spend the page with a photograph, the designer should always give it one. Suggesting these design requirements to the photography team and watching them go along would be an amazing experiment. The *Mimamsa* story and the *Triumphs, Trials and Turns* story surely had their ways with a lot of photographs.

And the work of the design team does not only end with stories and articles. It exotically includes many extra pages, like section introducers, the contents page, the cover page, the back page and many others which make up 20 % of the magazine. Choosing colours, textures, pattern, pictures, art and their combinatorial expressions would certainly make your evenings very special supplementing the mild drizzles and hot chocolate. The work in the design team traces back to clear division in labour. Designing more than double in almost half the time as issue one would not have been possible without having a vector artist, co-designers and occasional stylists.

This magazine promises to take you into the next level of design in terms of colour, composition, texture, techniques, typography and much more. I thank my team for supporting me till the end and for making QUARKS come alive at its best.



Naveen Sendhilnathan
Head Designer, QUARKS ■

QUARKS
Fundamentally Unique
Fundamentally Different

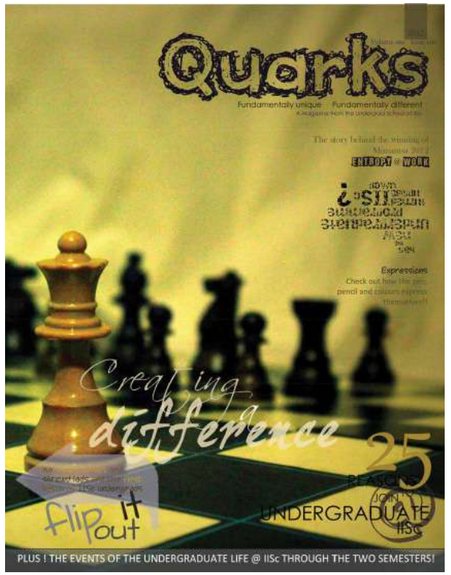
2013

leap ahead

Your Reaction

Mails and feeds about the first issue of Quarks

Quarks issue 1 received reviews and responses from a wide variety of people including professors at IISc, Ph.D. students at IISc, parents, IISc alumni, various organisations CEOs and students at other universities and colleges. Here we have listed a few of them.



I enjoyed it immensely, you have done a wonderful job. It was terrific to see that you have so many different talents

–Prof. Diptiman Sen,
Centre for High energy Physics, IISc

When I read your magazine, (I have criticisms, which I will reserve for another day), my joy knows no bounds. This is our dream too. An IISc campus full of youngsters, playing and learning whatever they are supposed to learn at a depth that only IISc provides.

–D. N. Prahlad, B.E. IISc,
Managing Director And CEO,
Surya Software Systems (P) Ltd, Bangalore, India

It looks good!

–Soundarya,
Economics TA, II Semester

The magazine is extremely helpful to get to know about the program—IISc UG course.

–Mr. Hari,
Parent of one of the potential students, 2013–2014

Your opinion is valuable to us … How did you enjoy the magazine? Have specific comments on any section? Please share them with us. Suggestions and "free advice" regarding any aspect of the magazine are greatly invited. You may drop an e-mail to quarkseditor@gmail.com.

Glad going through the first issue of Quarks. Glad to see the other side of these gifted kids. The interviews are really impressive and made me think on many issues. Keep up the good work.

–Ravi Shankar A.K.,
Founder & Managing Director | Aurobindo Bio Solutions
Editor | www.biotechnologist2020.com

Simply amazing! Keep it up, guys.

–Vijay Kumar
Managing Director & CEO
Peepal Consulting

I want to say first of all that your magazine is absolutely beautiful—I got hold of a copy and was amazed. Really wonderful work

–Anjali, student at JNCASR

ALSO,

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The true method of knowledge is experiment and so experiments lie at the heart of Science and research.Find out how UG programme at IISc follows this. Know and speculate the functioning of UG labs which supplement as well as complement the theoretical knowledge.

77 Triumph, trials and turns

The active set of 199 young undergraduates in the campus have created a benchmark in several national competitions, infused a progressive energy by their various new initiatives and contributed tremendously by participating in numerous activities in the campus. Get a glimpse of a few of them here.

Veni vidi vici ... omnes super iterum 92

Yes again! UG at IISc have succeeded in securing the number 1 title in national science quiz: Mimamsa this year too. Read the experience of the new team.

146 A Palette of Experiences

Engross in a day of UG student's life and get convinced that it is indeed - a palette of experiences.

Pravega 155

In the modern world, to stay in place you have to accelerate. Read on for how Pravega - IISc's first ever science festival - began revving its engines over the last year!

114 The Major Decision

The 2011 batch of IISc UG declared their Major subjects in January 2013. Explore every minute detail of this decision: student's experience, Prof's comments and witness the growth of UG programme at IISc

Clubs of the Undergraduates 150

As the no. of UG students increase, behind the scenes buzz at UG has also increased exponentially. Biology, Engineering, Kannada, Mathematics - the list of UG clubs has grown enormously this year, and we've been there to cover every one of them.

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175 Logic and Life

Popularly known for being irrational or illogical, life, here has been unveiled as a carrier of deep logic within.

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Infusing ancient language in a modern comic. Read a piece of of Amar Chitra Katha featured on Jamsetji Tata, visionary and founder of IISc

180 The Proof

Imagine a world where effects of logical reasoning and power of a proof extends into the physical world, and witness the consequences.

194 Diverse String Marathon

Know the peculiarities of life of science, the excitement of string theory and the from 1987 JEE topper and renowned string theorist: Rajesh Gopakumar

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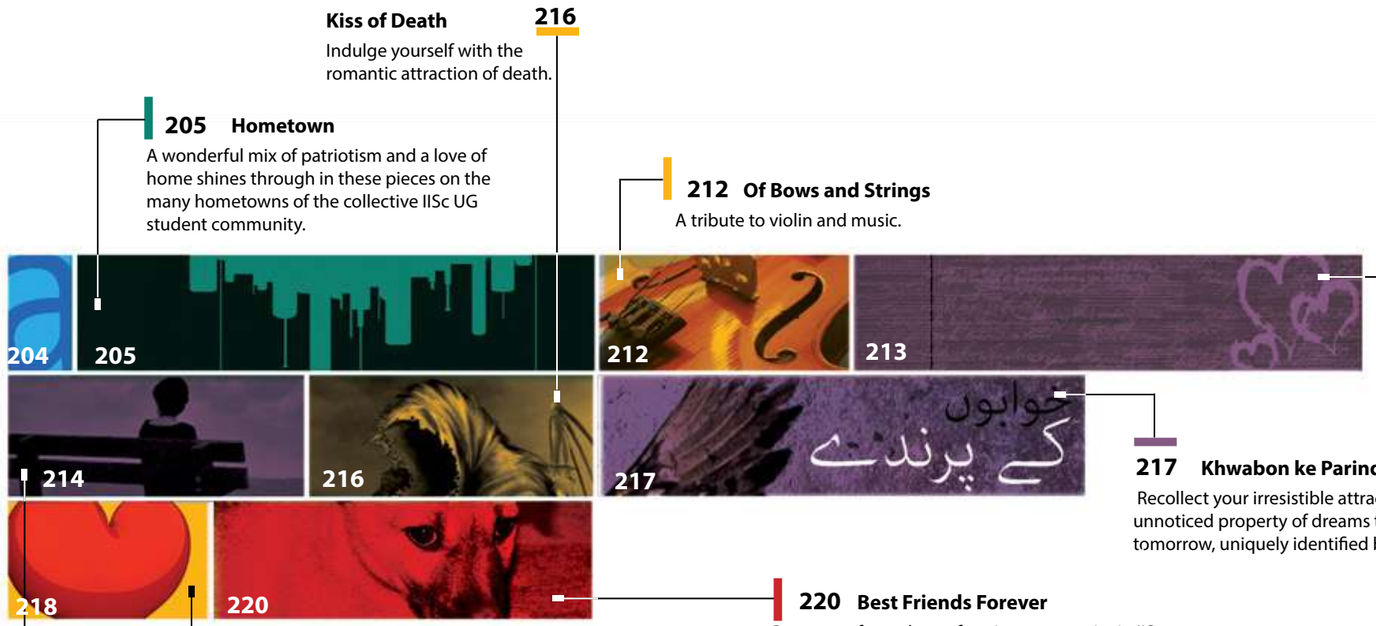

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Indulge yourself with the romantic attraction of death.

205 Hometown

A wonderful mix of patriotism and a love of home shines through in these pieces on the many hometowns of the collective IISc UG student community.

212 Of Bows and Strings

A tribute to violin and music.

213 Yeh pehla pehla pyar hai ya dil ka khumar hai (HINDI)

Witness the signs of the season of love. Welcome it wholeheartedly.

217 Khwabon ke Parinde (URDU)

Recollect your irresistible attraction to dreams and notice the unnoticed property of dreams to sacrifice itself for our better tomorrow, uniquely identified by our poet.

220 Best Friends Forever

Presence of members of canine community in IISc campus has always been a debated issue. In this article, the writer has given an insight into the matter from an entirely distinct perspective that will question your humanity, attitude and beliefs.

214 Pratikkha (BENGALI)

Contemplations induced during the poet's wait for a day liberated from bloodshed and bad news when disillusioned by the selfishness of mankind today.

218 Me without You is like

A touching and lighthearted ditty about a special someone

Library : 24 hour access 224

If you have a garden and a library you have everything you need. Realising this, UGs have made a special appeal for a 24 h access to JRD Tata main library, also unveiling a few interesting facts about main library.

234 Research Watchdogs at IISc

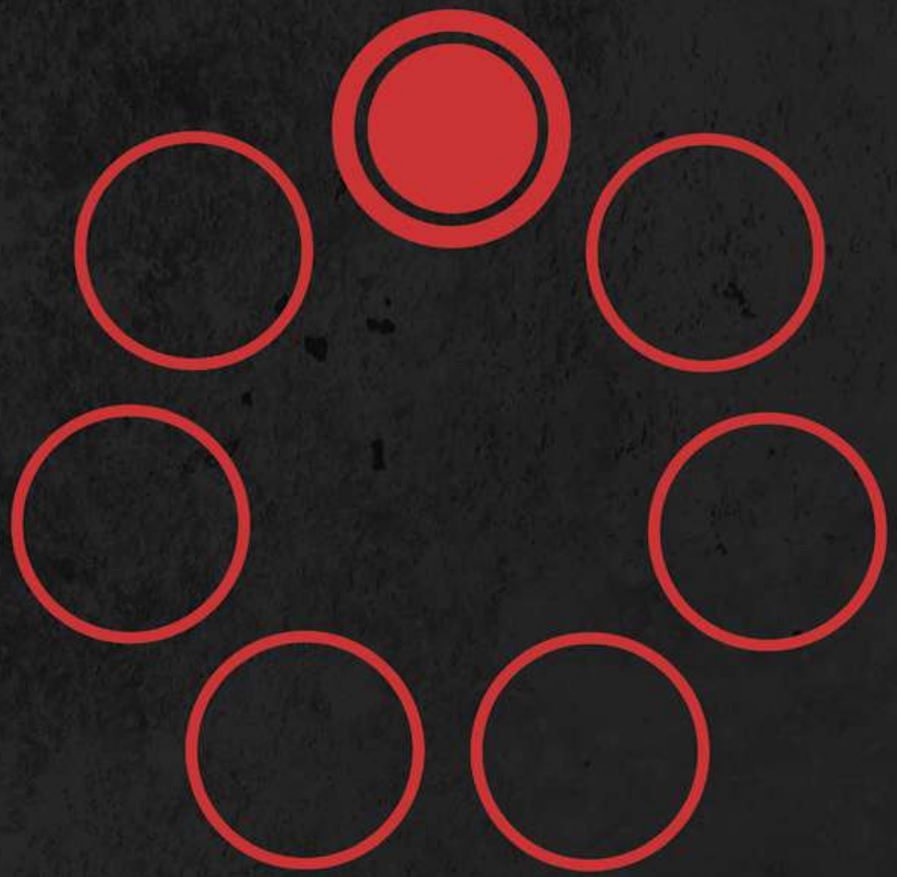
A healthy satire about our beloved activity: Research, which at times can be a frustrating endeavor

240 Namma Cycle @ Namma Campus

The introduction of the distinctive yellow cycles on the uniquely green campus, for the first time in Bangalore. Admire, appreciate and acknowledge namma cycle initiative @ IISc from UG perspective

Catch the Rhythm of Rhythmica 236

Music gives a soul to the universe, wings to the mind, flight to the imagination and life to everything. Acknowledge the UG participation in one of the renowned music clubs of IISc: Rhythmica



Contemplation

To broaden one's perspective is to push back the swirling winds of ignorance and hence, the ultimate meaning of active life is to make possible the happiness of contemplation. Sit back and read here the various forms of contemplation. Indulge in introspection, retrospection and reflection.

one
Contemplation

The thinker

TERRENCE GEORGE GEORGE

Drawing Credits: Amogh Kinikar

Reflections in the Moonlight

Eleven to twelve, the wind is out
Can you hear its frosty breath?
Leaves a rustle, over the roots
Of sylvan sentinels with verdant tresses
As drained of colour as the deathly pallor
Of the face of the night, which I have seen
Wicked doings and silent trysts,
But for the greater part, indifference;
For all the vigour of youthful life,
Day by day, it nears its end
And what remains but the night,
Its silvery light
Uncaring beauty, it ends each day
But the next dawn? I hear you say
Oh! hope the foolish jealously guard—
You see a new day, each day—
All I see is death awaiting its turn
In the wings, to dance its dance
And in her whirls I see the truth
For each beginning is but an end
Waiting patiently for its turn.

Anamay Chaturvedi

Crows on a street lamp
AMOGH ANIL KINIKAR

The last tread

"Here you are"
"Take the key"
"You will find it in the desk"
In a far corner
Rested the desk

"Go ahead"
"Take the key"
"Waste not the time ahead"
On the left wall
ticked the clock

"Belongs to you"
"Take the key"
"Soon enough he will arrive"
Between the door and
Desk, stood I

"The lock!!"
"Take the key"
"You are just a step away"
Desk opened and
Footsteps were heard

"Yours it was"
"He took the key"
"There is the door, leave"
I stood there
As I was …

Rekha Nawal Jyoti

Drawing Credits: Naveen Sendhilnathan

ऐ आस्मां,
मैं तुझे छूना चाहता हूँ!

चल रही हैं हवा, संग हैं मेरे अपने,
ये घोल रही हैं आँखों में कुछ अधूरे सपने
मैं उन्हें पूरा करना चाहता हूँ!
ऐ आस्मां, मैं तुझे छूना चाहता हूँ!

पता नहीं मुमकिन है या नहीं,
पर मैं जीना चाहता हूँ।
कर सँकूगा या नहीं,
पर मैं उड़ना चाहता हूँ।
अब फैला लिए हैं पंख मैंने,
क्योंकि, ऐ आस्मां, मैं तुझे छूना चाहता हूँ!

सफर मुश्किल है, पर इरादा मेरा अपना है,
हार मैं मानूँगा नहीं, क्योंकि सपना मेरा अपना है।
मैं इन सपनों को पूरा करना चाहता हूँ,
ऐ आस्मां, मैं तुझे छूना चाहता हूँ!

ये रास्ते मुझे कहाँ ले आए हैं,
ये मैं नहीं जानता।
मुझे मंज़िल कब मिलेगी,
मैं ये भी नहीं जानता।
कई बार लगता है नहीं कर पाऊँगा,
पर ना जाने क्यों, हार मानने से डरता हूँ।
ऐ आस्मां, मैं तुझे छूना चाहता हूँ!

हर लड़ाई लड़ूँगा मैं,
गिर कर उठूँगा मैं।
इन सपनों को पूरा करना है।
जीते हुए जिंदा मरना है।
क्योंकि, इस दुनिया को मुट्ठी मे करना चहता हूँ,
ऐ आस्मां, मैं तुझे छूना चाहता हूँ!
ऐ आस्मां, मैं तुझे छूना चाहता हूँ!

-अरवदि मेहरा
Arvind Mehra

redemption

A quiet Saturday night
Marks the end of my plight.
The mist has cleared, at last revealed
The monster that hunted me.

For months it played with my heart.
Twisted and broke apart
It drove me mad, needlessly sad
All the while, in deep disguise.

I blamed my near and dear ones
For having loved me once.
I doubted the fair maiden,
Who, my mind, had shaken.

But all in all, feeding me gall,
It was in myself, like a nimble wood elf,
A playwright's boon, my mental typhoon.
But no more shall I hide.
From the monster that waits inside.
I have survived the monstrous tide.
And with its own power shall, it, misguide.

The worst has passed.
It has been ousted at last.
My heart smiles with glee
I am finally free.

"This feeling, inside me.
Finally found my love, I finally broke free
No longer torn in two,
I'd take my own life before losing you..."

Rohit R

NOTE: Stanza in quotes from song "Finally Free" by Dream Theater (Metropolis Pt. 2 Scenes from a Memory)

ಆತ್ಮವಿಮರ್ಶೆ

ಎಂಥವಳು ನಾನು?

ಒಂದೆರಡು ನಗು, ಇನ್ನಷ್ಟು ನಗಿಸುವುದು
ಆಗಾಗಿ ಒಂದೆರಡು ಹನಿ ಕಣ್ಣೀರು ಕೊಡುವ ಪಾಪಿ;
ಅಂಥವಳ ನಾನು ?

ಬೇಕಿದ್ದವರಿಗೆ ಸಹಾಯ ಮಾಡುವವಳು,
ಕೆಲವೊಂದು ಬಾರಿ ಕೂಗು ಕೇಳದೆ ಹೋಗುವ ಅಹಂಕಾರ;
ಅಂಥವಳ ನಾನು ?

ಬಡವರಿಗೆ ದಾನ ಮಾಡುವವಳು,
ಕೆಲಕಾಲ ಸ್ವಂತದ ಚಿಂತೆ ಮಾಡುವ ಸ್ವಾರ್ಥಿ;
ಅಂಥವಳ ನಾನು ?

ಜನರಿಗೆ ಸುಖ ಬಯಸುವವಳು ,
ಮಿತ್ರರಿಗೆ ಸಮಾಧಾನ ಹೇಳುವವಳು
ಕೆಲವರ ಬಗ್ಗೆ ಮತ್ಸರ, ದ್ವೇಷ,
ಇನ್ನೂ ಕೆಲವರ ಮುಂದೆ ವೇಷ.

ಎಷ್ಟು ಒಳ್ಳೆಯದು ಒಳ್ಳೆಯದು ?
ಎಷ್ಟು ಕೆಟ್ಟದು ಕೆಟ್ಟದು ?
ಇಂಥವಳ ನಾನು ? ಅಂಥವಳ ನಾನು ?
ಎಂಥವಳು ನಾನು ?

Himani Anand Galagali

the Devil within

Dear Devil up there,
Why are you never satisfied.
Have you finally killed your friend,
Feels like the Angel inside has died.

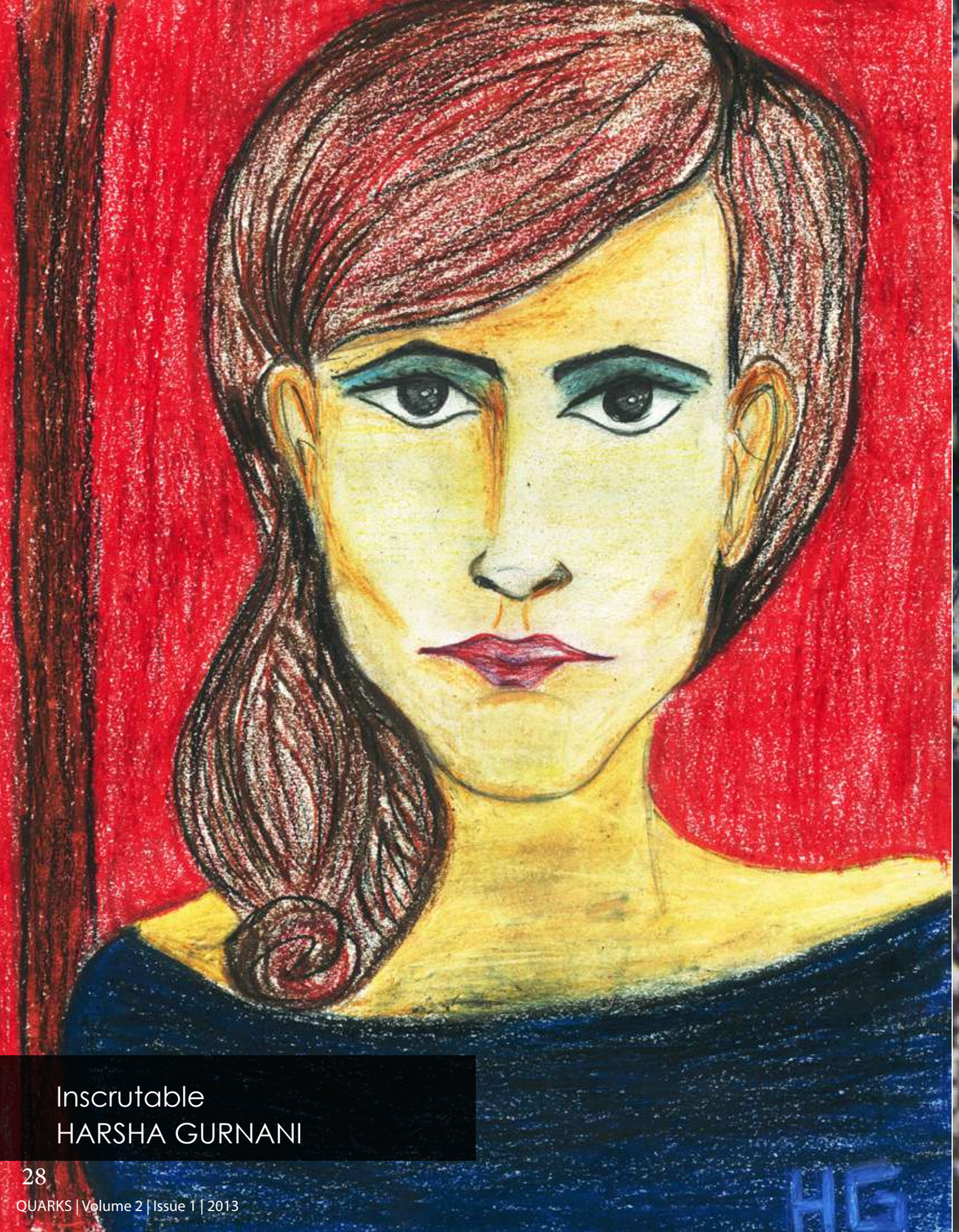
You have turned me to a slave,
Here to gratify your inane desires.
I had wished to do good deeds,
But you have quenched all the fire.

All you can think about is yourself
For others, why would you care.
Love doesn't mean anything to you
Is there nobody with whom you can fare?

You love playing with pain
Hurt is all I am left with now
Your quest is search of darkness
And you take me along with you.

Amrita Padhi

Picture source: Internet



Inscrutable
HARSHA GURNANI

my wandering mind

It wanders, my mind
To future 'n past
To places unseen
My senses its guide

It wanders, my mind
Transcendental thoughts
Incredible dreams
Ah my mind! So fine!

But it wanders, my mind
So disobedient
Aimless, a mad monkey
For it never does bind

It wanders, my mind
To tame it I try
But in vain they go
Those efforts of mine

And so it wanders, my mind
Away from me, frequently
Yet, without it, I ain't me
And you know what they say
About he who loses it
They call him crazy 'n mad

—*Swandha Srikanth*

Picture source: Internet

बदलाव या ठहराव

बदलाव या ठहराव?

क्या कभी कोई अपने आप को खोता है?
और इस खोने की प्रक्रिया में वह क्या हर पल सोता है?
चेतना उसकी क्या हो जाती है लुप्त?
या फिर नई चेतना जो अभी तक थी गुप्त,
वो खुल के आती हैं सामने,
मन, मस्तिष्क का हाथ थामने,
फिर किसी नए पथ पर चलाने,
बदलाव की आग मे पुराने स्वंय को जलाने..

पर इस नए पथ की होगी क्या परिभाषा,
'सही' और 'अच्छे' बदलाव की क्या होगी इसमें आशा,
फिर हम एक भूलभूलिया में उतर रहे हैं,
सारे निर्मित विचार बिखर रहे हैं
सही क्या? गलत क्या?
मन ये नहीं कर पा रहा है ब्यां!

बदलाव क्या एक तुफ़ान है या है आँधी?
जिसने अपने थैले में विनाश और बुराई है बाँधी,
या बदलाव वह मनमोहक हवा का है झौंका,
जिसने बोरियत के काले बादल को छाने से है रोका,
जो सूखे पत्तों को प्यार से ले जाता है अपने साथ,
और भर देता है नए कोमल पतों से पेड़ का हाथ!

तभी तो! बदलाव को मानू अच्छा या बुरा?
इसका उत्तर है उलझा और अधूरा..
अब एक नया प्रश्न मन में कर रहा है घर,
इस बदलाव से मैंने अपने अच्छे आप को खोया है अगर,
तो क्या वापिस जाना होगा मुमकिन?
या यह कार्य होगा अत्यंत कठिन?

पर ये कैसे जानू?
और कैसे मानू?
था ये कैसा बदलाव?
दिया हैं उसने मीठा फल या गहरा घाव!
ये जानू कैसे?
पहचानू कैसे!

ये जानकर या तो बढ़ना है आगे,
या फिर अपने पुराने आप को है पाना..
सुलझाऊँ कैसे ये गुथे हुए धागे?
ये मैंने अभी तक है ना जाना!

तुम ही बताओ बदलाव
है कैसा तुम्हारा स्वभाव?
तुम ही बताओ बदलाव
है कैसा तुम्हारा स्वभाव?

बदलाव भला या भला है ठहराव?
दोंनो में, निर्मल और उचित किसका स्वभाव?
बदलाव के विरुद्ध तो नहीं मन,
पर पहचान न पाई हूँ अब तक उसका कण कण..
इसलिए बदलाव के खिलाफ़ मैं नही!

ढूंढती हूँ ठहराव क्यों है सही?
इस पर चितंन मनन,
और निष्कर्ष निकाल रही हूँ हर क्षण!

स्वयं को पहचानने,
अपनी क्षमता को जानने
का देता है ठहराव मौका,
ताकि परिस्थितियों के तुफ़ान में डूबे न सपनो की नौका,
ताकि बहती गंगा में हम धो सके हाथ,
और सांसारिक सुख न छोड़े हमारा साथ।
ठहराव जैसे है एक कुम्हार,
जो मिट्टी रूपी हमारे जीवन को देता है आकार।

पर, अगर इतना निर्मल, इतना सच्चा है ठहराव
फिर क्यों शब्दों, कहावतों या यूँ कहे सच्चाई के बाण दे रहे उसे घाव!
ठहरा हुआ पानी न तन से अच्छा
न मन से सच्चा,
क्यों कह गए लोग?
अनुभव की है यह वाणी, न दिखाई देती इसमे लालसा या भोग!
फिर ठहराव एक निर्मल, आवश्यक, अप्रतिम गुण या कोई रोग!

अगर ये है रोग तो इसकी दवा है क्या, परिवर्तन?
इस पेहली को सुलझा नहीं पा रहा है अंतर्मन!
क्यों मैं ये जान न पाऊँ?
क्यों मैं ये समझ न पाऊँ!

ठहराव में रहे जीवन,
तो कुछ अलग करने से घबराता है मन,
फिर भी पढ़कर परिस्थितियों के संकेत,
गई उतर मैं बदलाव के खेत।
ठहराव के महल या कहँ ठहराव की कोठरी से निकलकर,
मानो नया विश्व देखा हो खुलकर!
आत्मविश्वास की कुनकुनी धूप,
कोशिशों की बारिश के असंख्य रूप,
जीत की भीनि-भीनि सुगंध!
उस मनोरम अनुभव को कभी ब्यां न कर पाएगा ये छंद।

इस यात्रा में बहुत कुछ किया अर्जित,
फिर भी बदलाव के पक्ष मे पूरी तरह नहीं हो पा रही समर्पित।
उसके महत्व को तौलकर,
आगे बढ़कर क्या करू मैं व्यापार?
बदलाव या ठहराव पहनाऊँ किसे विश्वास का हार?
या फिर जो पीछे छोड़ा,
जो हिस्सा मरोड़ा,
उसके बारे में सोचकर, रोक दू ये बदलाव!
वापसी की दिशा में क्या मैं बढाऊँ अपने पाँव?

ये कैसे जानू?
कैसे मानू?
था या है कैसा बदलाव,
दिया है इसने मीठा फल या गहरा धाव?
तुम ही बताओ बदलाव
है कैसा तुम्हारा स्वभाव?
तुम ही बताओ बदलाव
है कैसा तुम्हारा स्वभाव??

–प्रतिभा महाले
(Pratibha Mahale)

Photo Credits: Naveen Sendhilnathan

और
मैं कुछ ना कर सका ।

बारिश होकर थम गई,
तुफ़ान आकर चले गए,
कब रात से सुबह हुई,
मुझे पता ना चला,
और मैं कुछ ना कर सका!

सोचा था कुछ ऐसा काम करुँगा,
अपने माँ-बाप का बड़ा नाम करुँगा,
पर ना जाने मेरे विचारो को कहाँ ग्रहण लगा,
मुझे पता ना चला,
और मैं कुछ ना कर सका!

चाहा था पृथ्वी के बाहर जाऊँगा,
चाँद-तारों पर घर बनाऊँगा;
पर ना जाने ख़ुदा को क्या मंज़ुर था,
मुझे पता ना चला,
और मैं कुछ ना कर सका!

वादा किया था किसी को,
कि उसके जीवन में बहार बनकर आऊँगा,
ढेर सारी खुशियाँ लाऊँगा,
पर ना जाने किसको मेरा उसके जीवन में जाना अच्छा ना लगा,
मुझे पता ना चला,
और मैं कुछ ना कर सका!

यह कहानी है उस मनुष्य की
जिसने बहुत कुछ सोचा, चाहा
और बहुतों को वचन दिया;
पर ना जाने कब उसे ईश्वर ने बुला लिया,
उसे पता ना चला
और. . . . . वह कुछ ना कर सका!

-अतिशय कुमार सक्षम
Atishaya Kumar Saksham

Photo credits: Naveen Sendhilnathan

Grief

Lifeless, the sigh
With breath that reeks of wounds—
Welts that chafe the soul
Breath upon desolate breath piling
Wrung out forcefully, wrenched and torn out
As if to expel very emotion from the mind
As it focuses on the act of breathing
Colorless the sight, sound devoid of noise
The tongue a serpent raking on dry leaves
Every movement considered, every motion extreme
The sheer, dreadful terror of thinking
Thoughts that catch you unawares
At the slightest provocation
And rip out consideration and judgment
Leaving behind a pain
Almost sensual in its excruciation
And trembles that rock the heart

Photo source: Internet

Pain, sheer pain
Deliberate, slow, torturing
Hidden behind every shadow –
A spoken word, a voiced thought
Picture and text, out of context
– and convulsion of the mind
Laying bare the very essence of being
And draping it in black despair
Mind and limb
Precariously poised
As if slightest imbalance
Would push you back
Into the void
Whose mere shadow
Scorches happiness out of the heart
Grates the brain, entrenches agony

Thoughts wicked and twisted
Claw at the souls
The wounds of which bleed not from the eyes
But from the heart
And contortions of the being
Seemingly unaware of the smite of recollection
That flays living memory with vicious joy
The world would crumble unnoticed
Before the torment of mutilated conscience
The pain almost physical, abstract, eluding elucidation
Far above comprehension
Of those with wailing moans and teary faces
Intense
As the death cry of the cur
And to the same effect:
Numb – The limbs
Numb – The senses
Numb – The decrepitated remains of conscience
And smoldering crevices of the mind

Rohit Chatterjee

 Photo source: Internet

The Ruler of Requiems

Blood o'er spills my shallow chalice
Scabs my sole attire,
Dust and ash make my flaky mantle
My crown be wreaths of fire.

Lord I am of the bestial and wild
My whispers cow the brave,
My thrall the flame of the funeral pyre
I am sole master of the grave.

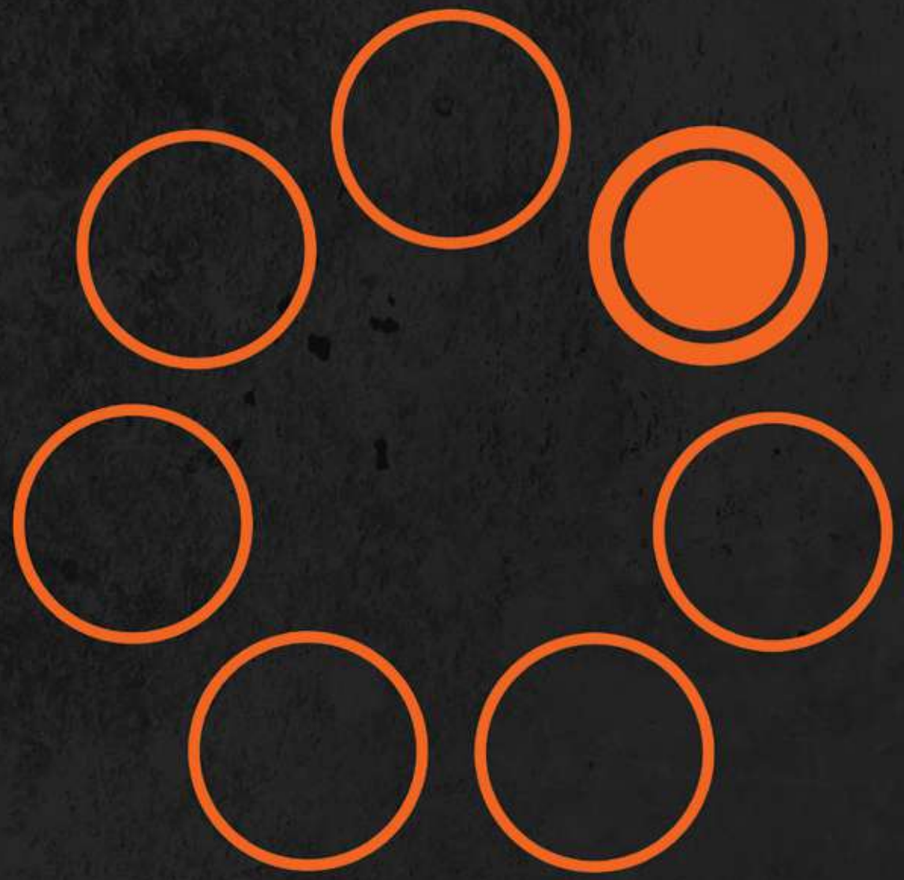
I ply my trade among the truly pure
Of the victims of blood lust,
Who have found the solace of the final slumber
And pledged to silence their trust.

For speech is but the denigration of flesh
Lacerations of the living breath,
Mortal cages of bone and tallow
Cannot rattle out the freedom of death.

Nor do I scratch on parchment
With sap and feather; for what prose
Could hope to capture the pain of the departed
The despair of the truly morose?

I sing only my songs of grey
My melodies of ash and soil,
Of the Void which is my possession and belonging
And the sole endeavor of my toil.

Rohit Chatterjee



Social

"Society is inside of man and man is inside society" is indeed true and so, the influences of social environment can be felt in all aspects of our life. No doubt, the repercussions are also reflected in literature and art. Some such influential social instances are gathered, pondered and recollected here by our writers which have inspired them.

two
Social

Kangdi
S. HEMAA

This is an article on feminism – and not by a woman. I don't know how common such articles are, but I suspect that they are much rarer than articles on feminism written by women. As part of the male population, I can safely say that this is prob- ably because the concept of feminism is completely misunderstood and almost never taken seriously by men, at least most of the ones I've interacted with.

So what is feminism? From just a little research, feminism is the idea that women are not treated the same as men in many aspects of life – and that this is caused not by natural or inherent differences, but by societal and cultural ones, which can and should be changed.

This article isn't about the government and its policies concerning women, either economically or socially, or about how to deal with monstrosities inflicted on women – those are deep discussions that have better places to be pondered. This is going to be about the way many of us men and women consider women in a more personal light, of people interacting with other fellow people, of the female gender.

Most educated men seem to prefer to think that the idea of women being biased or discriminated against isn't caused by them, that they are not responsible simply because they cannot recall an incident where they appeared to be biased. The idea that there might be some inherent bias, deep within their personalities that affects their mundane activities and decisions, is an uncomfortable one to consider – and generally it isn't.

A quick survey of typical male behaviour shows that the suspicion that females may be inherently objectified to a certain extent is true. Just consider a majority of inter- net memes, Facebook confession pages, the apparently universal desire for a "hot girlfriend" (which is often expressed in the previous two items), and it quickly be- comes clear that beauty and physical appearances do play a huge role in most men's appraisal of the women around them.

… Which is, of course, the definition of objectification – defining a person by a sin- gle attribute and relegating other aspects, such as personality, intelligence, or opinions, to irrelevance.

Everyone agrees objectification is a terrible thing, both in principle and in practice. No human being can or should be reduced to something less than themselves. This is a powerful idea that has been at the heart of several revolutions in world history, of which feminism is a more recent example.

There is an observation that is somewhat interesting and which, on reflection, is also quite terrible that can be easily seen every day. This is the fact that women seem to feel the need to, and hence do, constantly survey themselves. Be it their appearance throughout the day, their actions towards other people, their subconscious gestures and habits, style of walking, tone of talking, or anything else visible, women keep a tab on it, at all times and throughout their lives - in complete and utter contrast to men. I don't know whether many men have noticed this fact, but I want to ask a few simple questions.

First, just think about this a bit. Think about having to do that yourself, all the time, and of every minute aspect of your persona. It's not something men, including me, have much first-hand experience about. I imagine it would be somewhat like being constantly conscious of oneself in an interview; except, of course, it's for an entire lifetime. Once you consider it, you'll realize how restricting it must be – and what an ordeal it would be to live like that, without a choice in the matter.

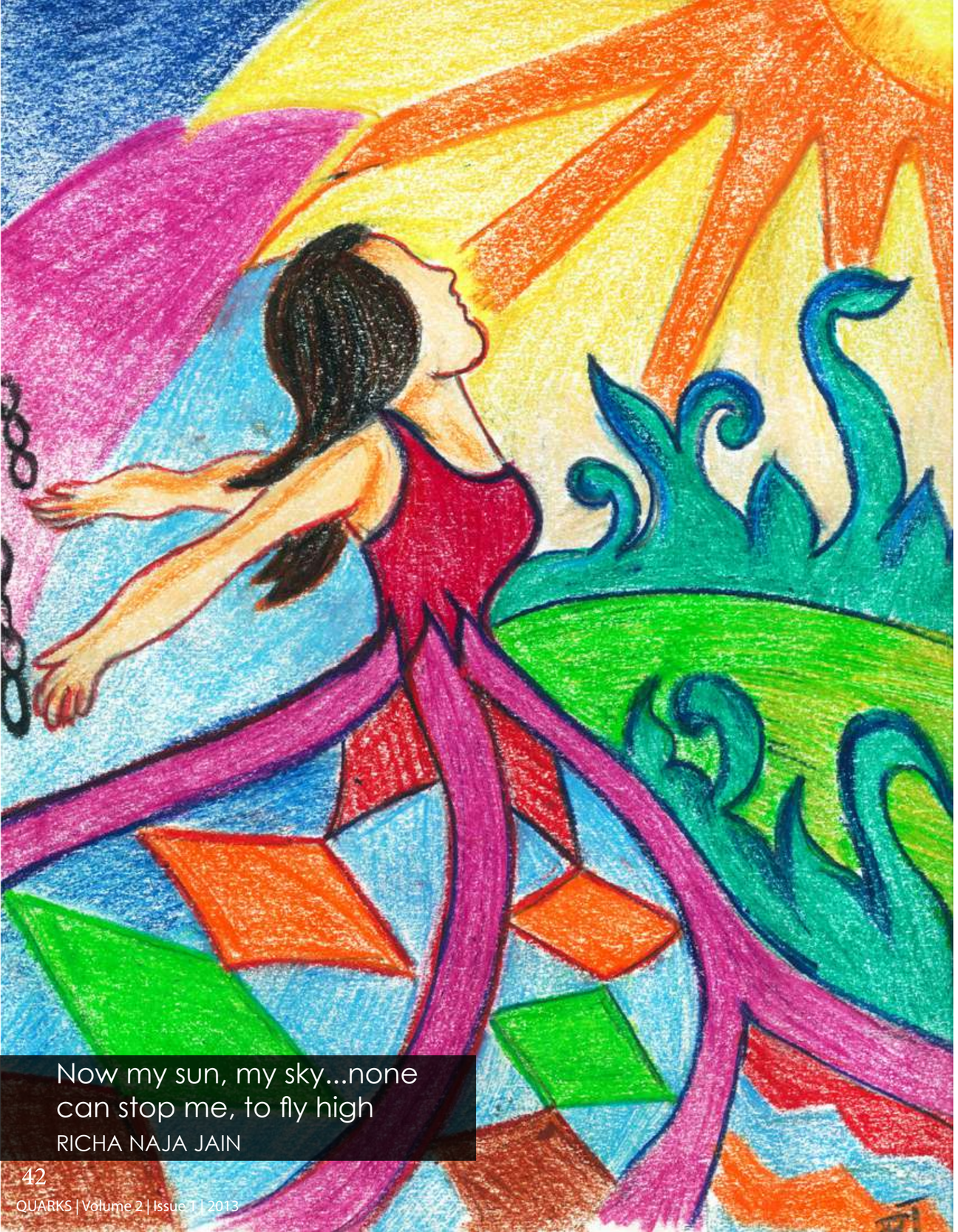
The second thing I want to ask about this observation is even simpler – Why? Why do women find the need to keep such a tight observation of themselves, and who "enforces" it?

The answer is not hard to find – the reason is men. Not only men who judge based solely on what they see, who then have the power to affect women's lives based on their judgements, but even normal men like us students of IISc; even our comparatively powerless actions have an effect and a bias. This gets reflected in society's image of an "ideal woman", and the way society deals with women who don't conform. It is a terrible effect of objectification and the traditionally male-dominated society we have.

> Being a woman is a terribly difficult task, since it consists principally in dealing with men.
>
> ~Joseph Conrad

My point is, while many of these discussions can be abstracted into a discussion of principles and what "other" people do, they shouldn't. This is a personal issue of which we, educated students of a premier institution, are also a cause.

Let me illustrate with several examples what I mean about how close we are to the problem. Consider the posts from IISc students on Facebook groups lamenting the lack of hot girls on campus. Consider the discussions of the gender ratios at different colleges between friends. Consider the enthusiasm students have for fashion shows at the Gymkhana events. Consider the glee with which hostellers reveal that a fellow wing-mate has a girlfriend who visits on weekends. Consider how men who have "hot" girlfriends are almost respected and admired for the apparent achievement. ▶



Now my sun, my sky...none can stop me, to fly high

RICHA NAJA JAIN

Each of the above is something that's not hard to find; they happen very often and it seems we've gotten used to them, have even begun to expect them. These are not abstract or faraway examples, but examples from our own campus, examples which many of us have been part of, maybe unthinkingly. We are very much a part of the problem, and not the solution.

So how do educated people rationalize these things? Do they consider them to their logical conclusion, or just avoid them because of the potentially unpleasant destination?

I would suppose that the most common rationalization for any case of objectification would be that the woman in question does not mind it, even wants it, based on conclusions drawn by the rationalizer about the woman's actions. A good example of an objectification that would need to be rationalized in this way (by educated, intelligent men) is the ogling of women in revealing clothing. Unfortunately, the common rationalization I've mentioned does not hold up.

Why not? The argument that the woman "wants" to be looked at is based on the assumption that that is the only purpose of revealing clothing. If she didn't want to be looked at, she wouldn't have worn what she did, right? (Which, by the way, seems to have faint undertones of the astonishing argument that women who wear such clothing are partly responsible if they are later raped, which is always floating around.) Now, this statement might actually be true, since it depends on the individual woman. But it doesn't even matter why she wore what she did; it is irrelevant. What does matter is there is a difference between objectification, i.e. considering a woman solely in light of the clothes she wears, and considering her clothing style and beauty as a part of her as a complete person. The former is exactly what feminism says is the problem, while the latter might well be the response women hope for.

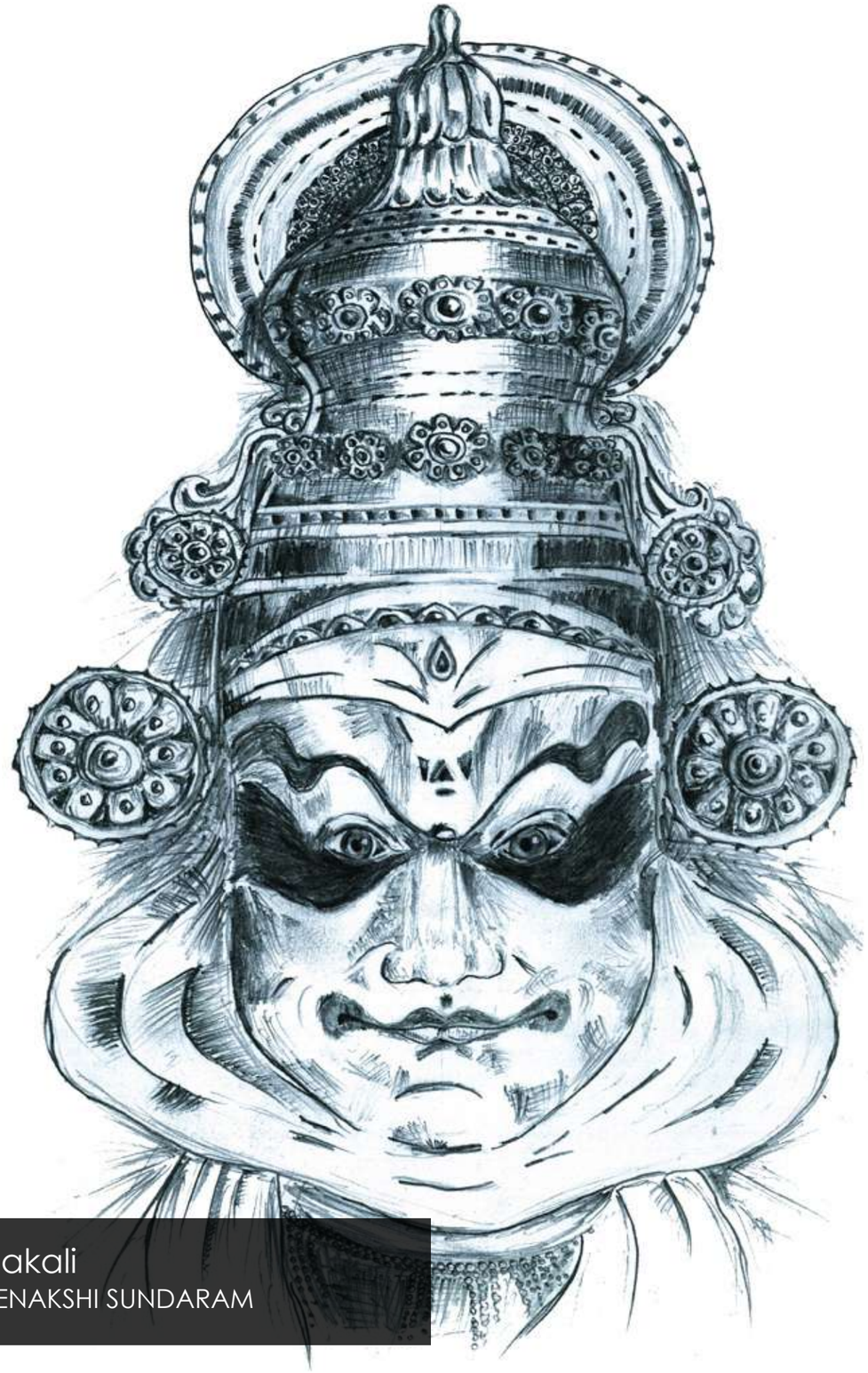
Finally, let's address one final question. Is there something that is actually different here? Is there something which separates men from women that makes women deserve this objectification, this judgement based on looks, this need to constantly survey their own behaviour throughout their lives? And the other difficulties women face – in jobs, in education and science, as leaders – are they a result of differences in skill, or is it again just society?

There is a difference. But it lies not in skill, not in ability, but in opportunity. When women are given the same opportunities as men and not subjected to stereotypes, they are equally capable in every respect – this is a fact with scientific backing that has been demonstrated again and again, and it can't be argued.

What I've talked about in this article are my views on the issue, which I think hold up to scrutiny. They don't need to be everyone's views, because of course, each person needs to consider things for themselves. What each person considers right and required in treating women, how they consider their own treatment and whether they have inherent biases, are all difficult issues which need to be considered deeply on a personal level. They might well lead reasonable people to a certain sense of guilt. While the conclusions others draw might not tally with my own, my hope is that this article will at least make others realize that there is something of substance going on here, something strange in their perception of the world.

And remember, it never hurts to think ■

- Milind Hegde



Kathakali
K. MEENAKSHI SUNDARAM

மனிதனின் சிரிப்பு

வேங்கைக்கஞ்சி மானோட, தன்காலிடையில் கல்லுரசி,
அம்மருன் மாலை வையவனும் வானிறங்க,
இரு கல்லின் நன்றி மறந்து அவைத் தொடங்கி
வனமெங்கும் தன்பசிபுசிக்கும் கடும் தீயவன் போலும்,

மென்மையின் பொருளாய் விளங்கிடும் காற்று
தொட்டிட, நாணிச் சுருங்கிடும் ஐய்யறியிலையும்,
தன் முறையால் முறையாய் நம்பிக்கைக்
கொன் றவனைக் கண்டு(ம்) நாணா !

நிலத்தின்மேல் இருந்திடும் வானம், அதுதன்னுருவம்
வண்டினம் அயலித் துளிநனித்தேன் சேர்க்கும்
தன் படம் தரையில் திரையிட விரும்பா -- கோடையிலும்
கடலின் நீரிழுக்கக்காரிலும் முகிலால் மதிமறைக்கத் தலைக்கணம் !

நாற்பதுடன் சேர்த்த நான்கின் வரையும்,
கேட்பதற்கு அறியா இவையுயிர் தொடங்கியும்,
காப்புக்கு உறுப்பாய் சிலயிலை பிரிந்தும் -நாள்கடந்தவோர்நொடியில்
தன்னலத்தே தன்புறம் இழுக்கும் நிலம் !

ஒளிமிகைப் பொழிந்தும், கடிநிலஞ்செழித்தும் -- பொலியா
பழுத்தேங்கும் நனிமரக் காட்டில் – ஈதொன்றிற்கு,
இம்மாலைக்கண் நீர்வீழ்ச்சி அழுதேங்கிட, உன்னிடந்தத்தம்
ஏனடா தாயிலையொத்த ஈரம் தங்கா இதயம் ?

இவையனைத்தும் மக்களெனும், சில மாக்கள் !!!

-நவீன் செந்தில்நாதன்
Naveen Sendhilnathan

Illustrations : Naveen Sendhilnathan
For meaning in English please go to Page 248

अनुदिनी: शब्दांचाच संवाद (माझाच अन माझ्याशीच)

आज २१ मार्च! आता तू म्हणशील की त्यात काय एवढे? पण अगं हाच तो दिवस ज्याने पुढे वाढून ठेवलेल्या भयानक वास्तवाची चुणूक दाखविली. कोड्यात पडलीस नं? मग आठव जरा!

हाच हाच तो काळा दिवस! बरोबर २० वर्षांपूर्वी याच दिवशी तो पहिला धरणीकंप झाला, ज्याचे छोटे – मोठे धक्के आजही आपण अनुभवतो. कधी ७ रिश्टर स्केलचे तर कधी १, हे धक्के कितीही तीव्रतेचे असोत जीवितहानी ठरलेलीच!

आता आलं असेलच तुझ्या लक्षात २१ मार्च १९९३ बद्दल बोलतेय मी!
हो मुंबईतला पहिला दहशतवादी हल्ला याच दिवशी झाला नाही का? सारं जगच त्यामुळे हादरून गेलं होते.

मग हे रोजचेच झाले नाही?

कधीतरी कुठेतरी एका संध्याकाळी दहशतवादी हल्ला होणार ; मग

अचानकच २४ तास बातम्या देणाऱ्या वाहिन्यांवर सो कॉल्ड "ब्रेकिंग न्यूज " झळकणार 'xxxxx येथे बॉम्ब स्फोट ** जागीच ठार & ## जखमी, मृतांची संख्या वाढण्याची शक्यता...'

मग न्यूजदेवतेची पूजा करणारे अतृप्त आत्मे धावतच आपल्या ob व्हॅनचे रथ घेऊन ठिकठिकाणी पसार होणार.

तेथूनच मग "LIVE NEWS" च्या नावाखाली स्वत:च्या अकलेचे तारे तोडत आपला मानसिक छळ मांडणार!

दुसरीकडे आता अशा हल्ल्याची बातमी आली की मी तरी केवळ या घटनेचा आढावा घेण्यापूर्ती दूरदर्शनवर बातमी पाहणार अन सारे जवळचे नातलग सुखरूप आहेत हे कळले की मग सरळ टीव्ही बंद करून आपल्या कामाला लागणार.
लाल - काळ्या रंगातले दुसऱ्या दिवशीचे वर्तमानपत्र वाचताना

मनात खळबळ माजणे तर दूरच आता तर साधे दू:ख देखील होत नाही.

मुख्यमंत्री ई ई यांच्या धावत्या भेटी. मृतांची अन जखमींची एखाद्या लिलावतील वस्तूगत केलेली किमत, कोणत्या दहशतवादी संघटनेचे हे कृत्य असेल हयाबद्दल वृत्तसंस्थेच्या सो कॉल्ड "गुप्तहरानी" वर्तवलेल्या शक्यता ...

या सगळ्याच्या आता खूपच वीट आलाय!
सगळ्यात त्रासदायक गोष्ट हीच की लगेच उठून दुसऱ्या दिवशी कामावर जाणाऱ्या तमाम मुंबईकराना केला जाणारा सलाम!

ज्या बिचाऱ्या जीवांचे हातावर पोट आहे अन अशा रोजच घडणाऱ्य घटनांनी थांबून राहिले तर उपाशीपोटी जीव जाईल अशा बिकट स्थितीत जगणाऱ्या त्याला थांबून कसे चालेल?
मग मन मारून ८.१५ ची लोकल पकडावीच लागते!
अन हे मूर्ख बातमीदार याला "मुंबई स्पिरीट" म्हणून गौरवतात!

अशा या साऱ्या परिस्थितीत मन अगदी निगरगट्ट झालय! कुठेही काहीही झाले तरी जोपर्यंत ती घटना घरापर्यंत येत नाही तोवर अगदी "लक्षपूर्वक" दुर्लक्ष केले जाते. दहशतवादी आपल्या मानसिकतेवरच अगदी गनिमी काव्याने हल्ला करण्यात यशस्वी झाले आहेत. आपणही माणुसकी हा शब्द फक्त "पुस्तकातच" वाचतो.

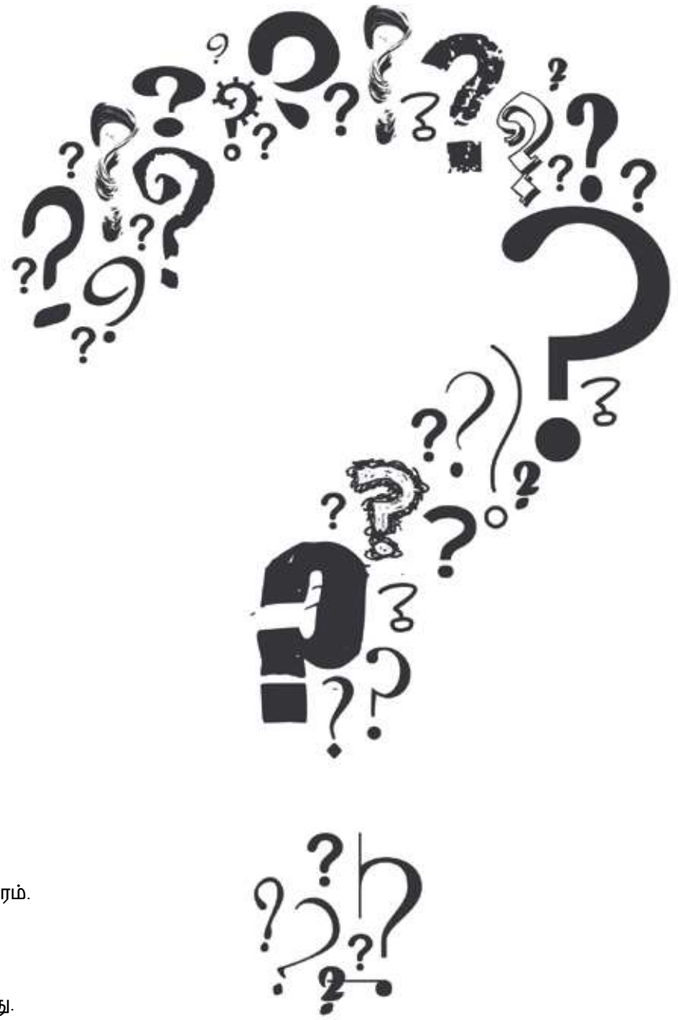
ह्या साऱ्याची कितीही चीड आली तरी आपल्या हातात आता काही उरले नाहीय हे कळून चुकल्याने जीव अगदी हताश होतो. हे सारे आपल्यालाच आता थांबवायला हवाय

त्यासाठी एकत्र प्रयत्न करूया अन एकजुटीने 'माणुसकी'ला विजयी करूया!
झाली गेली वीस वर्षे
आता करू नव्याने सुरुवात
सतर्क राहून सदैव
ठेवूया देश आपल्याच ताब्यात

- संपदा चंद्रशेखर कोल्हटकर
Sampada Chandrashekhar Kolathkar

Picture source: Internet

நகல்



பகலுறக்கம் இயல்பு விடுமுறையில்.
துயில் களைந்த வெறுமையில்,
பகலிரவு பகுத்தறிய இயலாது
குழம்பினேன் மாலைப் பொழுது,

கடவுச்சொல்லைக் கொடுத்தேன் கணினியில்,
செய்வதறியாது உலாவினேன் முகநூலில்.
வள்ளுவன் வலை யுகத்தில் வாழாதது,
சமூகவலைக்கு அதிகாரம் பாராட்டாதது.

முகநூல் , நிசப்தம் நிறைந்த ஓசை,
நண்பர்கள் விருப்பம் கோரும் இம்சை.
விருப்பங்கள் இதில் நடப்புப்பசை
மற்றல்லாமல் மைய சுழற்சி விசை.

வலைத்தீவிலே வலம்வந்தேன் நித்தம்
நொடிமுள்ளின் ஒருமையானது சப்தம்.
என் வலை நட்பு வட்டத்தின் சுவாரஸ்யம்,
ஓர் வகுப்பு தோழியின் புதுத்தோற்றம்.

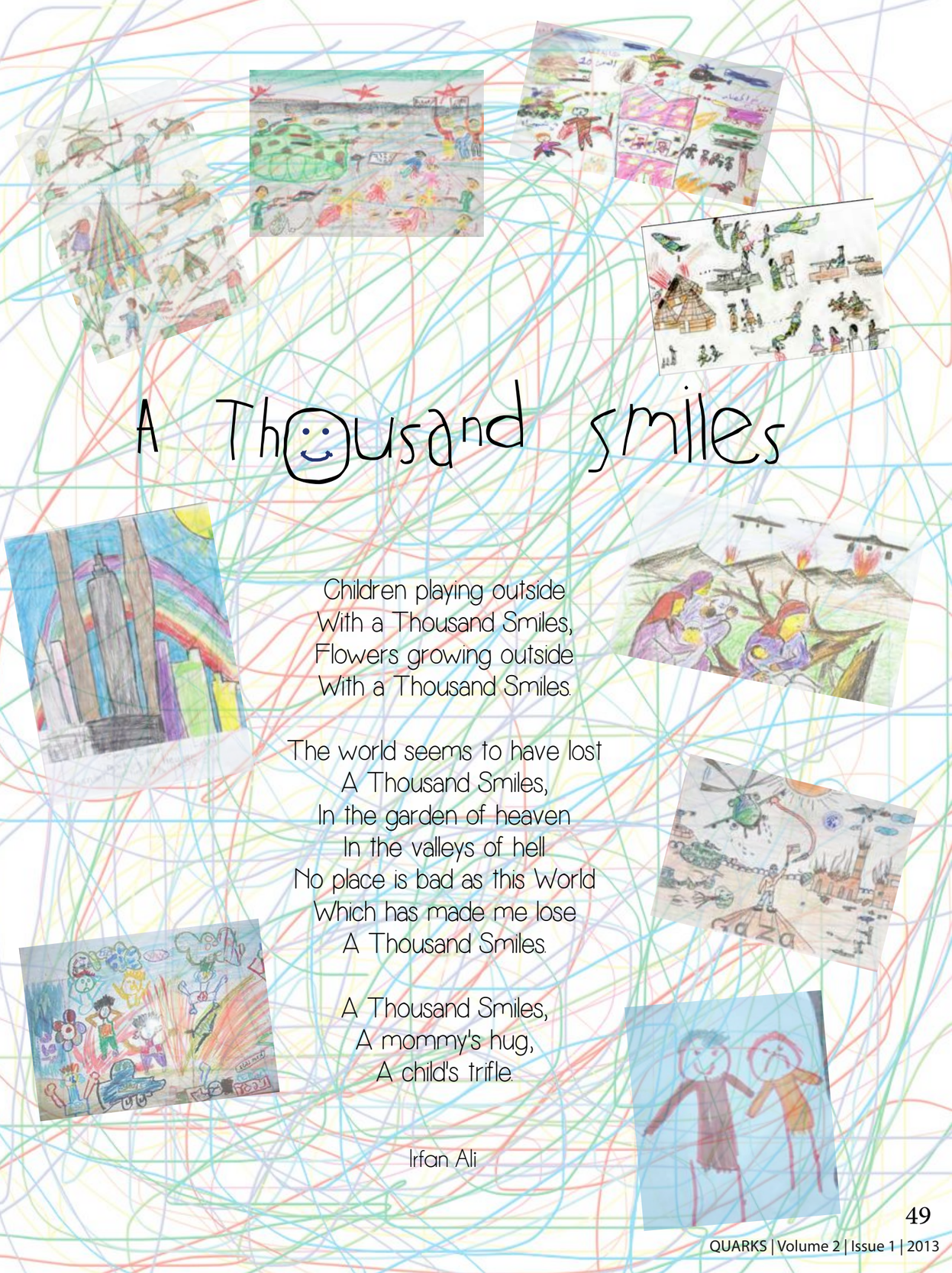
கண்ணாடி மேல் படராத பாதரசம்,
பதின்பருவ தோழி யவள் பரிச்சயம்.
என் மன எண்ணம் – இதில்லை சாத்தியம்
அவளுரையாடுவது வானுலக அதிசயம்.

இதற்கெதிராய், என்னிடமவள் உறையாடியது,
வைரம் தீயில் கரியாவதுபோல் விசித்தரம்.
உரையாடலில் இராக்காலம் கரைந்தோடியது,
பேசியபின் தெரியவில்லை, தோழியின் நிலவரம்.

அதற்கவள் வலைப்பக்கம் பார்த்தபொழுது,
சேவல்பணைண்யாய் நட்புப்பட்டியல் இருந்தது.
நகல் அடையாளத்தின் உருவகை எதிரொளித்தது.
சிறிது நேரத்தில் நினைவு கரைதட்டியது.

மெல்ல விடிந்தது
காலையும், உண்மையும்.

-அரவிந்த் வேலுச்சாமி
Arventh Veusami



नदी के दो किनारे

प्रतिभा महाले

नदी के दो किनारे....

नदी का एक उद्गम स्थल
मनोरम,सुन्दर,शांति हैं जहा पल पल
और उस नदी के दो किनारे.....
जो अभी तो हैं एक और जिनसे निकली है स्वच्छ पानी की धारें,
पर समय की रफ़्तार
और परिस्थिति रुपी पानी की ये धार,
कब क्या कर जाए किसे है ज्ञात!
समझ से परे है इनकी भाषा और इनकी बात,
दो किनारे या एक ही सही कहूँ तो,
चले थे संग-संग जो,
आज कितने दूर हो चले हैं...
इसे समय की साज़िश या परिस्थिति की मार कहूँ मैं,
या फिर ये तो नियति हैं...
प्रकृति हैं...
सभ्यता हैं....
कह के मान जाऊँ,
या ये तो होना ही था कह के टाल जाऊँ....

उद्गम स्थल पर ये एकता की थे मिसाल!
लगा मानो कोई भी हो दिन महीना या साल,
या हो छाया विपत्तियों का काल,
रहेंगे साथ नदी के दो किनारे...
जिनसे निकली है पानी की ये धारें...

पर इसे मेरा भ्रम कहो या नादानी,
क्योंकि अब इन दो किनरो के बीच है पानी.....अथाह गहरा पानी...
उस उद्गम स्थल से चली आ रही
बैठी नौका के एक कोने मे कहीं,
अब सोच रही हूँ यही,
जो हुआ जैसे भी हुआ,
मैं कर सकती हूँ बस दुआ,
समझ से बाहर है दूरी का कारण,
आज भी एक उम्मीद है कि होंगे हमेशा उदाहरण,
एकता, समर्पण, और मित्रता के, नदी के ये दो किनारे...
जिनसे निकली है पानी की ये धारें...

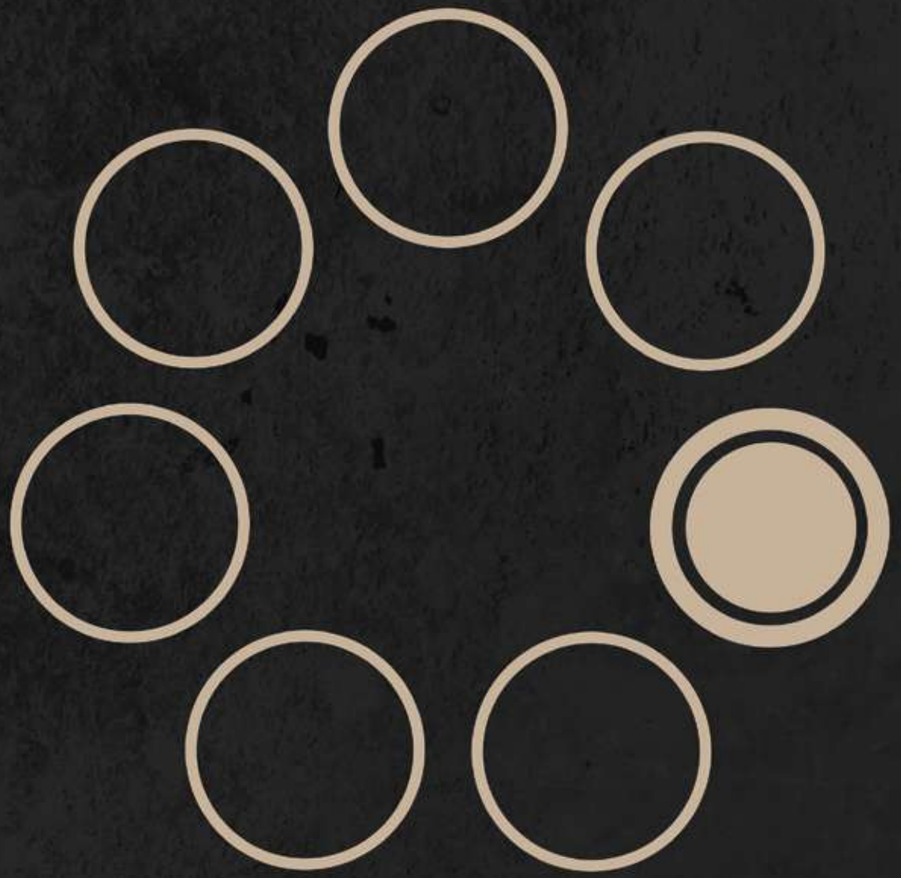
पर यथार्थ की वास्तविकता से सामना जब-जब करुँ,
वही प्रश्नों का तुफ़ान ज़हन में होता है शुरु...
सत्य का अगर करुँ मैं सामना,
तो किसी एक तट का हाथ होगा थामना,
कैसे जानू?
कैसे पहचानू?
कि किस किनारे के पास होगी वह प्राकृतिक सौंदर्य की
जादूई काया,
किस के पास होगी मधुरता की ठंडी छाया...
कहाँ जाऊँ?
इस प्रश्न की गुत्थी कैसे मैं सुलझाऊँ?
नदी के ये दो किनारे...
अब जिनके बीच है पानी की धारें.....

इस प्रश्न का तोड़े क्यों ना आधार,
आया मन में ये विचार बार बार,
भर के इस पानी से अपनी अंजुलि,
नौका में डाल रही हूँ इससे पहले के आ जाए गोधूलि,
समेट कर ये पानी, किनारे पास तो आए...
चाहे नैया मेरी डूब ही जाए,
पर देखो ना हो चली है रात, छा रहा है अंधकार,
इस प्रयास में मानो हो रही है मेरी हार,
लगता है रह जाएगें ये नदी के दो किनारे...
जिनके बीच हैं पानी की धारें.....

अब तो एक ही उपाय एक ही रास्ता,
बस ठहर जाऊँ बीच मझधार में और सुनाऊँ इस नभ
को अपनी
दास्ताँ,
अब इस अंधेरी रात में आए आँधी या तुफ़ान,
होगा मेरा विश्वास ही उसे देने को दान,
एक उम्मीद का दीपक मेरी नौका में हैं रहा जल,
इस अंधकार को जो चीरता रहेगा आज और कल,
समय के चक्र और उसकी रफ़्तार
पर है भरोसा और ऐतबार,
नदी के ये दो किनारे,
जिनसे निकली थी पानी की ये धारें,
फिर होंगे एक और फिर बनेगा वो स्थल,
मनोरम, सुन्दर,जहाँ है शांति पल पल...

नदी के दो किनारे....

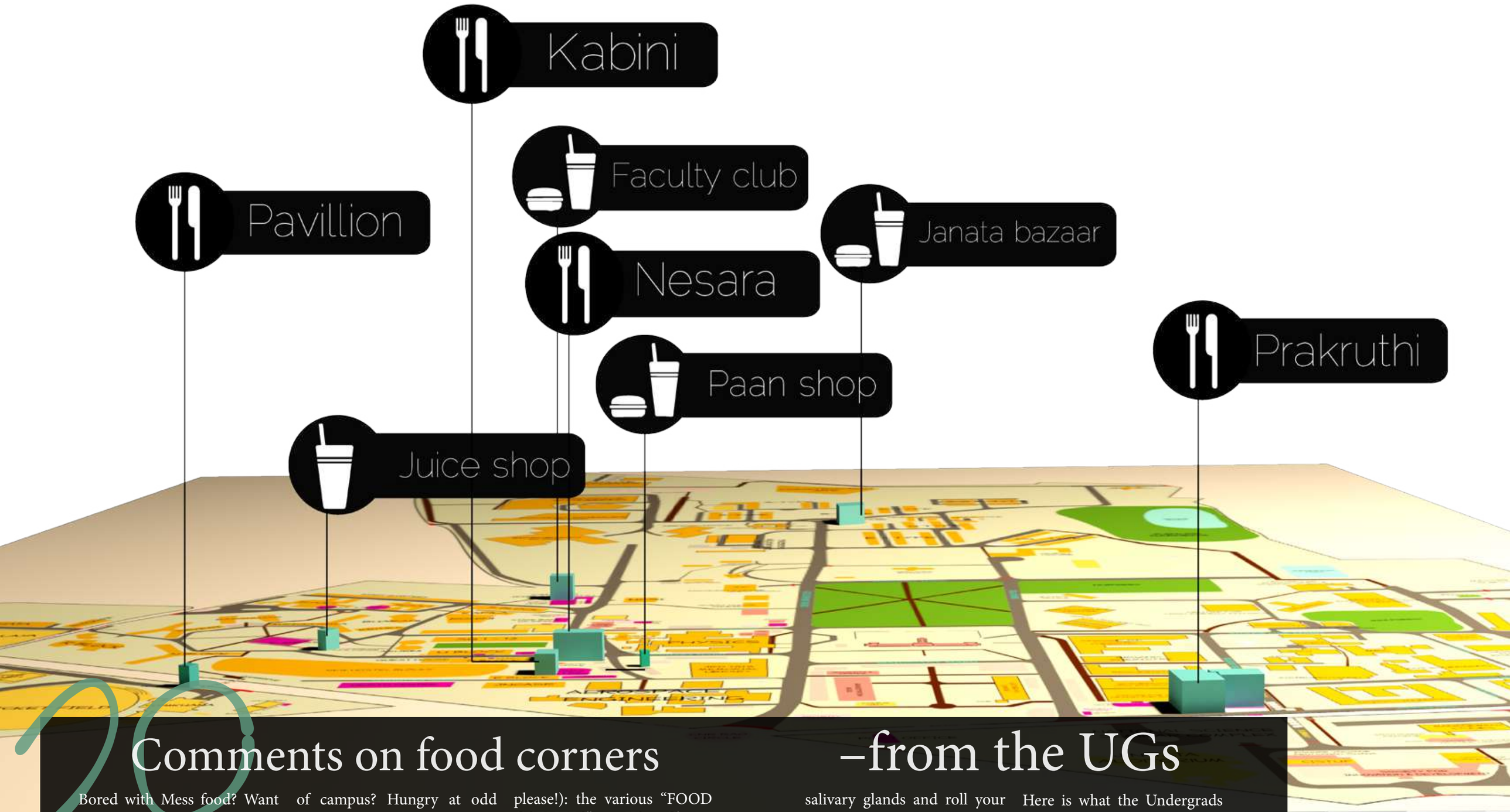
Drawing Credits: Shinjini Biswas



Connoisseurs

"One cannot think well, read well, sleep well; if one has not dined well." Recognising and acknowledging this, UGs at IISc explore the various food corners in the campus to achieve gustatory nirvana. This explorative food syndrome is a potential outcome of missing home food. Analyse how this has penetrated into our thoughts; making us Connoisseurs of food and inspiring us to fantasize, write and comprehend cooking and dining as science.

three
Connoisseurs



20 Comments on food corners –from the UGs

Bored with Mess food? Want to try something exciting but too lazy or too busy to go out of campus? Hungry at odd hours? Here they come to your service (or rescue, if you please!): the various "FOOD CORNERS" at IISc. Charge your taste buds, activate your salivary glands and roll your tongue to taste the flavour of various food corners in IISc! Here is what the Undergrads have to say about the various Food Corners of IISc:

Story writers: Ankush Sood and Apaar Shanker

Nesara

Timing:
10.00 am–10.30 pm

Food served:
Veg and Non-Veg:
Snacks and Meals

Relax and lighten your purse as your tongue savours the hot-served, long awaited food!

UG favourite:
Prawn biriyani

1. The food corners offer a welcome change of taste after the mundane meals in the mess. They are also great locations for addas, what with the umpteen bottles of Coke fuelling the revelries late into the night. Prakruthi used to be my staple haunt, but after a recent nightly sojourn to the Faculty Club, I have a new favourite. The Egg Maggi here is a novelty. The *aloo parathas* at least appear like the ones cooked at home. Most importantly, it serves greater variety of hot food which puts it head and shoulders above Prakruthi with their shoddy platter of *chaat* clones.

–Apaar Shanker

2. Eating the same boring half-baked Rotis and Sambar that looks like thick yellow broth does make me pukey sometimes (usually it's Mondays and Wednesdays), but guess what, IISc's various eating hubs come to my rescue. Just kidding! Even they serve crappy items but some stuff is good, especially at Faculty Club. Nesara, though pricey, serves decent food. If you are having lunch at Kabini and happen to be sitting outside, try not to have a lizard enjoy your baby corn masala. On the whole, the eating joints at IISc do provide experience and ambience that's wholesome and refreshing. Kidding again!

–P. Shubham Parashar

3. The mess timings don't go well with me. So just after one and a half month in E-Mess, having faced the food items I had never seen before, I began my Signing-Out process—just signing out every month! My first choice was Prakruthi. I dined there most of the time but being a hard core non-vegetarian, Prakruthi soon became boring for me. Then I tried Nesara. But after every meal my purse became much lighter. Now it's Prakruthi again (boring even now). At evening and night I go to Gym Café, where I can eat non-veg without having to worry about money. Gym Café is my favourite dining spot … for now.

–Nidhin Kurian Kalarickal

4. Of points of interest for food in IISc, Prakruthi is my favorite. I go there because I prefer vegetarian food, price is moderate, taste is good and of course, we can sit in the open air. One simple advice for those who go to Prakruthi is to watch out for monkeys. Once, four of us were having 'South Indian Meal' in open when a monkey jumped onto the table and took one of my friend's *poori*. While we laughed, the same monkey jumped again and took the *poori* of another guy. One of my terrified friends leaned backward and tumbled. After that time at Prakruthi we always make sure that the monkeys are not around and smile while thinking of the monkey attack.

–Ismath Sadhir

5. It's very hard to do justice to food which is available in IISc. I generally eat out. For a change I spend time in Gym Café. There is loads of variety of food. It has nice ambience too. More than the food, I enjoy the company of friends. Occasionally we also help the '*canteen-waale Bhaiya*' in his work.

–Nikunj Goel

6. My favourite Food corner is Prakruthi as it serves variety of good tasting food at reasonable prices. I love the Chana Bhatura at Prakruthi. The only thing I hate is that the food is very oily and spicy. However, it is thousand fold better than the food at E-Mess.

–Jaspal Singh

7. My favourite happens to be the Juice Centre. Run by a small family, it is one of the most well-known landmarks in the campus. It has a large daily patronage, a place to meet up and do a 'one by two' of a mango juice, perhaps (split one serving into two glasses). Apart from the juice mentioned in the name, you could also get bottled soft drinks, chocolates, as well as a LOT of Tzinga to pull off an all-nighter (although personally, I don't care much for the taste). Prakruthi is second only to Juice Centre. It offers a wide variety of items. The *chaat* items are not really definable as such, but the Pav Bhaji makes up for its lack of taste by being rather spicy, and if you like this, it's being half-drowned in butter. It remains open till two or three, but after eleven or twelve they will only serve the *chaat*, veg (grilled) sandwich, veg burger, and biscuits, apart from the (soft) drinks in the fridges. If you're eating lunch or your evening snacks there, be wary of unruly monkeys who might snatch any unattended appetising tidbits.

–Anamay Chaturvedi

8. I prefer Nesara as it is the nearest to girls hostel and appeals to my lazy nature (don't have to walk much to get there). Food quality is decent and it is a nice place to have dinner with friends when one gets bored with mess food.

–Diksha Rehal

9. Any bubbling campus like IISc needs a constant, unending and quality flow of food for its inhabitants to continue working at their optimum outputs. If there isn't a single place where one can go and refresh oneself over steaming, delicious food, or a place to look forward to going over lunch, or a place to discuss a developing embryo of idea, over coffee, then surely there is a huge vacuum in the vibrancy and energy of the campus. Within IISc, I think the title for best Food Corner has to go to Juice Centre for doling out ▶

Kabini

Timing:
8.00 am–8.30 pm

Food served:
Veg: Snacks and meals

Your wallet will not be worried about losing its weight when you run to Kabini for your breakfast!

UG favourite:
Masala Dosa

Prakruthi

Timing:
9.00 am–10.30 pm (main)
11.00pm–2.00 am (chat counter)

Food served:
Veg: Snacks and meals

Grab your coins and your order to enjoy the tasty bite in the open air.

UG favourite:
Chana Bhatura, Biryani

fresh and healthy fruit juices and fruits to the entire campus community. It has always has been "Yes, why not?" whenever it comes to responding to an invitation from a friend to pay a visit to the humble Juice Centre. A close second is Prakruthi due to the myriad of delicacies it has to offer. Upon every visit, there's always something new to discover there, and it makes me feel a step closer to home. Regarding the improvements which can be made, I think we should have a proper Cafe and an Ice-Cream Parlor within campus, for one. For another, we need to improve the quality and variety of fare served at these joints. Also, the hygiene and cleanliness of utmost levels must be ensured unfailingly, at all these food hangouts. We can probably let popular food chains (multinationals) open a parlor within IISc. Or better still, we can allow upcoming and local Indian food joints operating outside.

–Siddharth Kankaria

10. Prakruthi is the best for me. I like the place and atmosphere. Also, it is economical and one can always find company. Biryani is delicious.

–V. Meher

11. If you ask me which is your favorite food corner out here in IISc, well the answer will be—it depends! If you ask me for lunch, it will always be Nesara. I love the "Prawn Biryani" there. Give it a try sometimes, guys. Now, there has been a routine for me and another friend of mine for the past 2 semesters. As the clock ticked 3 in the afternoon, we had to somehow 'come out' of our labs for a while and go to Nesara for our special "cheese masala dosa"! And believe me or not, I had never been as regular to my morning classes as I had been there. :) Now, my second time of visit to a food corner will be after 12 at night! And the best place to go with your friends to sip a cup of tea and discuss some utter 'nonsense' is Faculty Club :) The atmosphere there is awesome for "gupshup"! For exam time, there has been another favourite. This time around, I have been going to Prakruthi with 2–3 friends before exam night quite regularly. With two three cups of coffee and packet full of biscuits, laptops opened somewhere on the table and some photocopied notes of Siddharth Ghule (our source of class notes), it was fun trying to figure out when those pages after pages of notes were taught in the class! So, it is not only one food corner that makes life at IISc possible. It is a "time-specific-combination" of all the food corners that makes each semester here memorable.

–Biplabendu Das (Happy to be in 2nd year)

12. My favourite food hangout is the 'Fac Club'. 'Why?' you ask—because it offers those simple little treats that one craves the most—eggs, bread and Maggi. Somehow they manage to make it the way it is made at home.

–Tapan Goel

13. Nesara—the only place in the campus which feels like not a part of it. Even when it takes more than an hour to get a table, force a waiter to notice (by shouting like a fool), decide on what exotic-sounding stuff to be eaten while the waiter gets impatient and leaves to wait by someone else, give the order to some other waiter, then wait, wait some more, and finally get some food placed before you, it feels kind of nice to fill yourself with polished junk food, then empty your purse to pay the bill and worry about how much tip would be just decent. Also, after a day spent waiting—for the professor's reply, for the stupid machine to churn out some result, for the last month's scholarship, and for all the miracles which were long due, having someone to take orders from you does wonders to your self-esteem. Off to Nesara now!

–Joseph J Kunnathoor

14. Food and Science certainly don't go together. Because after a long tiring day, you don't remember the assignments you have got to finish, but you can't stop enumerating the dishes you would have for dinner. And then the food corners come to the rescue. When I'll leave IISc, food corners will be the places I would miss more than my classroom and for obvious reasons. The endless candid chats over cups of coffee or sometimes ice-creams and chats, (often bought with some spendthrift's money) will definitely be memories forever. The food corners in IISc are great hangout places, not because they serve good food, but because they are a great place to unwind. My favourite food corner is Prakruthi. As the name suggests you eat with the nature (quite literally, chances of having a few leaves fall straight into your plate are very high). I must have been to Prakruthi more than the library and I am happy that I will take back priceless memories from this place.

–Neha Kondekar

15. I think the food corners are great places to spend time, have fun, and of course eat. My favourite food corner is actually the Juice Centre. Mostly because it is so close to the hostel and I love mango juice to cool down. It's much better than the mess snacks. Apart from the juice, the Juice Centre is also a great place to have discussions on anything and everything with friends, while sipping on some refreshing drink. That is probably the most important thing about it. I can't think of much that needs to be improved with the Juice Centre. Prakruthi needs, *needs*, to improve its *chaats* though. I find it amazing that a campus present in the middle of Malleshwaram lacks a single good source of chaats.

–Milind Hegde ▶

Gym Café

Timing:
6.00 pm–2.00 am

Food served:
Veg and Non-Veg: Snacks and meals

Let your ears resonate with the frequency of your name amidst the renditions of birthday songs.

UG favourite:
Chicken Fried Rice

Faculty Club

Timing:
11.00 am–2.00 am

Food served:
Snacks, Packed food items (chips, biscuits, etc.)

Grab a bite on stone benches as all "decent" chairs are lying on the wrong side of the counter.

UG favourite:
Egg Maggi,
aloo paratha

16. Fac Club is the place where I can get food late in the night at affordable rates. Also it is the go-to place for buying snacks like biscuits or chips at night. The fact that they have omelettes, burji and boiled eggs is something I find truly attractive.

–Pritish Patil

17. Nesara for the delicious Cheese Masala Dosa they serve.

–Arvind Mehra

18. As science students one of our primary skills is to take observations efficiently in any study/experiment. Hence, I believe after two years I can now rely on my set of observations. Here is what I have observed about UG students and Kabini:

Kabini is our breakfast rescue centre and our wallet's friend!

Morning 8:00 am class (for 2011 batch) and 8:30am (for 2012 batch) clearly debars many of us from enjoying the delicious breakfast served from 7:30 am in the mess. So, our empty stomach after our first or if very unfortunate, after our 2nd class, makes us rush to Kabini. If we need to crown a particular dish on the menu card as most popular, I guess the winner would be the Masala Dosa. Although, UGs do enjoy other dishes like *idli-vada*, *kesari bhath*, *set dosas* also.

Another important property of UG and Kabini that occupies a position in the observation table is Kabini's coffee. After a series of lectures, a cup of coffee boosts our concentration level by helping us to keep our eyes open! The cost of coffee makes it even more the most sought after refugee to stop the magical lullaby playing constantly in our ears during the lecture hours.

Actually, the numbers against all the items in Kabini's menu card seem to make good friends with the weight of our wallet.

The lunch and dinner tables at Kabini also invite us meticulously. A noticeable fraction of UG always accepts the invitation and gives Kabini a chance to host. Although, sometimes cleanliness of Kabini becomes an issue for some of us including me.

Nevertheless, if you have missed your breakfast and your stomach does not stop talking during the class or your eyes are surprisingly stubborn to stay shut and you just have 15 minutes or so left in your breaktime, then go and grab some coffee and snacks in Kabini without having to worry about your monthly expenditure.

–Pratibha Mahale

19. What I feel as one of the nice things regarding foods in IISc is that although we have many food corners, there was not a real need for me to go to them (unless special occasion) due to mess food. But amongst the few times I went, I liked Kabini very much due to food quality as in line with the cost. But the bad part is that they would close it at late night. For late night celebrations like birthday party and friendly treats, I like Gym café due to the large open space available next to it which makes it easy for birthday bumps, egg-on-head trolls, etc. For evening snacks and tea-break, Prakruthi has been a nice place which is actually very good for me, as I would be the last person to leave the lab normally. In Nesara although the food is nice, eating there is very time consuming.

–Kamalnath Kadhirvel

20. This might not be a hot spot for many of the Undergrads mainly because of the geographical isolation of the place. But, summer interns and undergrads working in the new science buildings surely live by this food corner.

Janta Bazaar has every utility needed for survival, from food to clothing (tailoring), hairstyling to beautification saloons. They also have a grocery shop you know, just in case for your excuse to labs. What interests any undergrad in Janta Bazaar are the two shops on the ground floor, welcoming you at the left and right as you enter this mini one-storied market.

Ice creams, cookies, milkshakes, cakes; you name it, they have it. This is a perfect place for refreshment on a long day's evening, when you almost can't find your limbs and think the messes are so far that they are almost in the other world.

–Naveen Sendhilnathan ■

Juice centre

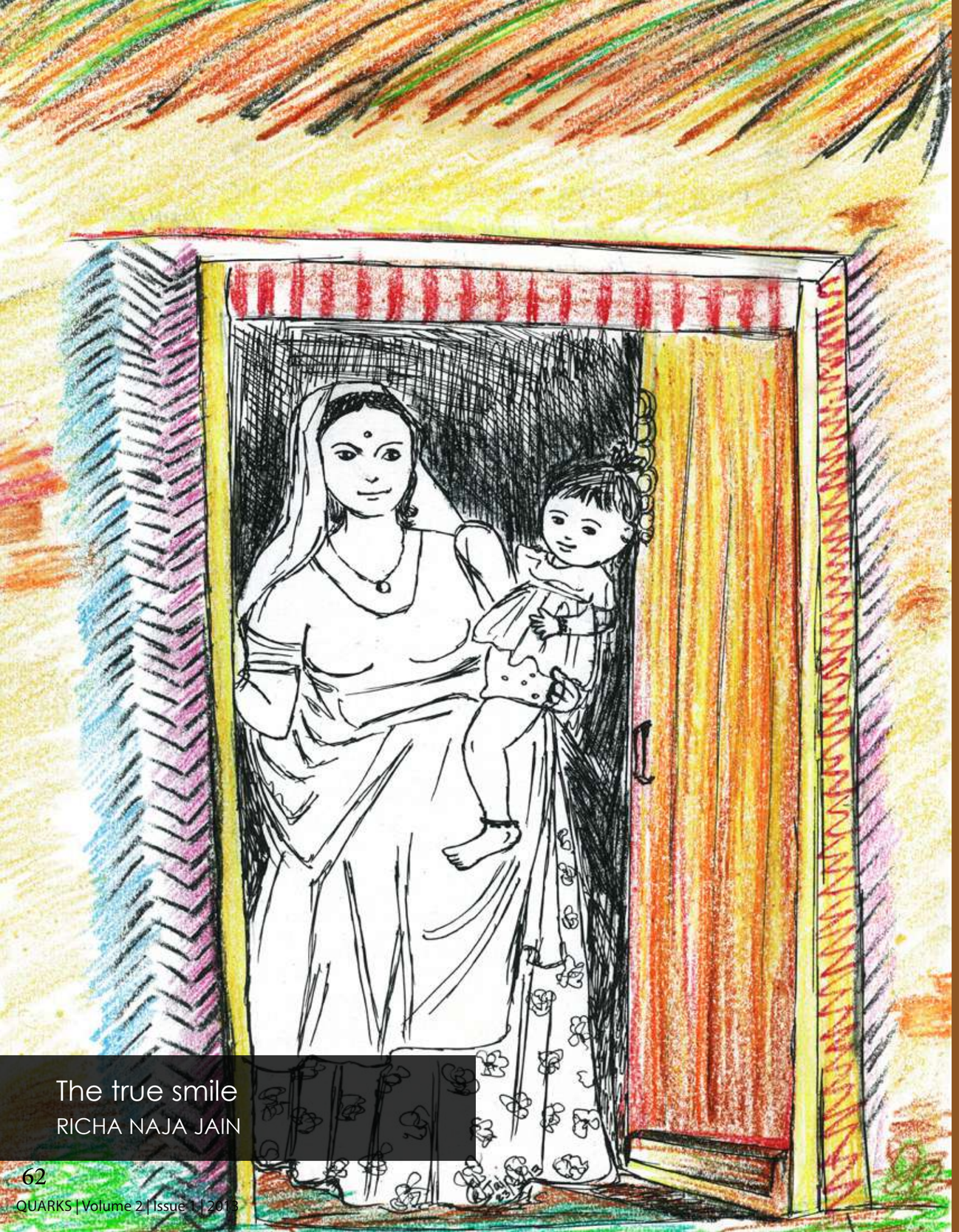
Timing:
9.00 am–11.00 pm

Food served:
Fresh juices, fruits and chocolates.

Let the fresh juices quench your thirst with a vitamin burst.

UG favourite:
Mango juice

Photo Credits: Naveen Sendhilnathan



The true smile

RICHA NAJA JAIN

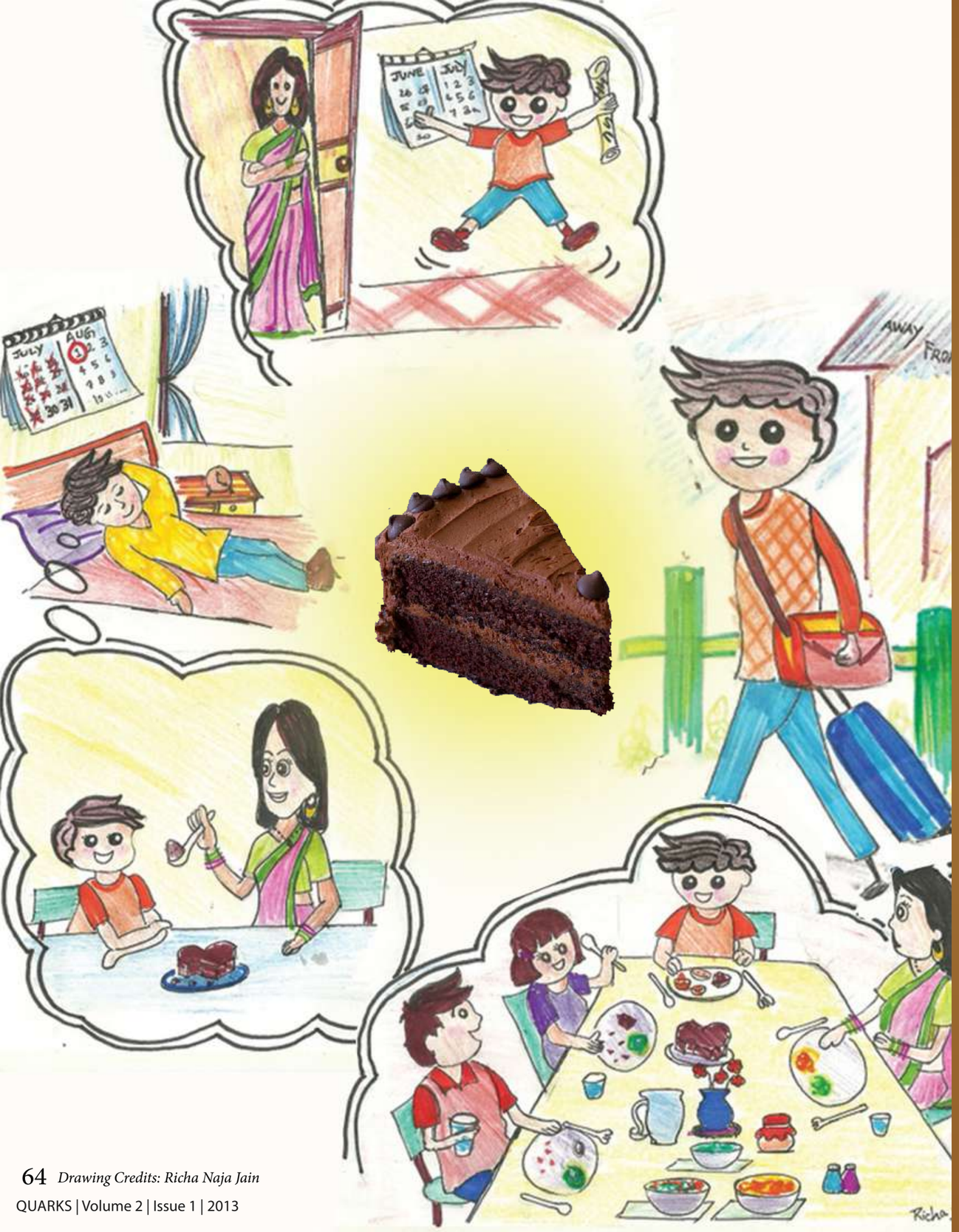
Away From Home ...

"I want to eat that, mom," uttered a faint voice, as I arose from the unconscious darkness of sleep, struggling to open my eyes against the dazzling sun waiting right outside the window. Even before I could get a clear sight of where I was, an enchanting smell invaded my nostrils, and I knew it was mom cooking in the kitchen, giving me a momentary sense of immense pleasure, before my conscience fought back and reminded me of the agonizing truth of the day. I parted my eyelids to find myself lying on the distinctively cluttered bed in my room. "Yes," I sighed, "this is my last day at home."

A couple of months back, it was a similar morning, when mom woke me up with a delicate kiss on my forehead and whispered into my ears, "You've got a letter. You're going where you wanted to". I was selected for admission to the Indian Institute of Science—an institute known for cultivating the best minds in the country, and studying there was my greatest aspiration. I probably cannot put into words how I felt at that moment, when I read the letter, and immediately started jumping ecstatically on my bed. I knew it was a substantial step in my life towards achieving my dreams. Amidst the frantic dance I had begun to perform, I looked back towards my mom, standing in front of the door, with a gloomy expression on her face. I didn't realize why she too didn't share my delight, until I went up to her and asked. "You're going away from home son. Who will enjoy the food that I cook after you leave?" she asked.

The question smote me as a stroke of lightning, and I realized that though I have my dad and siblings who share the same food, I was probably the one who enjoyed it the most, and as all mothers do, mom knew this better than anyone else on the planet. With an elder brother and a younger sister, I had emerged to become the most notorious individual in the family in terms of food habits, and somehow, to my astonishment, my mom seemed to love my puerile food demands. As one might expect, I happily made full use of my mom's indulgences to have all sorts of food items that I craved for. In particular, the food that she cooked seemed to me, more delectable than any sort of junk food that I cherished. "You're a young man, and as long as I can cook, you deserve to get the luxury of delicious food at this age," she used to say. I raised myself into a somewhat sitting posture, and looked around to find the train ticket lying on the shelf adjoining the bed. "Departure time: 4:00 p.m.," read the ticket. I never had the habit of having breakfast, as I was a late riser, and used to have a sumptuous lunch regularly. "I'll miss mom's cooked lunch," I thought to myself. I stood up, and went out of my room, and as I drew near to the kitchen, I could feel the strengthening aroma of the fare that had woken me up. Mom was there, as I had expected, standing in front of the stove, and cooking. She turned back and gave a smile when I greeted her, but somehow, I knew it wasn't the same smile I was used to seeing. The next couple of hours or so passed by in getting things ready for my departure—packing was something I detested as being too much hard work, and usually left most of it for the last day. It was about 12 o'clock when mom came into the room with her familiar comfortable face, and asked me to get ready for lunch.

I had arranged my entire luggage when I went into the dining hall, and found the rest of my family already seated and waiting for me to join them. I felt this peculiar stillness in the surroundings, as I stood at the entrance, and gazed at the table placed in the middle of the hall. Walking towards the table, I fixed my attention on the intricate pieces of art on the wall—I had seen it before, in fact I had ▶



64 *Drawing Credits: Richa Naja Jain*

seen it hundreds of times, and since art was never a part of my interests, I had never bothered to notice them before that day. Though I never realized what it meant, ambience, I had read, adds more to the food than the taste itself. "You only notice things when you're leaving them," I reflected. I went up to the table, and seated myself in between mom and dad, with my siblings on the opposite side of the table.

A captivating fragrance arose from the scrumptious assortment that lay on the table, as we started helping ourselves with the food, and mom quietly whispered into my ears, "This meal is dedicated to you." I knew this was coming, and smiled as I looked into my mother's cheerless eyes. As I started having the food, the items began with Basmati rice, Butter Paneer, Chana Masala and Chicken Tandoori. It wasn't long before I realized that the fare consisted largely of my most beloved food items since childhood, which delighted my taste buds, but somewhere inside me, I felt a void and a grievance—"It will be long before I have this sort of a meal with my family," I contemplated. Brillet Savarin had written in his book, "The joys of the table belong equally to all ages, conditions, countries and times; they mix with all other pleasures, and remain the last to console us for their loss," and somehow I couldn't help but keep thinking how true this statement was at that point of time. As I dug into my first bite of the meal, I was taken over by a sense of immense pleasure, as if I had been carried away by a gust of wind to an enchanted land of mouth-watering cuisine. There was something special about mom's cooked food today; it was different, and its flavour fulfilled one's most intense desires for delicious food. "Is the food really different or is it just my present state of mind?", I asked myself. The answer never really surfaced.

It was quite a long time ago when we had shifted into this house, and I had my first meal in the dining hall. I was very young then, and was uncomfortable adjusting to the different environment of the house. I would often run to my mother in the evenings, after I woke up from my afternoon naps, frightened from finding myself alone in the bedroom. She would carry me to the table, and after seating me on her lap, she would console me and feed me chocolate cake which she usually baked in the evenings, and I happily munched on it. "I was a food menace even at that age," I thought and smiled, as I continued with my spread. Within that smile, I knew there was a desperate longing to go back to my childhood days, where my mother and her cooked meals meant the world to me. "It's no longer the same me. I'm going away from home," I felt, heaving a sigh. Love for food, I realized, had characterized my entire life.

"Do you want more of that?" asked mom, disconnecting me from my realm of thoughts, and I realized that the feast was almost over. I noticed that everyone else had finished, and I quickly engulfed the food left on my plate. When my mother presented the dessert, I was astonished to find the same chocolate cake she used to give me when I was young. "She knows all my thoughts," I concluded, as I turned towards her, and found her standing at the corner of the room, with welling eyes. I left the table and hugged her, as she started sobbing with grief. We both knew how much these meals meant to us.

It was time for me to leave. My father was going along with me to help me settle down at the institute, and I had to bid farewell to rest of my family at home. I hugged my brother and sister, as they shed tears over my departure. Finally, I went up to my mother, who stood silent in front of the door, gave her a kiss on her cheek, and whispered into her ears, "I will be back for more of the chocolate cake."

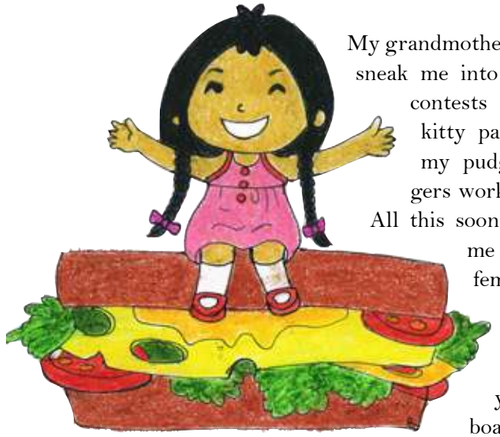
Food was the music that united our souls.

Kishalay Dey ■

ADVENTURES OF A GASTRONAUT

My dreams were never too deviant from those of the average ten year old. Ever since I was a tubby little boy, I always knew what I wanted to be—a gastronaut. Blessedly, I was born into a family where culinary excellence was more the rule than the exception. While my pals were still playing Ring a Ring o' Roses, I would instead be seen crouching over a simmering vessel, scrunching my nose and twirling its contents with the air of a professional. It was quickly evident that I had a flair for everything culinary. And soon, my abilities far outstripped even those of my grandmother. No mean feat—her culinary competence was stuff of legend through four generations. During festivals, it was not unusual to see a ladle-brandishing boy moving from kitchen to kitchen in our large household, sniffing the works-in-progress with a most Sherlockesque air and giving them little expert twirls.

Drawing Credits: Richa Naja Jain



My grandmother would often sneak me into the cooking contests at the local kitty parties and let my pudgy little fingers work their magic. All this soon accumulated me a fervent female following—not something every eleven year old can boast of. That the females in question were gossipy housewives was a different matter. Dropping in, they would often give me a piece of their latest creation and await my expert appraisal. "A little less cardamom, please. And a tad more sugar" —pontificating to that effect, I would send them scurrying back to their stoves.

To me, cooking was as much a science as it was an art and a skill. I would take meticulous care (and pleasure) in seeing my babies evolve from frothy bubbling masses into swishwifflingly scrumdiddlyumptious beauties. And just as I would put the stove to sleep, the monster in my stomach would awaken, prompting me to direct my attention to the fruit of my labour—and I would obey with greater pleasure.

But above all, cooking would have almost a therapeutic effect on me. The subtle aroma of finely chopped coriander, the lingering tanginess of a cut-lemon, the comforting warmth of the azure flame, the brown dappled gold of melting butter, the soft pop of roasting mustard seeds, the palatine pleasure of ingredient-sampling—it was a carnival for the senses. And who could resist falling in love with such a thing?

My only grudge was that I could only share my passion with the housewives of the neighborhood—not something I found very enjoyable. All my age mates were too busy trading Pokémon cards and eating fast food to appreciate the fine art of gastronomy. My attempts at evangelizing them had met little success.

Drawing Credits: Richa Naja Jain

But life must go on.

And many summers and countless dishes later, I found myself walking through the portals of Pre-University College.

Enter Vishwesh.

At first sight, Vishwesh looked rather like God's burlesque attempt at a sketch of Obelix. He was toweringly tall, loud, boisterous and gigantic, with a belly that quivered with every step. My anti-thesis in short. But one thing endeared him to me immediately—when the conversation came to food, he spoke like a man possessed. We would debate at length about "issues" like the correct technique for chopping olives—and would thoroughly enjoy it. We had such good camaraderie that we hardly needed words to communicate, mere glances sufficed. Working together, we could whip up desserts so gorgeous that it would break our hearts to surrender them to our stomachs.

Every weekend we followed a ritual of appraising a fine dining restaurant, which is really a fancy way of saying that we liked eating out. The rest of our week would then be occupied by an elaborate procedure for picking the perfect restaurant. In fact, we fussed and deliberated rather like we were launching a rocket ship, not selecting a restaurant. When we did get to the eating part, Vishwesh was always the suave and sophisticated one—in utter contrast to my stumbling and bumbling ways. Unlike me, he ▶

always knew what cutlery went on which side of the plate. In my defense, I maintained that God gave us opposable thumbs for a reason. He would also take great delight in pointing out my ineptitude at pronouncing the exotic dishes on menu("It's not bouillabaisse, its boo-ya-base"). We would sometimes run into very interesting people too. During one such outing to Hunan's, we were joined by a young, at-work, food critic who had overheard our chatter. Vishwesh with his gift of gab suitably impressed the chap who, before taking leave, handed us an ornately decorated, handwritten invitation which said:

The Bangalore Bakers' Society

Invites you to

Bake-O-Rama

Annual Bakers' Christmas Cake Contest

24/12/11

We were terribly excited at having got an invitation to a private baking event where we would rub shoulders with the best in the business!

The event was less than a fortnight away and we worked like madmen, designing a cake that would be the Pièce de résistance of the contest.

To the both of us, baking was second nature. It was not just an act of cooking; it was a form of meditation. When we put the frosting knife onto the cake, the world around us would dissolve. We would only see the metallic glint of the frosting knife as it sliced effortlessly through the snow-like icing. We savored these moments of escape from the mundane.

And so, the engine chugged ahead in full steam. Several cakes were made, admired and discarded (into our stomachs of course). Some were too big, some too small, few too gaudy, others too plain. Finally after much debate, dispute and deliberation, we agreed upon what would be the perfect cake. It was a design far more intricate that any we had attempted before. But if we pulled it off, it would be the Taj Mahal of the Baking World. We even did a few back-of-the-envelope calculations to make sure the cake wouldn't tumble.

The days passed quickly, as they do when you're doing what you love.

The 24th of December came, and the hibernating pupae in my stomach turned to butterflies.

After double checking all our ingredients, we left for the venue.

At the venue, I could only see elegantly dressed women and middle aged balding men.

We were easily the youngest contestants.

We had 3 hours to do our magic.

Slowly, but steadily, our masterpiece began to take shape. It was a four-tiered giant with the theme as Charles Dickens' A Christmas Carol. Each tier even had a different cake-filling. The lower three tiers featured Scrooge's encounters with one ghost each, complete with little cast-sugar figurines. The topmost tier featured a tableau of the cast.
And there, written in chocolate butter-cream was Tiny Tim's catchphrase, which encapsulated the spirit of Christmas:

God Bless us, every one!

One sweeping glance of the cake would make several hundred pages of Dickens come alive on one's mental screen.

We could scarcely believe that we were the creators of what stood before us. We gazed at it for a while, dazed, soaking in the exhilaration.

A steady trickle of visitors started flowing towards our table. Soon there collected a pool of people around the table. They were admiring the cake, taking photos and asking us questions. We were only happy to bask in our new-found glory. The judges would arrive only an hour later.

With passing time, the burgeoning crowd became more and more restless. People were pushing and jostling each other. In an attempt to get closer, the swelling crowd pushed the table a wee bit backward.

And the jostle was all it took.

We watched in horror as our pride and joy slowly teetered on its base, multiplying our heartbeats with each sway.

And then in ostensible slow-motion, our labor of love crashed down to the spotless marble floor, taking with it our hopes and dreams.

We dully stood there, paralyzed, the gravity of the situation refusing to sink in. The existing crowd was quickly replaced by a new crowd which was offering us their most verbose sympathies. All we wished for was to disappear. The injustice of what had just transpired was overwhelming. And we were not even sure who the perpetrator of this injustice was.

We quietly packed our belongings and left the scene. It was understood by both that we did not wish to revisit what had just happened.

Returning to life, I found that a warm talisman that I had carried in my heart for a fortnight had suddenly been stolen. A general feeling of gloom hovered over me, refusing to go away. I felt utterly unempowered. I was incapable of doing anything right. But life must go on.

The days passed quickly, as they do when you're sleepwalking through life.

Exam season came and exam season went. Results were announced. Fates were sealed. But the feeling of loss still lingered in my heart.

Soon it was the last weekend of holidays, after which I would be off to college. But a weekly ritual is a weekly ritual. And so, for the last time, I followed the path to Vishwesh's house and was received by the familiar Griffin on his door. The door swung open and I was greeted by 15 people who all stood against the backdrop of a magnificent four tier cake that proudly stood on a table set for a four course meal. Only this time, the little-figurines were of all of us. Enjoying the wonderful meal over delightful conversation, I felt that if on that day, our cake had decided to totter so that I could enjoy these moments, then I was glad it did.

The hours passed quickly; as they do when you're with the people you love.

And finally, after a lot of good-byes and miss yous, as I walked away into a new beginning, I felt something warm.

The talisman was back.

–Suhas Mahesh ■

Drawing Credits: Richa Naja Jain

Drawing Credits: Richa Naja Jain

The smile of a child

AKSHYA KUMAR PANDEY

Dessertlicious

an article by Siddharth Kankaria

A good desert is surprisingly akin to a good mistress: unpredictably delicate, extremelysubtle, perhaps a little bittersweet, not too verbose or flamboyant, oozing with mystery, an source of unsettlingly elusive yet enigmatic charm, holding back, yet giving away precisely enough to entice, lasting just an iota longer than it should!

Love, hunger, desire, craving, satisfaction, pleasure, are all so intimately and tantalizingly intertwined, that it's extremely difficult to perceptibly delineate these senses from one another. George Bernard Shaw had once said that, "There is no love sincerer than the love of food", and his words truly resonate in agreement within the connoisseur (albeit amateur) in me. People often argue that "love" is all that we need in this world, but I believe that a little "chocolate", now and then, doesn't hurt either!

Some people say that they belong to the "living to eat" type as opposed to the "eating to live" type, but very few can claim to belong to the "eating for a living" type, and these people, in my opinion, are the most fortunate of all! The world says that no task is worth doing on an empty stomach. True indeed, but, why do we have to 'eat' only as a prerequisite for performing a desired task? Why can't we make 'eating' in itself, the most desirable task at hand, and cherish every moment of it? There are various ways of consuming nutrition in this world: people eat uninterestedly when they have to, people devour passionately when they love to, people nibble nonchalantly when they are too busy, people binge constantly when they are feeling blue, people dine when they are too meticulous, and people like me, simply 'experience' food, employing the luxury of all our senses, and feeding not just the body, but also the mind and the soul, all at once!

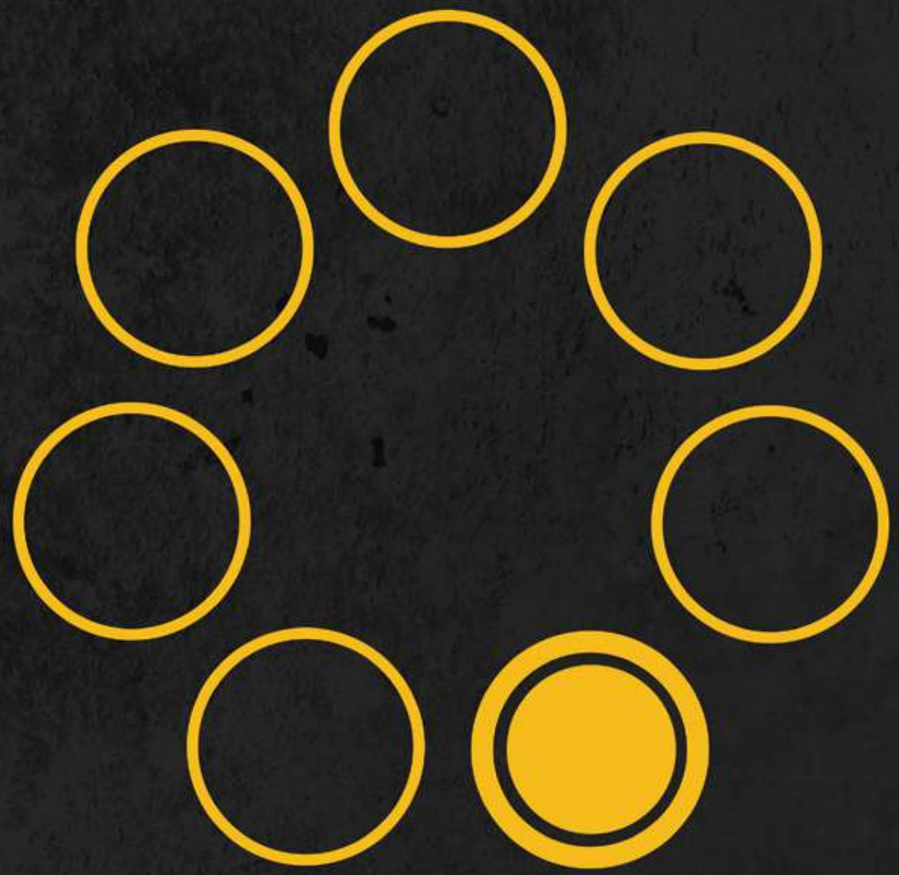
The ultimate form of instant appeasement in my life has been by and large, via the "pursuits of my sweet tooth". The simple and unpretentious little joys of life are often the most cherished and reminisced ones, and they prove to be surmountable over most materialistic pleasures of life. How many of these worldly pleasures can come as close to the joys of licking off a drop of molten chocolate from one's lips; of having a cake crumble and a marzipan crackle under your tongue, of devouring piping hot 'jalebies', of chewing an adamant fudge inside out, of cutting open an 'Baked Alaska', of almost burning your hands while munching away cookies fresh from the oven, or of simply letting a "*nolen gur sandesh*" dissolve into a smile? The mere mention of these delightful foods should be enough to bring out a twinkle in anyone's eyes, and undoubtedly and unabashedly, a drool off their lips, too!

Last winter, I had visited a fancy new dessert parlour by the name of "Piccadilly Square". It was one of my latest discoveries, and I had persuaded my cousins to accompany me for a 'sweet' little expedition. Our trip turned out to be quite a memorable one for all of us collectively, but even my experiences at the personal level were nothing short of a subliminal awakening, as I went on to rediscover my passion for desserts all over again. The moment we stepped into the dessert café, we were greeted by a strong smell of chocolate with subtle traces of caramel, coffee, and mint lingering by. My thoughts and expectations subconsciously elevated to another level, and I soon made a little mental note of intimating all my friends, about the next probable dream-destination for bringing their dates! So we quickly selected and occupied a cosy little corner of the parlour, characterised by a well-positioned shade sieving the gleaming afternoon rays from outside into a subdued splash of mystic aura around our table. Without any delay, we placed an order for an assortment of delightful bonbons and some interesting accompaniments, and we got much more than what we could have asked for. The first few dishes to arrive on scene were obviously savoury delicacies, which we quickly smacked off within a couple of minutes alone. If not anything else, the flavoursome and aromatic dishes surely managed to set the stage for the upcoming grand debutantes, for which we were eagerly waiting in anticipation.

The first confection to arrive was the "Chocolate Pancake", steaming hot, soft as a bunny, and with oodles of thick, luscious molten chocolate dripping from every nook and cranny imaginable. We hardly spoke to each other, as we fell deeper and deeper into the valley of ecstasy. The next dish to grace our taste buds was a caramel and coffee mousse, which put me into a serious puzzle, as I couldn't make out when my blessed spoon touched the surface of the mousse and when it reached the bottom of the cuppa. It was indeed an exquisite creation with many textures and flavours to it. The almost-fluid consistency of the mousse base, was enhanced by the aerated flavour of coffee, and topped by the devilish interludes of the caramel crunches. Sitting beneath an array of irresistible dessert snapshots, displayed at the most captivating of angles, I couldn't have had been more far drawn from reality. But my chocolate-filled fantasies were interrupted by my wristwatch, as it tried to demand attention by shouting 2:15 pm. I had some deadlines to confront, but there was no way I was prematurely disrupting this experience, until I had had my deserved share of heaven!And then, suddenly out of nowhere, came the multi-hued melange of mocktails, and all of us screamed in delight! Our dining receptacle was adorned with all sorts of iridescent thirst-quenchers: from orange blossoms to cranberry shots, from passion fruit mojitos to cappuccinos! But the most novel and envy-inspiring entrant on the table, which was about to become my personal favourite, was a dessert-cum-shake: a thick, lusciously condensed, yet meticulously foamed with wisps of magic, the so-called "elixir of life", characterised by a seductive combination of Brazilian cold-coffee laced with an 'oh-so-lovely' dark chocolate concentrate from Ghana, and adorned further with a coffee-flavoured ice-cream and tiny little chocolate chips! It definitely proved to be an 'enigma' to me, as it managed to both scream aloud, "Gulp-me-down!!!" as well as quietly whisper into my ears, "Go easy on me, boy! I'm not the one to be hurried with!" And then, before we could even pause for a breath, let alone reflect upon the spectacle we had just beheld, arrived that extra little gooey thing, served at the end of a meal, umm, what is it called, ah yes, a "Blackcurrant Pie"! As we managed to divide it hurriedly into 6 equal pieces (well, almost!), and stuff the warm, squiggly, beautiful little, purple-black thing into our mouths, we couldn't help but bask in the moment's bliss. And sure enough, again came along the peculiar, petite garcon, with a grin on his face, carrying the source of our next indulgence, a "Choco-Mint Dipped Doughnut"! The glistening sight, the melting form, and nostalgia-inspiring aroma, made us all weak in our knees, and what happened next is anybody's guess! The utter chaos, the scramble to get the largest piece we could lay our hands on, for a moment forgetting our kinship and returning to our basal instincts, and yet rekindling our fraternal love soon enough, as we all mutually admired the piece of culinary art before us. And finally, came the romantic lead of our little melodramatic escapade, a luminary we all knew too well, "Ms. Sizzling Brownies with Fried Ice-Cream & Chocolate Sauce" brought forth atop a steaming hot pan with utmost caution, borne by nothing less than a wooden palanquin! Ah, the tantrums of a coy 'mistress' pseudonymed "Dessert"!

We could have continued this way eternally, and I'm confident our fascination and awe would not have slipped by even an iota. But, despite all our cravings and endless desires of the taste, all of us reluctantly but unanimously agreed that 'this' was it! We couldn't afford to indulge in this frenzy of our sweet tooth any longer, and thus, wistfully we decided to call it a day. Nevertheless, as we left behind the heavenly ambience of the dessert deli, we carried with us a sense of contentment and serenity, which only a few select things in life can provide you. Rather than being unhappy about all of 'it' coming to an end, we were really excited at our little discovery, since it had enormous implications for our impending days of dessert-savouring. As we walked forth into the lackadaisical winter afternoon, we carried with us, a peculiar warmth in our bellies, a passionate surge in our hearts, a mark of elation on our lips, and an essence of contemplation in our thoughts, as we gazed on indefinitely towards the horizon. After all, the 'blue-eyed boys' had experienced nothing short of a "gustatory nirvana"!

Siddharth Kankaria ■



UG life

The UG programme at IISc is evolving both in terms of number of students in the programme and other significant academic developments such as major selection by first batch. Apart from the academic schedule, the youngest members of the family have their own distinct life characterised by their participation in campus activities, their new and unique initiatives and their achievements in national competitions. Get a sneak preview of UG life comprising of the above mentioned details and much more, here in this section.

four
UG life

The second batch
GANDI MOUNIKA

Triumphs, Trials and Turns!

-Achievements, Initiatives and contribution of UGs

"Curiosity about life in all of its aspects, I think, is still the secret of great creative people" – Leo Burnett

UG students at Indian Institute of Science along with their course work, participate in several national competitions and various co-curricular activities. In this adventurous journey that UGs embark every semester, they create a new benchmark and set a new example. In this exclusive section of Achievements and Events, Quarks team has attempted to capture a few snapshots of the happening UG life.

Paper Presentation

UG student presents a Paper in an International Conference

International Engineering Symposium–2013

Venue: **Kumamoto University, Kumamoto, Kyushu, Japan**
Duration: **04-03-13 to 06-03-13**
Agenda: **Paper presentations and scientific tours**
Participants: **Scientists and students from India and Japan**

Sudhanva Shyam Kamath, UG student of the 2011 batch presented a paper titled as "Some Generalizations of Vertex Covering and Independence Numbers of a Graph" at the International Engineering Symposium – 2013 which was jointly organized by Kumamoto University, NITK, Surathkal and MIT, Manipal and funded by the Govt. of Japan. The conference was held at Kumamoto University, Kumamoto, Kyushu, Japan from 04/03/13 to 06/03/13. The first day was a set of keynote addresses by experts from Japan and India. It was followed by a campus tour in the afternoon. The second day was allotted for presentation of papers. There were four parallel sessions on different technical fields and Basic Sciences. The third day was a scientific tour that included a visit to several historical places and Mt. Aso, a live volcano. Delegates were invited from India, Taiwan, Thailand and Japan. He presented his paper under the Basic Sciences session of the Symposium. His paper was jointly authored with Prof. S.S. Kamath, NITK, Surathkal, under whose guidance he had done his summer project last year.

> I was able to interact with some professors from Taiwan and Singapore aside from India and Japan

His experience

"It was the first time I was presenting a paper at a conference. It was also my first academic paper. I was a bit nervous about the presentation. However, I was able to observe how a couple of other newbies like me had presented their papers and it really boosted my confidence. My presentation went well and I was able to interact with some professors from Taiwan and Singapore aside from India and Japan. I am working on implementing the suggestions that they provided during the conference and it has certainly broadened my perspective on the subject. The scientific tour was quite meaningful and informative. I personally liked the visit to the volcano at Mt. Aso. I could gather a lot of information about the volcanic behaviour, the safety precautions that they have taken, etc. The whole conference was a great learning experience."

National Creativity Aptitude Test

IISc UGs grab the first position for two years back to back

> The test, by itself, requires no prior preparation but an open mind.

2012
Himani Anand Galagali secured rank 1
2013
Shah Sameer Bipin secured rank 1 and Hemaa Selvakumar secured rank 2

The NCAT is designed to sensitize the students to the domain of creative thinking and motivate them to read, learn and practise the same. The NCAT team wishes to establish that there is no known correlation between memory, logical abilities, linguistic talent and creativity. The NCAT will assess the creativity quotient of a student and his/her level of achievement motivation. By participating in this Test, the student shall get sensitized to the importance of these factors and their role in shaping one's future. Once so oriented, the student shall seek out resources to develop creative thinking and enhance achievement motivation. For the last two years UG students of IISc have bagged rank 1 in the competition—in 2012, Himani Anand Galagali and in 2013, Shah Sameer Bipin. Also, Hema Selvakumar secured rank 2 in 2013.

The primary objectives of this test are—
One, to sensitize the student
Two, to appeal to his/her competitive spirit to make him/her an achiever.

Hear it from the medalist

The National Creativity Aptitude Test (NCAT) is conducted by the International Forum for Excellence in Higher Education (IFEHE). They are also associated with the Continuing Education Programme at IIT Delhi. The test evaluates the innovative and logical thinking of students. The test, by itself, requires no prior preparation but an open mind. It tickles your creative side to the maximum extent leaving you amazed by the ideas you come up with.

The first round is a written examination with multiple choice questions. The questions are based on simple logic, arithmetic and algebra. The second round has two parts—a written examination with both multiple choice and subjective questions and a hands-on activity. Some of the subjective questions pose a seemingly impossible hypothetical situation and ask you to find solutions. Some of the others require you to think tangentially and come up with answers. One of my favourite questions was "Give as many uses as possible of a pencil." It was great fun writing this exam. The hands-on activity seemed ridiculous to me at first but then I realized it was designed for the participants to evaluate their strengths and weaknesses and come up with the best possible solutions.

Doing well in this examination qualified me to attend a 6 day workshop at IIT Delhi. The workshop was attended by students from all over India from different streams. The lectures and group activities were aimed at improving the entrepreneurial abilities of the students. Problem solving, teamwork, interpersonal relationships and associative thinking were the qualities stressed upon. It was a wonderful experience for me. I met and worked with a lot of people. We also went around the capital and visited the India Gate, the science museum and the 'Parathewali Gali' at Chandini Chowk. It was a fun-filled sweltering hot week in Delhi which ended with a heavy downpour of rain and ideas.

Himani Anand Galagali
AIR 1 NCAT 2012 ▶

e-Yantra Robotics Competition

"Surfing the internet is after all not such a waste of time." You will agree with this statement as you read the experience of Pranav Mundada, second year undergrad and winner of **E-Yantra National Robotics Competition – 2012** who came across the information and competition details a few hours away from deadline when he was casually browsing the net.
E-yantra competition provides a platform for students to demonstrate their knowledge and programming skills in Embedded system and Robotics. The basic aim of the competition is to make the study of engineering topics fun through robotics. Moreover, it provides an opportunity to the students to apply their knowledge to solve real life problems with the given hardware.
Here, as an exclusive effort of the Quarks team, we have Pranav Mundada narrating his very delightful experience. –Pratibha Mahale

One night, while surfing the internet, I came across a quiz on embedded systems which was scheduled to end that midnight. I took the quiz for fun and managed to finish it two minutes to midnight. Little did I know, that it was just the beginning of an intriguing journey awaiting me.
Qualified participants were instructed to form their teams and were randomly given a theme per team. The theme assigned to me was line following. It turned out that the organizers wanted to test our capabilities in exploiting the given hardware. So, we were supposed to work on a robot given by them without making any hardware changes.
The second round consisted of four tasks, namely theme analysis, algorithm analysis, implementation of algorithm and finally code compilation and report (yes, I had to make a report on it). The agenda of the competition was to promote engineering spirit. The organizers did a great job of making us work as per industry standards including a deadline for each task sequentially. The theme analysis questions were thought provoking and made me aware of many new possible applications of line following robots. Though the objective was simple, "Follow the line", the track to be followed had all possible turns, mazes and colour flips all combined into one.

"An algorithm must be seen to be believed." –Donald Knuth

Thus, I was eagerly waiting for the arrival of the robot to see my algorithms in action. I was given an array of seven white line sensors which gave '1' for white and '0' for black. It was clear from the start that it was foolish to try hard coding all possible inputs because then I would have to give 128 "if else" conditions. First I tried using a PID algorithm but the sensors provided did not have the required resolution and the bot started doing random walks on the track. Next I decided to make it work using only one sensor by following the edge of the line. It was a short and simple code and most importantly, it worked!
Now that I had a working code to rely on, I started exploring other techniques utilizing different combination of sensors to make my bot faster. Hari Krishna, a CSA Ph.D. student, gave me an idea for a priority-based decision algorithm. I implemented it into my program along with other algorithms and optimized them for the given problem. The resultant was a bot which was going very close to the theoretical optimum speed. Naturally, I topped the second round and was selected among the top five finalists.
The finals were to be held in IIT-B and my only worry was safe transportation of the robot. So before my departure, I applied various shock absorbers including crushed newspapers, thermocol balls, bubble wrap and clothes as well. You may think I was being overly cautious. But let me tell you that a majority of prototypes malfunction after transportation. Moreover my care was justified when I saw some finalists struggling to get their robots to work after transportation.
On the day of finale, I woke up early and made my way to the practice zone. Unlike the other teams which consisted of 3–4 members, I was all on my own. Due to the support and encouragement of my friends at IISc, I never felt alone while working for the competition. But, here in the practice zone, just the sight of final year engineering students working together made me nervous. Wild thoughts started running through my mind. What if my competitors had improved their code and their bot was now faster than mine? Surely they would have learnt some advanced techniques of optimization in their engineering course. I had optimized mostly through intuition and trial and error. Could I really beat them here?

To add to my issues, my robot started behaving erratically after calibration. Here I want to digress from my narration to point out that it is not uncommon for electronic circuits to behave illogically without any apparent cause, with noise as its major culprit. I had to take deep breaths to keep my sanity in check. I checked both software and hardware once again only to discover that the root cause of my problems was a loose wheel. I fixed the wheel but still the robot didn't go as expected. Beads of sweat covered my face as it was only ten minutes to showdown. Not knowing what to do I simply restarted the robot. And just like a malfunctioning desktop works properly (at least most of the time) after forced restart, the robot started working just fine. Now I could say that I knew exactly what went wrong, but that will not be the complete truth. I still had no clue why the robot had stopped working. But it was not the time to let my inquisitive mind loose, I had only five minutes to presentation. So thanking my stars, I made my way to the arena.
Team JLROBO, Jalgaon, had implemented edge following algorithm using one sensor and they successfully completed the task. It was nice to see the wonders a SIMPLE logic can do. But the gain in simplicity came at the price of speed. Team VGEC, Ahmedabad had smartly optimized their codes to speed up their robot. The other two finalists were unable to present due to some technical error. I had one sweet run and completed the track just five seconds faster than the runners-up. I won!
The look on the faces of people when they came to know that I was majoring in Physics and not in some engineering field was just incredible. Overall, the nine-month long (oh yes, it is nine) competition was a happy journey filled with a lot of learning experiences. I remember making the track layout as the wallpaper on my laptop for almost a month. I think E-Yantra was successful in providing a platform to encourage engineering attitude among students. The Firebird V robot (the one I worked on) has been donated to the UG Department, IISc. The bot provides a great research platform and I encourage anyone interested in exploring embedded systems on it to contact me. ▶

Theme Pranav got:
Line following
Condition:
Work on robot without hardware changes.

Numbers:
6000 registrations, 500 selected participants, 131 teams, 20 finalists.

Unlike other teams which consisted of 3–4 members, I was all on my own.

Photograph 51

The performance of Anna Ziegler's Photograph 51 at the Satish Dhawan Auditorium, Indian Institute of Science, by the Undergraduate students was in its entirety a very beautiful and persevering effort, despite the very short duration of preparatory time. Considering the fact that for most of the actors, this was their debut in theatre, they did a marvelous job. The entire play was very well coordinated and was indeed a very engaging and inspiring endeavor. And we must confess that we came out of the theatre replete with nothing less than a smile, a tear, a frown as well as a raised eyebrow!

The fact that the entire cast and crew could pull off this extremely challenging and demanding play, was in part due to everyone's hard work, but also in part due to the able guidance and mentorship of Mr. Prakash Belawadi. The direction was flawless as Mr. Belawadi once again showed his dexterity at transforming every liability into an asset, and pulling off success stories in even the most difficult of situations. The various techniques adopted by the actors like blocking, awareness of the stage and the fourth wall, as well as cognizance of conducting themselves on stage was really at par with any professional thespian. Not to forget the fact that a lot of people worked behind the scenes too, from UG students helping out with lights, stage setup, costume collection, make-up, stage assistance and every odd errand-running, to Mr. Belwadi's small bunch of professionals, to the people at CCS, everyone silently put in heaps of effort and dedication, in making this endeavor a great success. A special mention needs to absolutely put in for our beloved professor, Dr. Raghavendra Gadagkar, who not only roped in Mr. Belawadi for the Theatre module of our Humanities course, as well as managed to convince him of directing a play with novices in a such a short period of preparatory time, but also suggested to us the script of the play Photograph 51 for enactment.

We, at Quarks, bring to you two exclusive reviews of the play, fresh from the oven—one from a leading member of the cast of Photogaph 51, Milind Hegde, a first year student who enacted the role of Dr. James D. Watson—and the other from Krishnan Iyer, an avid theatre enthusiast, and a proud member of the Rangmanch (IISc's Drama Club).

-Siddharth Kankaria

Performer's experience: From the "Applause" collector

Milind Hegde, James Watson in the play Photograph 51, describes his journey as a participant and an actor. Read and feel the thrill, anxiety and motivation of the theatre amateurs.

From the little that I know of the world of theatre, I understand that it is somewhat unheard of to put on a 90-minute play with less than a week of preparation. Make it three days and most industry veterans will opine that it is likely impossible. Throw in a cast which has zero experience with anything resembling theatre, and you will have a hard time finding someone who does not *know* that it is impossible.

And yet, this was exactly the situation that we, the cast of Photograph 51 were faced with. There were seven of us from the second batch of the undergraduates—Sahana Rao, Kaivalya Molugu, Pritish Patil, Sabareesh Ramachandran, Vrujen Andhare, Biplabendu Das, and myself, Milind Hegde (and several more from the wonderful backstage team). None of us had ever acted before, but we were going to put on the one and a half hour play—in front of the entirety of the IISc community—on Monday, April 8th. And up until Friday night, we had not even started anything beyond reading the lines. A pretty scary situation.

Of course, as the naysayers believed, it absolutely would have been impossible if not for the involvement of the one person whom I did not mention in my list. I am referring to Mr. Prakash Belawadi, the director of the play and probably the man who held it all together. Mr. Belawadi is an experienced and respected member of the theatre scene; he is well known in Karnataka for his plays, in which he may be found as the director, an actor, or sometimes both.

Mr. Belawadi's fame is not for nothing—his understanding of theatre, audiences, and scripts amazed me constantly throughout the two and a half days we spent with him on the play. There were many scenes and dialogues which had not made sense or did not seem to fit during the many readings we had done on our own. Mr. Belawadi would listen to us read the part aloud just a single time, while keeping his head in his hands and an intense expression on his face. He would become very irritated whenever we stumbled on the reading or misstepped in the delivery, though we have been told by those who know him better that he kept himself remarkably calm throughout the two days. But as soon as the reading of the scene ended, he would spring out of his chair, full of excitement about a new idea, interpretation, or understanding of the play that he had just come up with. He would start acting out the dialogues himself, telling us where to go and how to deliver the line, and more importantly, making lucidly clear the emotions and motivations behind the characters' actions. What we had struggled to make sense of over so many collective readings and discussions, he would pierce through in minutes, and simultaneously find a perfect way of subtly communicating the message to the audience, in a way designed not to be noticed. It was amazing to witness over and over again.

The rehearsals were often very tense, with everyone terribly anxious about the prospect of messing up and potentially facing the wrath (reportedly subdued, but still worthy of avoidance) of Mr. Belawadi. But a pleasant contrast could be found as soon as we stepped out of CCS, where the rehearsals were held, as we headed to Nesara for snacks. Whenever this happened, the tension would disappear, to be replaced by jokes, banter, and—the times I particularly enjoyed—discussions with Mr. Belawadi on a variety of topics. Apart from theatre, he can also speak on a huge number of seemingly unrelated ideas and issues, in a way that holds your attention. In the grand total of two tea breaks that we had, we discussed many things, ranging from the frequency of theatre performances and auditoria in Bangalore, the reasons for Bangalore's being the centre of IT in India, to even the nature of educational institutions in India.

With rehearsals only properly starting on Saturday and the first blocking being decided on Saturday afternoon, at no point during the weekend did any of us feel comfortable. Progress was slow by our eyes, which were latched onto the closeness of Monday, but apparently extremely fast by the standards of normal theatre. This was exacerbated by our lack of fluency with our lines, as we were only told to completely memorize them on Thursday.

The situation was so dire that on Sunday night, the night before the performance, only half of the play—half—had been blocked. We would have to block the remaining half, and hopefully have at least one rehearsal on Monday, before the 6 o'clock performance. It was hard to believe, and scary to sleep.

The last day was, as expected, pretty crazy. The final half of blocking went all the way up till lunch at 2, and we were only given half an hour to rest before coming to the stage for make-up and costumes. There was no time for a proper rehearsal, not even a simple line reading or an entry/exit practice. The last half of the play would practically be performed on the fly.

As to how the performance finally came out and the audience's reactions, I will let Krishnan describe. But whatever the result, it was a wonderful experience for all of us involved. There were so many new things that we learnt and were exposed to—acting, the subtleties of scripts and the arduous process of converting them into play (unlike what outsiders may think, practically nothing of a performance is explicitly in the script), and of course, the chance to interact and learn from as interesting a personality as Mr. Prakash Belawadi. I would, without hesitation, want to do it again. ▶





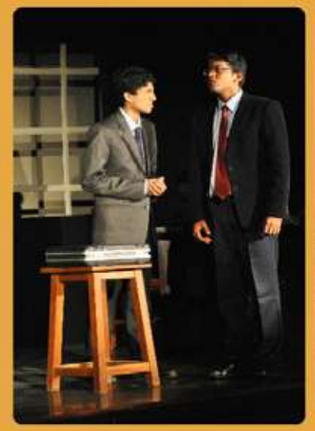





Photo Credits: Sasi Amavarappu

Audience's Review

Krishnan Iyer, Second Year undergrad, an active member of Rangmanch IISc, shares his perspective and review of the play with our readers.

"Discovery of the DNA and its model … a topic for a drama? Really?" was my reaction when I first heard about the play Photograph 51. I was not totally disapproving of it nor did I mean it in a condescending tone. It was a mystery to me for in my amateur experience of drama at school and the IISc drama group Rangmanch, I had dealt with more "classical" plays. You can now imagine what it was like for me to attend this play—Sherlock embarked on a mysterious case, perhaps.

The stage was expected to be well decorated for it was Prakash Belwadi who was directing the play and it was so. They got two microscopes, tables and a chalkboard to describe the offices; the idea of the microscopes was not very accurate, though. The costumes were apt; I presume there was not much difference between the apparel of Americans and Europeans by that time. However, the behavioural differences of the two parts of the West were brought out nicely.

The style of dialogue delivery was very different and in the beginning, annoying. It was plain and monotonous but since the dialogues themselves were well-written, it did justice to be emotionless. The sense in the dialogues was enhanced and no personal touch to the words was given. It was perhaps the first time that I saw how involving it could be to perform without emotions—the viewer took part himself/herself to assign proper emotions as he deemed fit and by this process got a part in the play. The humour was good and the little glimpses of romance were funnier.

Duration of play: 90 minutes

Duration of preparation: less than a week

Cast: Enthusiastic UGs with minimal exposure to theatre –
Sahana Rao, Kaivalya Molugu, Pritish Patil, Sabareesh Ramachandran, Vrujen Andhare, Biplabendu Das, Milind Hegde

Director: Mr. Prakash Belawadi

Performed on: 8th April, 2013

Venue: S,D Auditorium

The saga of Watson and Crick is known to everyone in the scientific world but this play by Ziegler mentioned more about the personal interactions of the people involved in the discovery of the structure of DNA. "Relations and personal life over fame" seemed to be Rosalind Franklin's idea. Watson was either of the opposite view or never thought in this direction at all. Watson was portrayed as a shrewd and clever person, ready to do anything to get to his goal, which was to submit a model of DNA first. In fact, all the characters could be described in a very simple way. Gosling, a Ph.D. student in Wilkins' lab was a comical character and played the role of a narrator in some situations. Wilkins was Jack the dull boy—all work and no play. He changed, however, as he seemed to fall for Rosalind as days passed. Don Casper was a true gentleman and his role seemed to be the soother to Rosalind rather than a scientist. Crick, the old pal to Wilkins and associate to Watson, was a man who no matter what, enjoyed his life to the fullest. This was all the more true when sitting in his office he, savoured his cup of black tea with lemon.

There were brief moments when my attention moved away. When I looked around, the rest of the audience, however, was fully occupied with their self-assigned roles in the play. Well, if it was true that this play was in some sense the final examination for humanities, then I must say the performers earned a good grade! For some reasons like these I wish I was in the junior batch. ▶

Well, if it was true that this play was in some sense the final examination for humanities, then I must say the performers earned a good grade!

Animal adoption at Mysore Zoo

The UG students this year, in 2013, adopted four animals in Sri Chamarajendra Zoological Gardens, commonly called Mysore Zoo, by contributing money collectively. The initiative was taken by Mr. Ashwathaman from the UG office and was actively supported by Dr. Chetan Nag, our Biology instructor. The UG students showed full enthusiasm and succeeded in collecting an amount of Rs. 25000. The student coordinators for this noble task were Rhine Samajdar (1st year UG student) and Amogh Kinikar (2nd year Physics Major). As a token of appreciation of our adoption, Mysore Zoo has given us a Complementary pass (five persons are allowed free of cost) to visit the zoo anytime for one year from the date of adoption.

Undoubtedly, this was a noteworthy event in UG life, in fact in IISc life and hence, Pratibha Mahale and Aditi Mishra from the Quarks team used electronic communication (emails) at service to speculate behind the objective and motivation for this event. So, here we present the story of the idea development and processing from the initiator Mr. Ashwath along with the interview of Dr. Chetan Nag.

The Backbone Supporter: Dr. Chetan Nag, his views

What motivated you for "animal adoption initiative"? How and when did the idea originat in your mind?

Frankly speaking, the idea of animal adoption was not mine. The credit should actually go to Mr. Ashwathaman (known as Ashwath) from the UG Office. I feel this question should be for him.

My role was to lead the initiative largely because of my background in ecological sciences.

Why did you choose UG students to support the noble cause?

Mostly because undergraduates are less biased towards many things in life and have an open mindedness to explore such novel initiatives.

An amount of Rs. 25000 was collected. What was your expectation? Did we meet the expectation? Were we enthusiastic enough to understand and support the cause?

In the first place we did not expect anything since this was made voluntary. In fact, we were surprised by the amount that you people pooled in. Due credits to Amogh Kinikar and Rhine Samajdar for all their efforts in this regard. The amount collected itself is enough to say that the undergraduates understood and supported the cause.

What factor makes this effort "noble"? (How is this beneficial to the animals?)

The amount that one donates will contribute for the food, medical expenses and other relevant expenditure of the animal that one adopts. Schemes like these also play a significant role in the conservation of wildlife through a successful captive breeding programme. Additionally, zoos act as rescue centres and orphanages to take care of abandoned animals. Also, there is a lot of genetic research (maintenance of pure lines for breeding purpose) going on in recent years to maintain rare and endangered animals at zoos. Our "noble" contribution helps all of the above since there is a huge cost factor that is involved in accomplishing this task.

What is the protocol involved to adopt an animal? (A brief description will help other groups also to make such an effort.)

The first and foremost criterion to adopt an animal is to decide your budget range. Secondly, decide on which animal you are adopting and on what basis it is decided. I decided to adopt animals which are rare and endangered and should be endemic to the Indian subcontinent. I chose animals from the Indian subcontinent mainly because of the reason that in case if any contributor is willing to see the animal in its natural habitat, I should be able to take them there without many glitches. Since more people try to adopt "charismatic" animals, we made sure not to choose charismatic species. The other details are made available at the respective Zoological parks' website.

There w some concern among the UG students about the "NEEDY PEOPLE" and the "Animal adoption". Some of the students claimed the money collected would have been used better for helping the poor and the needy. What is your general message for the UG students regarding the same?

It is true that there were a couple of questions regarding this. I do not want to comment much on this "issue" since it is little dicey to speak of people's perceptions. This is exactly the reason why we made this adoption entirely voluntary.

I am open to help such needy "people" anytime but that does not deter me from helping needy "animals" as well. This help can range from keeping a pot of water for animals (and people) during summer to such programmes. I have maintained empathy towards people and animals—These are my personal views.

A message to IISc community regarding this initiative.

It is nice to have empathy to humans and animals without a demarcation. Let us all join hands for any such initiatives by the institute and others.

- Animal adoption initiative: Chance to live and survive
- What motivated you to join it? Being considerate
- UG participation in this initiative: Empathy
- Comment on amount collected: Reasonable
- Message: We cannot do much ourselves, caretakers at zoo do.

- Total amount collected by UG: ₹25000
- 4 Animals adopted
- Brow-Antlered Deer, Indian
- Black Vulture, River Terrapin and
- Paradise Whydah

–Srinath Thiruneelakantan

A tryst with Animals at Mysore Zoo

It so happened that I decided to visit the zoo during my recent trip to Mysore, the 'heritage city' of Karnataka. It was a pleasant Sunday morning and the visit being unexpected, was really special for me.

My experience at the Zoo

As soon as I entered the zoo gate, I saw two giraffes standing, tall and very attractive. Giraffe being my favorite animal, I spent a lot of time admiring their attractive skin pattern, their tallness, their eating behavior, etc. (the Mysore Zoo is very famous for housing giraffes). Then, I started rounds at zoo and moved to visit other animals housed at the zoo – lions, tigers (including one white tiger), monkeys, rhino, birds, cheetah, forest dog, chimpanzees, snakes, gorillas, elephants and the big-eared African elephant, hippopotamus, crocodiles and so on. The zoo authority has taken great care to house the animals and to safeguard the animals and visitors. There are wide varieties of trees planted inside the zoo and the surroundings are well maintained by the zoo authorities to create a healthy atmosphere for the animals. One of the best policies imposed by the authorities is making the zoo area as Non-plastic zone. Drinking water, cool joints and few refreshments are facilities provided by the zoo authorities to visitors to refresh themselves. The must visit place is "*thandi sadak*" the coolest pathway to relive tiredness and get refreshed.

Sign Boards and the origin of the idea of adoption

During my rounds at the zoo, while watching these animals, I spotted many Sign Boards and labels. These are erected in front of animal enclosures and housing to avoid confusion among the visitors. The zoo authority has given importance to various signages to create awareness to the public. These signboards are providing information about animals, warning messages, directions, slogans and other administrative matters of the zoo. Some provides detailed information about the adoption of animals by public, institutions, etc. I found this concept very interesting. It was noon when I finished the rounds at the zoo.

Carving out the nitty-gritty's

On the way to return to Bangalore by bus on the same day, the animal adoption sign board was drilling my mind and I was thinking of possible ways of adopting an animal if I can. I knew it was not an easy task for me to do it by myself. Being an office supervisor, I handle various administrative tasks at UG office and assisting and co-coordinating with the students to conduct meetings related to various clubs including the magazine *"Quarks"*. Suddenly, I realized that I can take the help of enthusiastic students of our UG Programme on animal adoption. I thought of approaching UG students about animal adoption at Mysore zoo with the permission from Prof. Chandan Dasgupta, the Dean of UG Programme and with the help of biology lab instructor Dr. Chetan, who recently completed his Ph.D. thesis on Common langurs. Dr. Chetan circulated necessary information to all the students. Later Dr. Chetan and I found two students, Mr. Amogh and Mr. Rhine, who were very fond of animals. These two students rushed to UG office immediately to discuss and express their interest when they heard about animal adoption. Finally, we planned to inform all the students and UG community to contribute voluntarily for the general cause to represent their solidarity towards animals.

On the other side, Dr. Chetan was pursuing the matter with the zoo authorities to fulfil the formalities. After a couple of weeks we were able to collect Rs. 26,500/-. This was a really good response from the UG Students and the UG community. Next, Dr. Chetan, Dr. Srinath (Biology Instructor), Mr. Amogh, Mr. Rhine and I charted out our programme to visit Mysore zoo and to complete the formalities. Due to end-semester exams nearing, these two students could not accompany us to visit the zoo. Finally, Dr. Chetan, Dr. Srinath and I went to Mysore zoo and completed the formalities by presenting the DD amounting to Rs. 26,000/- to authorities for adopting four animals in the name of UG Programme, IISc, Bangalore on 06.04.2013. The four animals adopted are *Brown-Antlered Deer, Indian Black Vulture, River Terrapin and Paradise Whydah,* all being vulnerable to be wiped out in near future if not given enough attention. We returned from the zoo to the institute with the certificate and free entry pass for five people to visit the zoo any number of times during the period of animals are adopted as a courtesy of the zoo authority.

Last words

Dear students and friends don't forget to visit the zoo; it's your wise decision and efforts that have led to make the animal adoption programme a grand success.

The spirit, interest, enthusiasm and support shown by the UG students and others for the general cause are unbelievable! Hope the same spirit continues in future as well. I am thankful to the UG students and community for supporting animal adoption concept and also my special thanks to Prof. Chandan Dasgupta, the Dean, for permitting us with his usual two simple words "O.K" "FINE".

My best wishes to you all

M.L. Ashwathaman

Office Supervisor, UG Programme





Notebook Drive and UGs

A team of IISc students has been running a noble initiative called Notebook Drive (NBD) since 2002. Their objective is to provide notebooks, stationery, etc. to poor students who otherwise have to drop out of their schools.

Since the year 2011, when UG programme started in IISc, the undergraduate students have actively participated in the activities of Notebook drive and have volunteered regardless of their jam-packed schedule comprising of lectures and labs. As the second batch of UG entered the campus, this support and involvement increased manyfold. Here, Pratibha Mahale from the Quarks team, herself a huge admirer of the organisation, has attempted to get a glimpse of this enormous participation of UGs and has tried to discover the extent to which this has supported NBD via an email interview with our very own Pankaj Jain (popularly known as Pankaj *bhaiya*), NBD coordinator and via a poem written by Sabareesh.

Hear it from NBD coordinator, Pankaj Jain

How is the UG participation in NBD activities: minimum, fair enough or good? When the UGs joined IISc, what were your expectations regarding their participation? Were we enthusiastic enough to support the noble cause?

The participation of UGs have been very good in some of the activities, especially in Children's Day celebration and it was OK in the other activities and I look for a more active participation in those activities. Since the day UGs joined (or rather were about to join), I knew that it will bring a new energy and new ideas in the group's activities. And they worked well upto the expectation and I was also very happy to know that many were already associated with such activities before they joined IISc.

How has UG participation helped the NBD activities?

Frankly speaking, till now it is just the beginning of UG's association with NBD or any other group in the campus, but even with this limited association of 2 years, there have been some events which have got a big boost because of UGs. The one advantage with UGs is the ease of information transfer, because of a large number of students in one classroom, which is not the case with the PGs. Also, currently the core team consists of a very good number of UGs and they are not only volunteering but are helping to coordinate many of the different activities. So as I can foresee, UG will be one of the major forces in NBD in the near future.

A message for the UG students (2011, 2012 batches) and the coming batch (2013).

Do join for the activities as and when you are free. NBD as a group is mature enough and a well settled one in IISc and also among the schools. I know you all have a whole lot of ideas and this will help NBD a great deal in going to the next level where we can improve all our activities (or add some new ones), so as to make maximum impact of our activities in the schools we reach.

Your participation will not only give you a feeling of satisfaction but in the bigger picture, your small time is making an impact in the life of that kid and can become a guiding light! ▶





UG students in NBD: Core committee members

Sunandha Srikanth: Treasurer;

Himani Anand Galagali: Children's Day coordinator;

Biplabendu Das: Notebook Distribution Coordinator;

Suhas, Milind, Shashank, Sabareesh and other 20–30 active volunteers

Sabareesh Ramachandran, UG core committee member in the NBD team, also an avid writer, uses this combination of words to describe one of many NBD activities.

The Santa of the summer came to share,
The Notebook Drive van went everywhere,
27 schools around Bangalore,
The goodies, well they did galore.

Single and double ruled, square and four line,
Long book and small book, scales to align,
Erasers and sharpeners, crayons and pencil,
Sketches and boxes, the gifts were indeed ample.

The kids' thrill bounded only by the skies,
Their delight and joy flowing out their eyes.
The glee on their faces made everyone's day,
The smile on their faces moved all the gray.

The magic would have been inanimate,
But for the volunteers passionate.
Fifty went along on tempos and bikes,
Some gave their vehicles, some FB likes.

Thank you to volunteers who travelled the mile,
Also to teachers welcoming them with a smile.
Thank you to Biocon for the colourful Ganitha,
And to Infosys for the support with paisa.

The NBD van will come back again,
With a renewed supply of notebook rain.
Until then keep chanting flocks,
'Note Book Drive truly rocks!'

UG Talent Show '12

Every year in October, UGs at IISc organize a cultural night commonly referred to as the **"UG Talent Show"**. As the name suggests, the event is a culmination of various cultural programs put together by the undergraduate students. It is mostly organized in the Satish Dhawan Auditorium and is open to all. From preparations to performances everything bears the name tag of UG. Amongst the whistles and thundering claps, the unoccupied seat at times catches the performers' attention.

The planning and anticipation for the show begins in the collective minds of the UG community perhaps from the moment our odd semester starts and we stare at our calendar for upcoming festivals and events. But, caught in the class and lab, gyri and sulci, the idea takes a while to come out on the mess table on a Friday night. (Friday night as the coming Saturday assures the presence of time for completing the pending reports, overdue assignments and, of course, extra study.) In the holy spirit of Friday, the idea receives beautiful presents of "yes, definitely", "let's have a blast this time"... "oh! we can do this" and so the conversation starts with the intention of never ending. However, the end of the walk from the mess to the hostel does stealthily kill the conversation as each one of us are attracted by the mesmerizing Friday musical of mattresses or sometimes a new movie, a new novel, a new pen waiting for inauguration, a new canvas or even mobile phones to have endless long awaited conversation with our friends. But, the diplomatic words of a few very enthusiastic friends make us see the sanctity of the cause in terms of thrill and fun. This realization is followed by an extended discussion of the performance in one of the rooms which is preferably opened first and looks clean. The layout is made, the working schedule is put on paper and the meeting is dispersed with sounds of "yay", "Yeah, see you tomorrow" launched in the corridor air. The real exercise begins when dish of weekdays garnished with classes, labs and assignments are served. I must take a moment (actually a line) here to salute the spirit of all the participants and performers who manage to practice and perform on the destined day along with their coursework. The practice sessions take place in hostels, gymkhana dance room, SAC, playgrounds, main building in early morning or at midnight, any possible place at any possible time. Most charged up evenings are the ones which are a week away from the cultural night. The function is kept on a suitable weekend which is at a decent distance from any heavy assignment and also sufficiently and safely away from any exam. 21st October in 2013 satisfied all the conditions. The eve of the eventful day witnesses a rehearsal usually not in complete order but a jumbled run through all the performances. The big day begins with a locked schedule alarm, subsequently followed by arrangements of wires, cables and instruments by the singers and instrument players in SDA and dance rehearsals with our friend who has access to all the colorful lights during the show. The real moment begins as the clock strikes four and our audience starts to occupy their seats. The cultural extravaganza packs the night with music from classical to rock; dances from folk, contemporary to Gangnam Style; theatre models from skits, dramas to mimes; all exemplary and unique. However, this is a viewpoint of a performer and a UG student. The audience perspective of the performances I leave you guys to form, as you watch the videos or rather when you come this year. Nevertheless, I am quite sure you will agree with me.

–Pratibha Mahale

Some events of UG Talent Show 2012:

- Gangnam style dance
- Carnatic mix
- Veena, violin and keyboard fusion
- Mime based on love
- Indian instruments and classical music
- Undergrads Under Radar—dance drama based on UG life
- Skit: A satire on Indian daily soaps

Other achievements

Hindi poem writing competition held on Hindi Diwas.

14 September 2011: Amongst the winners: **Pranav Gupta**
14 September 2012: Amongst the Winners: **Pranav Gupta and Pratibha Mahale**

National Graduate Physics Examination 2013

Two IISc 2nd year undergrads, Physics majors: **Amitabh Shrivastava** and **Pranav Gupta** brought home Gold medals! ■

UG
Talent Show
2012

UG in
SPECTRUM
2013

Photo Credits: Naveen Senthilnathan and Abhinav Jain

NIKUNJ
GOEL

PRITISH
PATIL

SUSHANT
BANGRU

TAPAN
GOEL

Veni Vidi Vici . . . . . omnes super iterum

Well, to begin with, Welcome Back! Yes, we were there again and we won it again. For those of you who didn't come across the magazine last year, Mimamsa is a science quiz dubbed to be the toughest and most unique of its kind in the country. It is an annual quiz organised by the science club of IISER Pune. Well 'quiz' is hardly the right word. A quiz usually means a few hours of questions and answers, the answers being one word or a few sentences but Mimamsa is nothing like that—it is, as the Mimamsa team puts it, a test match in the age of T-20—14 hours of quizzing spread over 2 days, divided into four sessions, one each on physics, chemistry, maths and biology plus a 30-minute presentation by each team on a science topic of their choice followed by some instant grilling

Photo Credits: Abhinav Jain

Let's just start from the beginning; it was the middle of November, when IISER Pune announced its annual science event, and since a team from IISc had won it last year, it was all the more reason for us to win it again. Now, to begin with one must mention the fact that for a team from IISc it was easier to come within the top 20 over India, compared to standing within top 5 among teams within IISc. Now, after having initially formed our team comprising of Tapan, Nikunj, Pritish and myself, and setting on a journey which would give us some of the most memorable memories for our time in IISc. Moving on, our task was set on preparing for the prelims; but let's just be clear here we never really got to performing the task of preparation, but only naming it.

It was so hard for us to believe that we actually confirmed if it was a prank call.
(since this was exactly the kind of thing that we would have done; which we had, in the past!)

Then came the day of the prelims—the 13th of January, and after our failed endeavour called practice we were pretty confident, well to be frank we were more merry than confident I would say. While others were all wondering what the test would be like, we were just worried where we would have food after this particular charade. Since, most of the people who had come for the test were our own batch mates, we were confident that someone from our institute was bound to make it to the top 4, but we never thought that it would be us. But, then one fine day Nikunj gets a call on his phone from some guy who claims to be from IISER Pune and announces that we have got selected among the four teams for the finals of MIMAMSA 2013. The kinkiest part of it (believe me when I say this was weird!!) was that we found it extremely hard to believe that we actually got selected, and initially for the first 48 hours we thought that this was some guy from our batch pulling a fast one on us (since this was exactly the kind of thing we would have done, which we had in the past!!). Of course it was a feeling of happiness, but at the same time we were amazed at the fact that of all the teams it was us who made it—but then you realise that procrastination stops here, maybe it was time we prepared something.

Beginning to work on the presentation—what happened was the worst situation you could expect. It was the kind of scene wherein you start to work on topics and end up having only one, and even though you know it's not an interesting topic per se but you really got no options. And the topic we had at our hands was action potentials. Though fearing for the worst we just went ahead with it and for the next few weeks we worked on the topic strenuously and seriously trying very hard and reminding myself—yes, I believe in it. After all the hard work and what not we are finally prepared with our thing and now it's time to inform the organising team at IISER and we do so. But, as fate would have it, the Mimamsa team tells us that this topic isn't acceptable since, it is completely bookish and would probably bore the audience to death. Now, we were staring at an impossible task of preparing a new presentation in a short period of less than a week. So, we opted for optogenetics (I like the ways it sounds!!) because we had previously come across it when we were preparing for action potentials—and don't ask me for the presentation cause it is worst one ever with containing hardly a dozen slides. Finally, totally unsure about the work we had done, we set off on our journey to Pune on the night of 14th February.

Reaching Pune the next morning, and forgetting all our troubles since we looked forward to a delightful couple of days ahead of us. On reaching IISER Pune, we were greeted by the student volunteers and I must say—the hospitality was truly awesome. It took six months at IISc and six minutes at the IISER guest house to make me appreciate the luxuries that we call A\C and attached bathroom! The mess food was great (yes, the mess food) and so were the people (let me admit—I am the kind of person who talks about people and food in the same sentence!!!). That's the kind of volunteers one must have when you're organising something of this kind and level. After being shown to our rooms and post-lunch, we met the coordinator of Mimamsa, Dr. Sutirth Dey (Wizard of some witchy place—as they called him I remember from the mails and of course Facebook!!) for an orientation and introduction session.

Next morning started the quiz, and my oh my were the questions interesting—'cause I must say that you could really see that they had worked on making the quiz. The most exciting part of the quiz was, well we somehow managed to screw up on all our ▶

Then there was a question about 'Pink-Pouting Piranhas' and that's all I remember of it.




Photo Credits: Naveen Sendhilnathan

Photo Credits: Naveen Sendhilnathan

QUARKS

gives you a sneak peak at the Champions of Mimamsa 2013's lives as students and after in this section.. Wait till you hear all their secrets !

Sushant Bangru

I am a 2nd year Biology major at IISc. I am fascinated by the world we live in and especially the concept of life and hence, I always found science to be my calling. I love being outdoors but when I'm indoors I prefer to spend my time listening to jazz and blues. My friends would describe me as being very talkative and an extrovert but that isn't completely true.

Nikunj Goel

I am 2nd a physics major at IISc. I love the Sciences and it has always been an integral part of my life. Quantum physics really intrigues me and I am also hugely interested in mathematical ecology. I like to spend my free time listening to old Hindi music and also like watching films

Tapan Goel

Hi, I am a first year undergrad at IISc, and well I don't talk much. I think that half the intros are lies so I prefer it this way.

British Patil

I am a computer geek and a science freak. I enjoy clear night sky and I love astronomy. I am passionate about life sciences, especially when it comes to cell biology and the likes. I enjoy watching TV and movies and listening to music

direct questions and scored all our points on indirect questions (cause let's just say "live and let live" is too mainstream!!) We finished the physics round with a respectable lead. Then we started with a talk on "google page rank" by NISER Bhubaneswar. This talk was particularly interesting since Google is something you use every day single living day and it's just natural you got to know more about the things you use. And I started to wonder why couldn't come up with a topic as subtle and interesting like that and hoping for the best we went for a sumptuous lunch. Right after lunch, was our talk and we were so nervous I recall. Oh dear! We really defined bad. We were totally out of control since we were unorganised and it would be an understatement to say that we were unprepared, and there that day we set a new precedent, a whole new benchmark for screwing it up, and then came the counter questions by other groups and mind you St. Xavier's people are real serious about their GPCRs.

This was followed by the biology session and again we scored off other people's questions rather than our own. The first question we were asked was on action potentials (Yes! No knowledge ever goes waste or maybe not). We answered confidently and without a grain of doubt, and the rest of the teams simply agreed with our answer in unison –well to say the least we were after all the experts on action potentials among all the four teams! (that's what everyone came to believe!) But life, as they say is a funny game and we managed to get it all wrong (everyone laughed as the judges explained the answer). The Biology round went well for us with we scoring quite well, as a member of our team (Pritish Patil) came to have a belief that he somehow had a déjà vu at every single question which ended up in making our lead even healthier by the end of that round. Well, the question which really deserves a mention in that round was the one about the Pink Pouting Piranhas (PPP) Which the professors claimed was formed by Dr. Dey on the 14th February (if you know what I mean!!) and though everyone was busy listening to the answer provided by the judges, I couldn't help but appreciate the pun. And there came the end of first day with IISc in a comfortable lead.

Photo Credits: Naveen Sendhilnathan

The rest of the evening was spent in chatting with our co-participants and hosts—exchanging notes about our courses and professors, bitching about mess and hostel and generally talking about our native places and so on. We even managed to squeeze in a game of handball at night—the game is surprisingly very vigorous and requires great agility!

The next day was rather uneventful—St. Xavier's presented their talk on occurrence of Fibonacci number like patterns in nature (another example of how mathematics permeates all across the universe) and BITS presented theirs on the biological clock (circadian rhythms). We held our own in mathematics and even nailed a few in chemistry (I am especially proud of that as that was supposed to be our Achilles' heel and remember the Riemer-Tiemann ▶

200 *curious* TEAMS

hardworking VOLUNTEERS 52

20 *distinguished* JUDGES

remarkable PARTICIPANTS 16

14 *unforgettable* HOURS

fascinating ROUNDS 4

4 *outstanding* FINALISTS

memorable EVENT 1

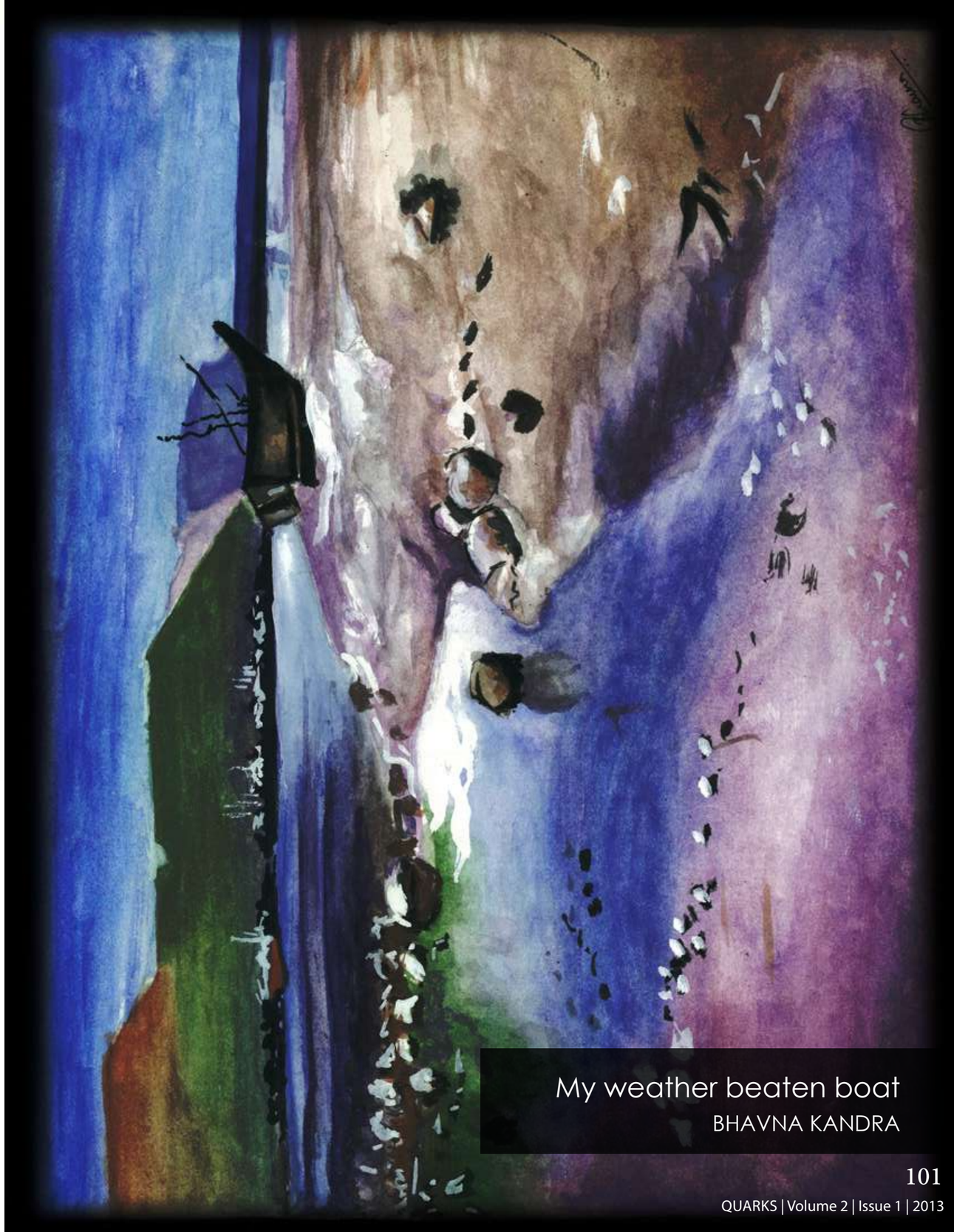
'cause let's just say "live and let live" is too mainstream!!

Well, I guess then the IISER people will just have to give us rolling trophy in the coming years too.

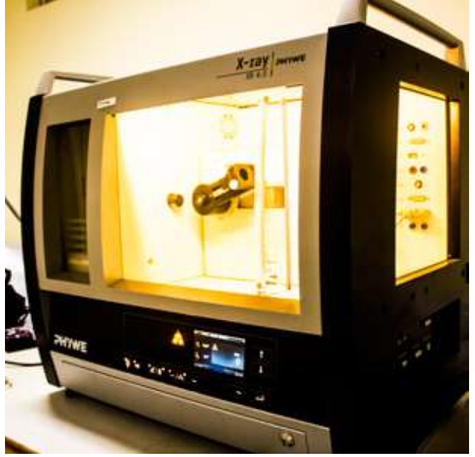
reaction. Well, let's just say all hail organic chemistry!!!). We won the competition and this was followed by the prize distribution ceremony, wherein we were really looking forward to asking if we were entitled to take the rolling trophy home as we had won the event twice. At night, we had pizza as the mess was closed and that was also a enjoyable experience having pizza and having random small talk with strangers who seemed to be like friends of many years.

We had ended up winning the competition but that, as it turned out, wasn't the most memorable part of the trip—it was that game of handball and the random gossip over a few slices of pizza that really made that weekend one of the most memorable ones of my undergrad life. Looking forward to next time, I sincerely hope that our batch mates and juniors win it the next year too, and years to come. Well, I guess then the IISER people will just have to give us rolling trophy. ■

Story authors: Sushant Bangru and Tapan Goel Stylist: Naveen Sendhilnathan and Sushant Bangru Photographer: Naveen Sendhilnathan



My weather beaten boat
BHAVNA KANDRA



I actually held a *human brain* in *my* hands. It was amazing.

–Amogh,
Physics Major

The Undergraduate Laboratories

Promoting research is one of the reasons why we started the BS course in the first place.

The Dean, the UG Programme

The Indian institute of Science was once known as the *Tata Research Institute*. No wonder the name still holds for the institute, after a century as it is clearly reflected in the undergraduate courses started recently as a part of the institute's centenary celebrations.

"Promoting research is one of the reasons why we started the BS course in the first place. Providing a comprehensive research ecosystem is one of the ways to retain top research candidates in India," says Chandan Dasgupta, the Dean of the Undergraduate programme.

A national newspaper comments that, "The standard of lab equipment and specialized instruments in the UG labs shames several high end Government research institutes in India." The laboratories are designed specifically and specially to suit the needs of daily theory classes conducted in the adjacent huge lecture halls. Lots of efforts were put into designing the labs in a way that the labs would supplement or complement the theory taught in the same week.

The courses offered in UG of IISc in pure sciences are among the very few courses offered across the globe where a single course contains both the theory and lab component. This makes it easier to give the Undergrads hands on experiments of the concepts taught in theory in the same week to give a complete science experience. Most other universities have separate lab and theory courses.

The scientific community explains that, giving a rigorous laboratory experience would give these undergraduates an extra edge over any other science students in the country.

Walking in the institute's sprawling lawns, the undergraduates' mind would be clouded with thoughts:.

Designing a few of the labs would have been challenging, like the materials or environmental sciences, which are first introduced to the undergraduates only in the 4th semester. Hence these lab courses must act as an introductory course as well as a bridging course.

However, other disciplines like Biology and Chemistry should have comparatively required a little less effort.

While only chalk and talk mode of teaching is generally preferred in Mathematics, maybe it is time we introduced some computers to the traditional teaching.

After pondering over all these, the QUARKS team has interviewed a variety of people from Professors to lab instructors, project assistants to the students for their views on the laboratory component of their courses.

In this exclusive article, QUARKS presents the amount of effort that went behind making the labs, the feedback received, the excitement displayed by students in the labs and much more.

–Naveen Sendhilnathan

There's nothing quite like using a laser, mirrors and a drill to measure the speed of light. How far we have come from Galileo and his lantern on a mountain!

–Milind, 1st year

Photo Credits: Naveen Sendhilnathan

All you wanted to know about the undergraduate Biology lab …

Setting up laboratories is not a piece of cake. Setting up the first UG labs, which would make tens of hundreds of Undergrads and exceptional scientists, was clearly no exception. Sunandha Srikanth listens to all the excitements of Dr. Sushama Yermal as she narrates the story.

It has been a wonderfully enriching experience to watch the UG biology labs grow out from sketches and lists on paper into real work spaces bustling with people and activity. I feel lucky to have been part of this journey almost from the start. By the time the first batch of students joined the undergraduate programme, the physical location of indoor biology experiments consisted of one fairly spacious, well-equipped laboratory and a sparsely furnished room used as temporary work area. Both these were housed under the same roof. The expansion since then has been on several fronts, including larger space, wider scope and more personnel. Now it is spread over three well-equipped laboratories across two UG buildings, with more than a dozen people ensuring that the students have a smooth sail through the semesters.

To know what to teach and how to provide the right kind of learning experience to transmit the lessons has been the task of teachers at all times, but this was specially true for those venturing to teach at the novel, one-of-its-kind course here. The trepid first steps of consulting the large mass of material available from courses elsewhere and conjuring up the many aspects that were not available anywhere took a lot of time and effort by many experts. Even after we were confident of how the practicals were running, the list of experiments was modified time and again to go along with the range of topics covered in theory classes. Such decisions were arrived at based on both self-assessment by the teachers and feedback from the students. Now we have the satisfaction of the experimental modules looking quite established and well-coordinated.

While record writing is always a nightmare for any Undergrad, Dr. Srinath, our biology instructor, tells Sunandha Srikanth why is that so important.

Why do you click photos? Because you need to have a proof of what you saw, a record. Similarly, in lab, you must record what you do so that if the experiment does not go well, you can go back to the protocol and change it until you get it right. And if you do get it right, you need to record it for future references to reproduce your results. The equipment of the Stanley and Miller experiment done in 1953 has been stored till date! The questions posed at the end of each lab session helps you to think differently. You will come up with new ideas and troubleshooting techniques by answering those questions!

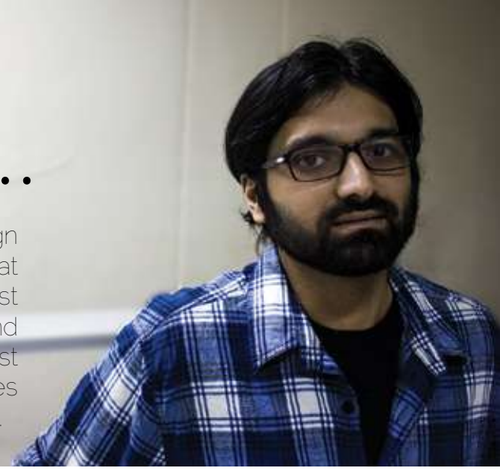
Photo Credits: Naveen Sendhilnathan

Computational biology has now started to become the new fashion in certain regions of Biology, esspecially in Ecology and Structural Biology, while other branches like Bioinformatics is a pure blend of Biology and computer disciplines. While traditionally the classical or mordern Biology is supplemented only with wet lab practicals, we at QUARKS were wondering if it is time we had enough dry lab treatment also.

When asked Dr. Chetan Nag, our 1st semester biology instructor, who handled Ecology labs, he said, "Ecology is an open field. Go out, observe and learn! Computational analysis of your observations can come later. So, learning computation at the very beginning is not necessary in my opinion. The Ecology experiments were designed at the UG level—but they are fantastic experiments! We didn't learn Ecology in this way," as he smiled at Naveen Sendhilnathan.

The structure of Physics lab …

Physics, as we know it today, is centuries old. Given this fact, design of lab components for introductory physics can be a tricky affair, at least at the undergraduate level. While the fun component must still be preserved, the labs should give space for innovation and education through hands-on experience. Dr. Anish Mokashi, our 1st year physics lab instructor, discusses his views and experiences with Naveen Sendhilnathan in making the physics lab come alive.



We can easily claim that, equipment-wise, ours is one of the best labs in the world. Additionally, a lot of thought and effort has gone behind designing the courses; for instance, you already know about the synchronization between theory and experiment. The nice thing about IISc is that people love what they do—this is reflected in the lab as well. A student feels this is his/her own work and unlike in school, people do not have to be forced to work. We are trying to evolve a work-culture in the lab that ensures rigour as well as encourages experimentation to go beyond mere verification of theory. Yet, it should be exciting to do a 200 year old experiment to find the value of the Universal Gravitation Constant! Maybe if we are able to appreciate simpler experiments, we could use these insights to understand and design more complex experiments for research. These strong and clear fundamentals would definitely help you explore the broad diversity of research in the Institute and ultimately find your passions!

I Year BS Physics lab

Most liked experiment:
Measuring Universal Gravitational Constant.

Most disliked experiment:
Coloumb's law

II Year BS Physics lab

Most liked experiment:
Determination of e/m ratio

Most disliked experiment:
Electrical and Thermal conductivity

Meanwhile in the Chemistry lab …

The Chemistry Lab instructors answer one of the fundamental questions which, we at QUARKS thought, needs some discussion: Is the chemistry lab meant to supplement the theory course or complement it?

Chemistry is more of an analytical based science. Preparation, characterization, identification of substances gets the limelight here. So, to tackle this subject, people need to be trained with quantitative and qualitative analysis initially. But, these are generally taught in a later stage in theory. And chemistry being an analytical science, the analysis needs to be taught in the lab first. That is why the labs are not overlapping with the theory component, unlike the other disciplines. Hence, chemistry is taught in a complimentary way with respect to theory rather than a supplementary way.

Photo Credits: Naveen Sendhilnathan

Since chemistry is an experimental science, there has to be synchronization. But this can be realized only in later levels of teaching in this programme.

Since people come from different dimension of India, and given that not much of a practical training is emphasized in schools, especially at high school level, students need to be leveled to bring them to the same line. Hence, certain degree of mismatch becomes unavoidable.

–As said to Naveen Sendhilnathan.

OBSERVATIONS

voices of our lab assistants and the undergrad students

The lab component was designed very carefully to closely complement the chemistry theory course. In this way, students get the maximum out from us. Initially in the first few semesters, basic techniques of handling in chemistry like preparation of standard solutions, titrations, etc. will be taught. These cannot be taught in theory. But after a few session, we shall go on with the theory-based experiments.

Chemistry majors would be shortly introduced to what can be called as 'the frontline chemistry', like developing topics including polymer chemistry and coordination chemistry. So this would definitely be promisingly very interesting for students.

–Says Dr. Srinivasan as Naveen listens to him carefully.

Dr. Tamil Selvi,
Lab instructor

The UG students are very brilliant, inquisitive and meticulous. They are very good at listening, posing and answering questions. Their eagerness to experiment some application oriented problems has even motivated me to try out new things.

Kanad, Chemistry major

The experiments we do in this lab have been fun, and the instructors have done a great job in arranging the lab for the experiments every week!

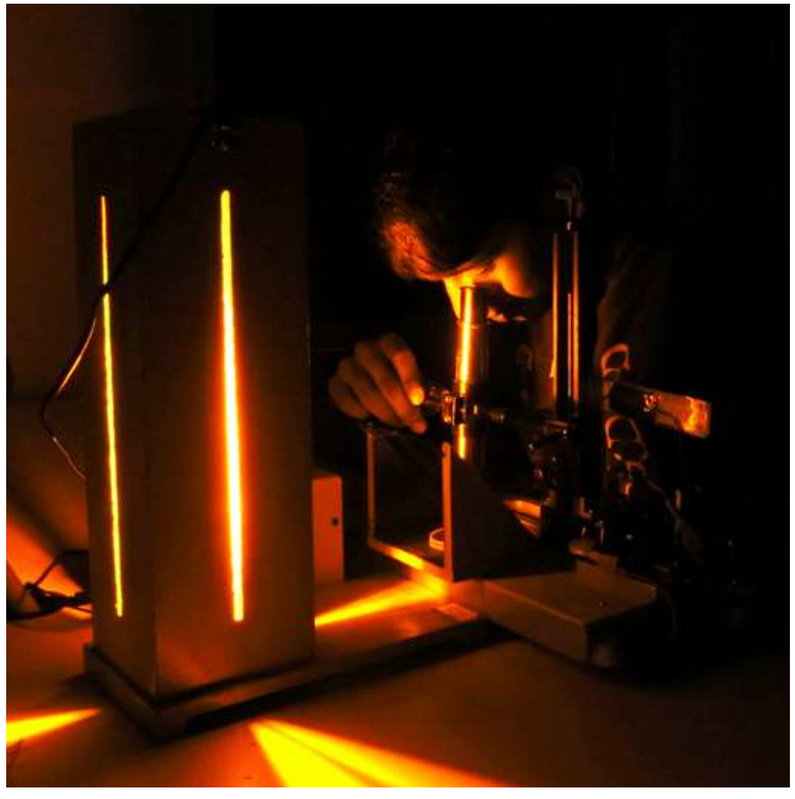
Tandrila, Chemistry major

The chemical sciences division has provided the UG chemistry majors with a nice blend of important theory and practical courses as bridging courses in 4th semester. It is worth taking this joyous ride into the world of chemistry.

Indrashis, Chemistry minor

The chemistry laboratory was always full of colours and smell of chemicals, The experiments were also really interesting. I hope it will help us to do better chemistry in future.

Photo Credits: Naveen Sendhilnathan



Sonatan,
Physics lab assistant

IISc undergrads have a lot of strength compared to other UGs to get into a strong research career. Here labs are designed specifically to supplement the theory material to give a strong feel for the subject.

Photo Credits: Naveen Sendhilnathan, Siddharth Kankaria and Abhinav Jain.

Namrata, bio lab assistant

You guys are fortunate to have hands-on experience with state-of-the-art equipment. Even during our Masters, we read about these instruments only in theory.

Serene, bio lab assistant

We try to make the experiments better and more interesting for future students based on the feedback we get from the present batches.

Reena, bio lab assistant

When you start your Ph.D., you will already be familiar with most of the techniques. You need not depend on anybody to teach you these, like we had to.

Amrita bio lab assistant

The undergrads here, get exposure to the wonderful research that is going on here, in IISc.

The physics lab

We all know that physics is the favourite subject among the present UGs. But are experimental and theoretical physics equally liked? Let's hear it from Dr. Ragavendra as he explains to Naveen Sendhilnathan.

Is enough exposure given through UG experiments to handle research work later on?

The motivation behind the training given in physics lab is to make measurements, which is also the core of experimental physics. The aim is to familiarize you with the practical aspects of the topics covered in theory. The lab exercises cover experiments based on 300-year old physics to that of modern physics so as to enable you to have clarity in fundamental concepts and also get prepared for your research days. We use state-of-the-art techniques in these labs. For example, for measuring force, we don't use spring or spring balance; rather we use force sensor, which is interfaced with a computer. Now in most of your research work, the instruments are interfaced with the computer too. So, the technique of interfacing, recovering and handling the data has already been taught in the UG labs rigorously. If you learn how to precisely and accurately measure and know what the error is in the measurement now, these will help you immensely in your research later on. After two years we expect you to be capable of designing your own experiment.

Why insist on reports even after a heavy negative feedback?

The main reason for insisting on reports is to avoid the sudden feeling of discontinuity/feeling of being lost when you have to document your research work one day. We want you to exercise your originality while writing the reports instead of just filling in the data in the blanks to avoid the risk of plagiarism. We think that it is too much to expect the students to be independent when sufficient prior training was absent from us at a lower level. Hence report writing is must.

Physics lab is fun but lengthy:

Physics lab is lengthy because we want you to analyze too many parameters. But we are constantly revising the methods and amount of work to fit experiments into a 2–2.5 hours length, giving one hour analysis time. This is advantageous because you can find out the accuracy of data then and there.

Could you comment on the current and the expected state of experimental physics in India?

If you want good research to take place in India, we need good experimentalists who do not fear doing experiments and who do not mind getting their hands dirty.
Greatest of the theory people may not bring in a great revolution in scientific research in India. ▶

Photo Credits: Naveen Sendhilnathan

The biology lab

THE ONE BIG QUESTION

"What is your expectation of the graduates of BS programme with respect to research?"

Dr. Srinath
bio instructor

The kind of teaching by the faculty, hands-on experience during practicals and inculcation of scientific temperament is the perfect ingredient for the BS students to prosper in research work. Apart from this, the summer project done at research laboratories allow them to hone their skills and get ample exposure to the contemporary research work done. My expectations are high and it is achievable by these BS students in their respective field as well as interdisciplinary work.

Dr. Chetan
bio instructor

I have a rather general expectation from the BS graduate students and that would be that, your "Questions" in life/research/work should be proper. Without a "Question" you cannot "Answer". When you are not "sure" it probably means that you have to "search" for appropriate questions. So please ask right "questions" and "answer" them with right "tools". After you ask the "question", the process of discovering the "answer" should not be very difficult after the training given to you at IISc.

Photo Credits: Naveen Sendhilnathan

Dr. Sushama
bio instructor

Experiments in biology labs are primed to provide hands-on and wider range of learning than most colleges. The students have the advantage of familiarity with the latest techniques as well as equipment. At the same time, they know how to understand and tackle from the basic level. Most tasks require thinking and applying what is learnt in theory. These traits, together with the KVPY/INSPIRE summer projects, are sure to give our students an extra edge over many others who embark on research careers at their age.

Photo Credits: Naveen Sendhilnathan

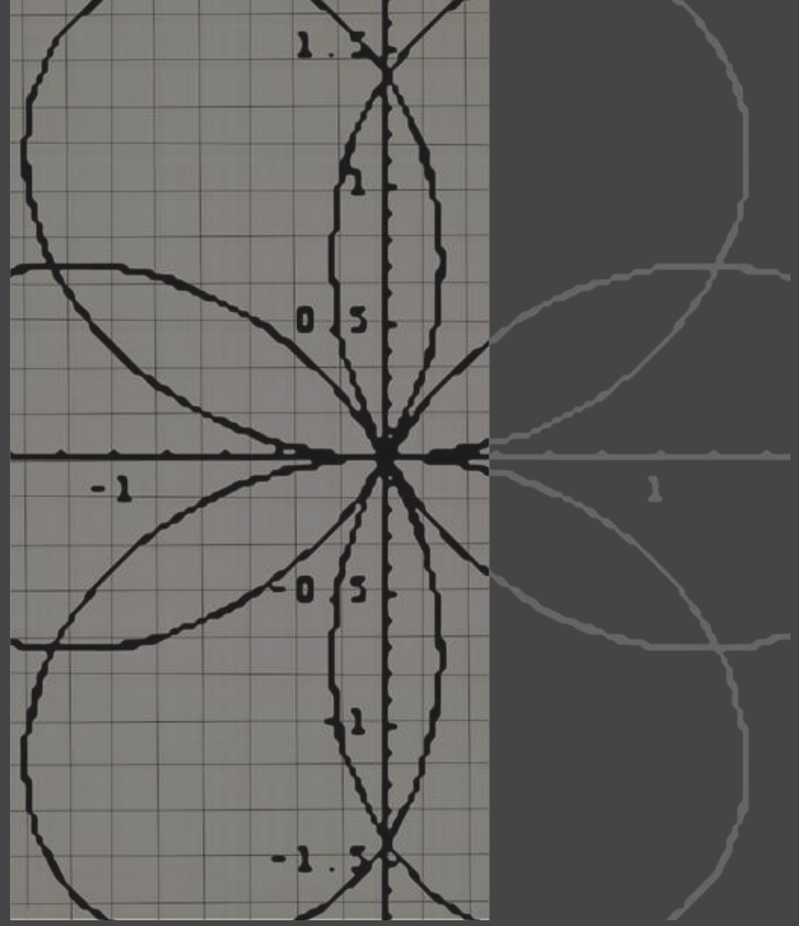
Dr. Gowd
bio instructor

IISc Undergrads are exposed to science and research at an early age. So, they know their options and hence, can narrow down their field of interest easily. Also this enables them to focus more on their chosen option. So in a way, they can achieve things at a much early age compared to other college Undergrads. So they would have an advantage at the level of age, to do more and excel. Here, experiments are chosen not only on the basis of their synchronization with the theory but also keeping their future usefulness in mind.

Dr. Vatsala
bio instructor

The training given to the undergrads at least with respect to laboratories are to such an extent that they can directly pursue Ph.D. without having any other prior training. Standard experiments are chosen in a way that the concepts can be quickly and completely understood. The experiments are also very well planned and are under a constant review. The exposure and the facilities received by the undergrads here are exemplary which would definitely make their Ph.D. life less complicated. ▶

TIME FOR LABS IN MATHEMATICS



Science is at it's best when it is woven with hands on experiments. With a realization for exponential importance of including mathematical knowledge in newer fields to understand the subject better, mathematics goes from paper and ink to keyboard and screen. While simple algebra had already made the shift from fingers to calculators, Sriram Chandramouli asks professor Gadadhar Misra, our Math coordinator if it was time we had the transition to other topics of mathematics also. Find his interesting answer in this special QUARKS interview.

Mathematics courses usually do not have lab components. You can observe this in most of the Indian universities as well because this is the convention here. Even if they do, it is mostly software based like Mathematica and Matlab, which interested students can learn on their own. Personally, I am trying to introduce a lab component with exciting things such as Möbius Strip, use of binary expressions and other such demonstrations. There was a time when Mathematics was considered dull. There were very few people who practised the art and passed it on. But now, Mathematics is viewed as an essential subject, because of its increased importance in various previously unthought-of fields. Laboratory components are extremely non-traditional and teachers have to agree to make space. Unlike other subjects, there is no model that we can follow. Hence it requires some serious changes in thinking and a proper mindset to introduce such a component at the undergraduate level. However, I can assure you that even if it takes some time, the undergraduate Mathematics course would definitely be modified to include a laboratory component in the future to give a finishing touch to the Mathematical art.

Understanding Environmental Science

Dr. Sudhakar M. Rao kills the ignorance about the environmental science lab with Naveen Sendhilnathan.

The training given here is about understanding and measuring. Many industries have a separate environmental science unit. For example, many industries invest a lot of money on water purification technology. Well, here you are exposed to such techniques. And you people have the advantage of having the background understanding of Chemistry and Biology, so that you can handle the contaminants more comprehensively. Most of the techniques, standards and experiments required at the industry level are being taught here, to the undergraduates. Since this is an applied field, there are more opportunities for Environmental science majors than any other.

Characterization of Materials lab

Here we have a quick interview from our Materials Lab Professor. Apaar listens to the events which happened behind the scenes in making the lab, as Dr. Karthikeyan unfolds them slowly to QUARKS.

Apaar: How was the Materials Lab component designed?

K: First of all, we didn't know what you already knew. So, we assumed that you would not know much more than atomic structures and a little bit of bonding. Hence we knew that we would have to start at the basic level. We knew we had to have an instrumental component because at the end of the day, everything is about microstructures. We wanted you to see the microstructures and not just see micrographs. Not only that, we wanted you to see the effect of having defects. So, that was the main aim—to give you a hands-on feel for what actually goes on in characterising microstructures.

Apaar: How was your experience teaching us?

K: It was fun! I learnt so much interacting with you. In the process of setting up the lab, my Ph.D. students too learnt a lot. It was a very good experience. I don't know how much you guys learnt but we learnt a lot for the next year—what to do and what not to do. And I realised that the theory and lab components were slightly out of synchrony, out of phase. That, we will try to fix. Part of the reason was that the lab and theory components were taught by different instructors. But the idea was this—for everything that you learn in the classroom, you need to have some hands-on component here (in lab). ■

Photo Credits: Naveen Sendhilnathan

Know it from us

THE MAJOR DECISION

2011 batch defines their field of interest.QUARKS analysis in this COVER STORY

January 2013 marked a significant change in the history of the Undergraduate Programme in IISc. The first ever UG batch in IISc selected their MAJOR subjects. The Quarks team explores various aspects of this MAJOR event in this exclusive story The Major Decision.

The decision gives a brief account of the process of major selection.

Following this in *Why Physics?*, we discuss why Physics bagged the title of most sought after major.

Life of majors As the title suggests, it wraps up the views and experience of students after the major decision. Their expectations from the course, their complaints and their experience.

The twist section, akin to its weird name, captures the episode of major change by three students: reasons for change, the process and their views.

In *What coordinators have to say?* The Quarks team brings to you interviews of Professors who are coordinators of various major subjects.

In *A glimpse of the future*, our junior batch i.e. 2012 batch expresses its concern about the process and gives its outlook.

The complete story captures the very existence and essence of the event. Enjoy reading! –Pratibha Mahale

Physics, Physics everywhere! 29 out of 83 go for Physics as major.18 others plan to complete the race as physics minors.

By AUTHOR

Since, a long time Physics has been a science which attracted a lot of intelligent minds and engaged them in its diversity. Likewise in UG programme at IISc too, it succeeded in attracting the maximum no.of students. However, this attraction was not uniformly distributed amongst both the genders. Many reasons can be sited for this inclination of students towards physics from the nature of subject to the glamor associated with it to even peer pressure and ofcourse individuals interest. Physics not only attained the title of most sought after major subject but also was recognised as most sought after minor for the 2011 batch.

Major Announcement before exam gets over!

The UN-sponsored International Moose Census got off to a flying start today with hopes for an increase in the worldwide moose population compared to last year's disapointing figures. Among the traditional early reporters were Egypt, returning figures of six moose, a twenty percent

News every

Wed, December 5, 2012 8:36 pm

Everybody gets their Major!

Each student of the 2011 batch was excited to choose their area of interest. However, the necessary evil of CGPA was troubling some of the students. Fortunately, the first batch didn't have to go through the process which had role of this necessary evil. This news was relieving for the students.

to 60,000 making China a net moose exporter for the first time. This is good news for ... lia, a barren ... inhabite... tiable ... crease ... anticip... relative ... but inc... trade w... Hi... to Ch... marke... tiny i... not kn...

ed to rise year, particularly thanks to a strong showing in the last quarter.

Physics: Most sought after

Since, a long time Physics has been a science which attracted a lot of intelligent minds and engaged them for this inclination of students towards physics from the nature of subject to the glamor associated

First batch gets their F

UG programme at IISc began in 2011 with a set of 84 students from various parts of the country who joined IISc on the basis of their KVPY, IIT-JEE, AIPMT, AIEEE ranks. Today in 2013, if we analyze the UG programme, undoubtedly we all can notice the enormous growth of the programme. The concept of trai... scienc...

by the whole co... Alongside this ... acceptance of ... programme, the prog... in itself is developin... spreading. The first ... of students ... completing their fi... subjects in all the ... subjects have now i... declared one of the ... subjects as their majo... of interest.This de...

Humanities continues to follow in the MAJOR LIFE

UG course at IISc not only only gives students an exposure to science and engineering but also introduces them to humanities. Every semester a new and an interesting course in humanities is made a part of the curriculum. Few of the courses already taken by students are theatre, economics for science and technology etc. Professors from IISc, guest faculties from other universities and other renowned people are involved in making this new initiative in IISc a

Environment Science still not hitting young minds. Attracts only 3

Know it from us

THE BEGINNING

BS course in IISc offers majors in 6 disciplines: Biology, Chemistry, Environmental Science, Material Science, Mathematics and Physics.

During the admission counselling sessions, one of the prominent doubts of the participating students was regarding the allotment of major subject. The students were apprehensive about the process and were concerned if at the end of three semesters they will get their subject of interest as the major subject or not. But the first batch was lucky enough to have their first choice.

In this section, QUARKS gives you a brief account of the process of major selection.

UG Students at IISc study four core subjects: Biology, Physics, Chemistry and Mathematics along with a blend of engineering courses and a flavor of humanities, for the first 3 semesters. The initial period of three semesters gives students a uniform exposure to all the subjects and thus, enables them to choose their area of interest wisely.

In their fourth semester i.e. in the second year, students declare a subject which they would like to pursue as their major.

Subsequently, they take courses from their major subject and gain maximum credits in it. A set of nine credits are also compulsory for engineering courses. Moreover, for a dynamic development, students are required to take up one-credit humanities courses also for the next three semesters. Along with a major subject, students can as well choose a minor subject. However, declaring a minor subject is not mandatory. By its inherent nature, IISc provides freedom to the UG students to even take up courses in other subjects (other than their major and minor) so that they continue to understand the interdisciplinary nature of science.

The procedure of major selection is as follows:

• The students fill a form stating their first three preferences for the major subject in order and also state their minor subjects. Students can declare either zero or one or two subjects as their minor subjects.

• To allot a particular subject to the student, the following two factors play an important role:

a) Number of seats available in that subject after considering the laboratory and other constraints.

b) Total number of students opting for the same subject.
In case b>a, then the allotment of the subject is done by considering the CGPA of the student. Grade in the respective subject is also taken into account.

For the first batch (i.e. batch of 2011), the students were allotted their first preference because the number of interested students in each major did not exceed the total number of available seats.

Officially, the news of major allotment was announced on 5th December, a day prior to our last exam of the third semester, through the Dean's e-mail which reads as:

Dear students,

We have received the preferences for Majors and Minors from all of you. I am happy to inform you that each of you will get the Major and Minor of your first choice. Thanks for making my job easier -- I don't have to persuade any student to take a Major that is not his/her first choice. Also, there is no need for organizing an extended counselling session before the beginning of the 4th semester. So, it will not be necessary for you to return to IISc by December 28. However, you may find it useful to come back a few days before the start of classes for the 4th semester -- this will help you in finalizing the courses (other than the ones required for the Major you have chosen) that you will take in this semester.

Best wishes,
Chandan Dasgupta

The above words seemed to create a history in ruling out one of the prominent disadvantages of electronic media that it does not convey emotions considerably well. This message brought by communication fibers seemed to be one of the rarest things in the universe that uniformly cheered up the UG students.

No one had a slightest clue that this date could register in our mind and receive more preference than 6th December, the day when our exams were supposed to get over, exams of THE SUPER HECTIC 3rd Semester. The e-message made us jump to an excited state regardless of the gravitational force of the mathematics exam the next day. The Brownian motion resulting from the excitement was clearly visible in our hostel corridors and definitely the mobile companies made a lot of money that night by the exchange of calls and short message service! In short we were all overwhelmed by the sudden unexpected announcement. ▶

◀ The major announcement:

Wednesday,
December 5, 2012,
8:36 pm

I don't have to persuade any student to take a Major that is not his/her first choice.

–Dean, UG

Know it from us

LIFE OF MAJORS

Here in this section, we bring to you views of the students from different major subjects. They share their experience after the MAJOR decision.

Why did they choose a particular major? Their expectations, their experience!

Biology: Himani Galagali, Arijit Paul.
Chemistry: Artira Sil.
Environmental Science: Arjun Chakrawal.
Material Science: Akshaya Kumar Pandey.
Mathematics: Sudhanva Shyam Kamath, Sriram C.
Physics: Aditya Hebbar.

Major Stop: Material Science

Akshay Kumar Pandey
II Year, Materials Major

1. Why did you choose Material science as your major subject?

I chose materials because I like applied physics, biology and chemistry. Material Science is interdisciplinary subject and not hard core theory.
Although, I love physics, I found only a few Physics courses useful and interesting to me which I will be taking in coming semesters. I am not very good at math and not very interested in theoretical physics. Also, three labs a week is very hectic for me.

2. What was your expectation from the courses? Did the course meet your expectation? If not, what would you suggest?

My expectations were to learn engineering aspects of using the right material at the right place. Prof. Vikram Jayaram's course Introduction to material science, UMT201, fulfilled it to some extent and aroused my curiosity.
Material Thermodynamics was fine.
For the course Structure and Characterization of Materials UMT202, I think use of models to explain slip systems and line defects should be done. Also, the practicals could have been more organized.
Further, clear understanding of all phenomena was missing which I realized during viva. I accept that I should have enquired and asked the professor or the TAs but at the same time, I believe the TAs should have explained the basics more thoroughly and in greater detail.

3. Suggestions to improve the course structure of Material Science.

More lab courses would be great, and as stated earlier, better interaction between TAs and students should be there. To achieve this, both have to work.

4. What do you feel about the process of major "selection" or major "allotment"?

Giving first choice as major is fine. But, a chance to change major should also be given, maybe at the end of 4th semester. A student might not have done well in a subject he/she is interested in due to some reasons like pressure of biology, chemistry for a maths student. Even if his grades are not good in that subject, he will improve over time by virtue of his interest. Mostly, he will discover his interest correctly in the first 3 semesters. If he doesn't, that's when the chance to change major is useful (also useful in case of other reasons like disliking Professors).
I am not very confident that what I said is applicable to all students or not as each one of us have different calibers. Some follow difficult interests, while some follow easy marks.

5. Message for the junior batch about Majors or in particular Material Science. Why they should opt for it Follow your interests.

If you like applied sciences and an interdisciplinary branch, and not too much of theory, this (material science) is your place.

6. Comments on the engineering and humanities course.

I didn't like the philosophy course this semester. It was too mature for our age and should be taken only by those interested in it. I like the courses being offered to juniors—theatre, cinematography and visual arts—They are great. I think we also deserve these.
I would like foreign language courses to be included in humanities like it is done in IITs. They have a language course every year.
Plus, there are not many basic engineering courses in IISc, at least for me, (I like Mechanical) that's what I and many like me miss.

Major Stop: Mathematics

Sudhanva Shyam Kamath
II Year, Math Major

1. Why did you choose Mathematics as your major?

Mathematics has been an interest—a huge one—since class eight Euclidean Geometry. The fact that I was fairly good at the subject was certainly a push in the same direction. There's no other clear cut reason; I just find mathematics interesting.

2. What were your expectations about the course and did the course meet your expectations? If not, please give suggestions for improvement.

My expectations from the course were exactly what it delivered. It gave us a sound footing into basic abstract mathematics and has helped us appreciate a flavor of mathematics that we haven't yet been exposed to. Again, there is the fact that the professors were absolutely brilliant at their job. I do wish, and Prof. Gadgil concurred, that we had a course in Discrete Mathematics.

3. How do you feel about the 'life' after taking your major subject?

Life is good after the major. This semester was basically one long free hour for me. We had not much new to learn and personally were able to complete 2 of my 3 compulsory ▶

MATERIALS

Alloying required to make course MATERIAL better:

Suggested Metals:
- More lab courses
- Better interaction amongst TAs and students

MATHEMATICS

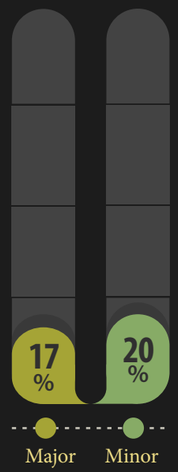
Mathematics course incorporated the entire number system. In general, students are satisfied and happy.

A course in discrete mathematics is desired by some students.

MATHEMATICS

All UGs majoring in mathematics do agree:

"The chief forms of beauty are order and symmetry and definiteness, which the mathematical sciences demonstrate in a special degree." –Aristotle



MATHEMATICS

The Mathematics major courses have exceeded my expectations. With the exposure of Math major courses only for a semester I have reassured myself that I have made the right choice.

Engineering courses. While I did not have much to do in class, I was able to channel the free time into studying each topic more thoroughly and gain a deeper understanding of the subjects and appreciate them.

4. Comments on the engineering and humanities course.

I felt that we should have been given free reign to select our Engineering courses. But now that I've completed the ones I didn't like, I don't feel bad about taking them. They have broadened my spectrum of knowledge and I feel it was time well spent. As to the humanities course, I wish the professor had spent a bit more time making the subject matter interesting rather than attacking the scientists at every possible turn. But the topics themselves were interesting, although their resolution is impossible. An 'interesting' course all said and done.

Sriram C.

II Year, Mathematics Major

1. Why did you choose Mathematics as your major?

I chose this major as I love doing Math. I decided to become a Math professor when I was in my 9th grade!

2. What do you think about the process of "major allotment"?

As far as Math is concerned I think the process does not have any flaw.
Usually not many students opt for a 'Math' major. We all know that the seats are allotted first on the basis of preference then and only then on the basis of performance. So, since the first category is almost never exhausted, it is a win-win situation.

3. Was the mathematics course upto your expectations?

Yes! The major courses have exceeded my expectations. With the exposure of Math major courses only for a semester I have reassured myself that I have made the right choice. You know you are in the right place when you feel its blasphemy to bunk even a single class.

4. Any comments as to the organization of the course?

No particular comments as such. Both the courses were very well-planned and were not taxing. The exams were aptly scheduled and just before the final exams, there was no pressure on us as no new material was taught.

5. Comments on the engineering and humanities course.

I would not consider the Engineering courses as a success. The options are too few and the conditions for satisfying the requirements are very strict. This invariably results in students performing well below expected, and 'Introduction' courses are not exactly introduction courses. So proceed with caution.

Humanities was another disappointment for the students. I would suggest that in the first week of every semester, the students are given different options for the Humanities courses and the course voted out by the majority can be taken up by all. This way certainly minimizes the number of disappointed students.

Major Stop: Biology

Himani Anand Galagali

II Year, Biology Major

"What is this life, if full of care,
There is no time to stand and stare."
–William Henry Davies (Leisure)

And I love to stare. I love to stare at the plants growing around me, at the ants at work, at the spider weaving its web, at the birds singing, at life in action. The question of how life emerged from a mere bunch of chemicals intrigues me a lot. This is what attracts me to Biology. I believe that the ultimate test of Physics, Chemistry and Mathematics also lies in explaining the myriad of phenomena of the life sciences.

The UG Programme assigns majors based on a combination of the individual's CGPA and the marks obtained in the subject chosen for major. This, I feel, is a necessary evil and not only for logistic reasons. Yes, a few students may not end up with their desired majors, but this is a good way to measure whether one's liking for a subject is a mere fantasy or whether one is truly capable of handling that subject. It does not mean that a student cannot excel in a subject not chosen for a major. But it forces a person to re-evaluate the situation and to accept another subject, may be, for his or her own good.

The major course in biology included four courses—General Biochemistry, Introduction to Structural Biology, Introduction to Developmental Biology and Physiology. Initially, the courses seemed to be very basic. But as the semester progressed, we realized that the course was much more than just textual learning. The biochemistry course increased our appreciation of the complex web of events that every cell of even a newborn baby carries out. The accompanying laboratory course was a little below my expectations, but nevertheless I learnt a bunch of new techniques. The structural biology course gave us a new perspective of biology, making us realize how the microscopic machinery of biochemicals truly constitutes this amazing machine, our body. The developmental biology course was always work in progress. We had to constantly 'pick up relevant concepts through concurrent studies' (quoting the feedback form). But, in my opinion, it was worth it! The analytical skills this course involved renewed my belief that Biology is beautiful and can be pursued as a logical subject. The physiology course was a little soul dampening initially, but it ended up with wonderful concepts that will always remain evergreen in the field of research.

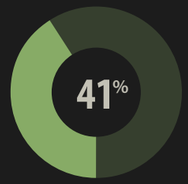
The only frustration that I experienced in this course was when the following happened: Instructor: Do you know about the XYZ pathway/phenomenon? (Naming one of the ▶

BIOLOGY

The subjects a student should have studied compulsorily to enroll in BS course at IISc are Mathematics, Physics and Chemistry. So, a large proportion of students who joined in IISc did not have an exposure to Biology in their high school. However, the adequate exposure to the subject in first three semesters has motivated and got a significant fraction of students interested to explore and understand biology even more.

Many students who did not have biology in their +1 and +2 have taken up biology mostly as their major or minor subjects.

The redundant myth of Biology primarily being a fact based learning subject was broken after the unique approach of IISc BS course to introduce the subject.



41% of girls are majoring in Biology

BIOLOGY

Some prerequisite topics or concepts which were not introduced to students earlier, need to be addressed with more precision: either by suggesting appropriate reference material or by organising bridging courses at appropriate times.

BIOLOGY

Elaborate, well-equipped lab sessions simultaneously followed the theory lectures.

CHEMISTRY

8.5% students major in Chemistry

15.6% students minor in Chemistry

many, many signal transduction pathways or phenomena in biology.)
Students: (Blank look initially) No.
Instructor: (exasperated) How am I supposed to teach this class if they do not know this basic topic?!

It is not any of our fault that we were never exposed to the major chunk of biology that was required as prerequisite for these topics. The solutions to this problem can be of two kinds. One, the same instructor, at that moment realizing that the class requires a bit of background knowledge, can explain it then and there or refer us to some material. Two, introduce a bridging course this semester and push the advanced courses to the subsequent semesters.

As we sailed through our theories, it was the engineering and humanities courses that snapped us back into reality. It is important to have an engineering course to keep our practical sides still alive. It is necessary to have a humanities course too, of course, to keep us in touch with humanity. The impact research has on society cannot be underestimated. Civilizations can be created or destroyed by research. We cannot live in our dream world of doing science for the sake of science. We need to do science for the sake of progress of humanity. I also feel that literature and arts must be incorporated to a certain extent in our humanities course to enrich and nourish the artistic side of our brains.

Arijit Paul
II Year, Biology Major

From the 9th standard I used to like Chemistry more than my other subjects. Even after joining IISc I wanted to take Chemistry as a major. But soon I realized that I looked at Biology with a bias and that it was also equally profound and interesting. The complexity and the underlying simplicity is what makes me explore the world of biology and inspires me to find the missing pieces in the enormous jigsaw puzzle. The diversity in living species and also the diversity of molecules inside every organism makes us realize the magic in evolution.

Major Stop: Chemistry

Aritra Sil
II Year, Chemistry Major

"If you want to be good in Science, you have to start asking good questions. You cannot ask good questions if you don't have good training. You have to be open to other fields. You have to feel it. Team up with others and remain very motivated to work hard…"
–Prof. Jules A. Hoffmann, Nobel Laureate

As Prof. Jules A Hoffmann has pointed out, to have a successful career in science one should have firm grasp on his subjects. Thus, finding out the right combination for you and subsequent training plays a pivotal role to shape one's career.

I chose Chemistry simply because it fascinates me. Well, loving science and living for science is extremely important for long term success.
I got my desired major and believe that one should get his/her desired major too. But, at the same time I feel that there should be a balance between what one desires and what one deserves. It will be imprudent to allow a student to take a particular major if his/her performance in that subject in the first three semesters is below average.
I am happy with the Chemistry major courses. But I am expecting more organized courses in coming semesters.
This BS course aims to cover Masters level materials in just 4 years. So my opinion is that after 3rd semester, engineering/humanities courses should be replaced with major courses. At the end, I would like to say that your major does not determine your life. You can always change in your career. But, keep the decision in perspective.

Major Stop: Environmental Science

Arjun Chakrawal
II Year, Environmental Science Major

1. Why did you choose EVS as your major?

The very first and my personal reason would be I didn't want any other subject.
Secondly, it is perfect for me. I always wanted to study a thing which are application based, that is why I appeared in IIT JEE. But, fate had decided something else, so here I am, at IISc. Only after coming here I came to know what IISc is. Earlier, it was like I don't want to study and whatever I have been studying is useless (yes you are right, I'm referring to epsilon-delta). But, now I can bet how wrong I was. This was the foundation building which is required to be an IIScian.
Now, I had to choose between Materials Science and Environmental Science. I chose EVS because on seeing the syllabus, I thought it will be easy to learn and comprehend and this is what I want.
So, I had many questions in mind which had to be answered. It was like you are going to marry a girl and you want to know everything about her.
Then I met Professor Sudhakar Rao (father of the girl), coordinator of EVS. He told me this course is all new in IISc but if a single student is going to take EVS major, Professors will teach like they normally do. But then we were three who wanted this course as major so I thought it is good, less number of companions, less trouble you have to face.
The professor told me that this course is in accordance with the current scenario and the syllabus is very good to carry out further studies. I remember he told that in some companies like Panasonic they can manage to get us some internship after completing the BS. That time it was almost like, "oh God! At least someone is talking about a job."
After all this I did my own research on the subject, I tried to check how this course in foreign universities is. It was quite similar, but, at the same time more inclined towards civil engineering. As you guys might know this course actually comes under civil engineering in all other institutes.
That's it! I got engineering and basic science together and I think it is a good start for engineering or research. ▶

CHEMISTRY

HeCimStrY:
Jumbled! Confused?

A little more organization in the courses will remove the confusion.

ENVIRONMENTAL SCIENCE

An introduction to Environment science in the first three semesters will help students to know, understand and appreciate this subject better. Consequently, increasing number of students are majoring in it.

3

students out of 83 are majoring in Environmental Science making it the minority major.

ENVIRONMENTAL SCIENCE

We three go to class and then lab and then room; just three of us.

ENVIRONMENTAL SCIENCE

Employment of environmental scientists and specialists is expected to grow by 19 percent from 2010 to 2020, about as fast as the average for all occupations.

(as concluded by Bureau of Labor Statistics)

2. What were your expectations about the course and did the course meet your expectations? If not, please give suggestions for improvement.

1. All the courses were very good except one which was supposed to comprise of two courses according to the professor who taught us the course, but because of UG, two separate courses were made: one in fourth semester and other in fifth semester (as an elective). I am pretty sure they didn't know about our physics or biology syllabus that is why they thought so.

2. The other two courses which made me really interested in EVS are:
- The Earth System
- Fundamentals of Climate Science.

The only suggestion I can give is please don't expect too much from professors, they haven't taught UG guys before. So, sometimes they treat us like dumb and sometimes as if we have finished our Masters.

3. How do you feel about the 'life' after taking your major subject?

Our time table basically didn't change in fourth semester as compared to the previous semesters. So, it is like we have been abandoned from society. We three go to class and then lab and then room; just three of us. At least earlier in lab we could make fun each other now that fun was gone. But, the best happened; our lab assistants and Professor were so cool they never taunted us even if we all were late sometimes. You guys will not believe what happened one day—it was Tuesday morning 9 o'clock, no one appeared in class and the best thing Professor too didn't come. It was such a hilarious moment, we three were just laughing like hell. This doesn't happen normally in any other major but this happened with two professors in EVS.
After all this we had a field trip organized by Professor Prosenjit Ghosh to Kolar Gold field where we had so much fun and yes, we did exploration too. We didn't find any gold there, but passing through forest, farms and climbing mountains was just awesome!
Another field trip was organized by the same Professor to the nice road to study Igneous rocks. This too was good but because of high temperatures we didn't enjoy much.

4. Comments about engineering and humanities courses.

1. Engineering course wasn't at all like an engineering course. It was like we were forced to study other major's compulsory subject.
In my own opinion, engineering course must have a lab component and it would have been best if it was continuation of some computer science course or scientific computing course.
2. Humanities: Why are we suffering from this bug till now? Wasn't there enough torturing in the previous three semesters?

If instead of this course we had some EVS/Materials Science course in first three semesters, our EVS major population might have been bigger.
Finally I would like to conclude with one hope that this will help a lot of those who are planning to take EVS. And a regret which I will ever have is why we are the one (first batch) who is suffering with course work. Many examples are there like biology and chemistry syllabus for juniors and our batch.

Major Stop: Physics

Aditya Hebbar
II Year, Physics Major

1. Why did you choose Physics as your major?

Towards the end of 3rd semester, forms were circulated asking for preference order of major and I had a choice to make—Physics or Math. Ever since I first learnt mathematics in primary school, I have been fascinated by it, however as I reached high school and science stopped being just a collection of facts but became more about reasoning and logic, I was drawn towards it, especially towards physics. Just a handful of laws and one could explain why things moved and how they would move. The allure of physics only strengthened as I learnt more advanced topics and finally when I was exposed to quantum mechanics and particle physics, I knew where my interest lay. It would be possible to do particle physics after doing a Math major but it was more straightforward with a physics major and as it is I had more interest in physics in general and so I decided to take physics major.

2. What do you think about the process of "major allotment"?

The process of selecting majors was straightforward this time as everyone got the major they wanted however for the future batches this may not be the case. It would be ideal if everyone got what they wanted but that may not be practical. In such a case majors must be awarded on merit—based on (weighted) GPA and also maybe an interview of sorts where professors try to discern a student's aptitude and interest.

3. What were your expectations about the course and did the course meet your expectations? If not, please give suggestions for improvement.

I am happy with my choice of physics as a major. As expected the courses this semester were on a more advanced level as compared the previous semesters. In general the courses were good although I personally wish that the mechanics course had covered a bit more of advanced topics. The statistical mechanics part of the thermal physics course was the highlight among the courses for me as it opened up a whole new field of study, having had very minimal exposure to statistical mechanics previously.

4. Comments on engineering and humanities course.

Regarding engineering credits, I hope that more courses are added to Pool A and Pool B because right now the courses in these categories are very narrow—materials and climate science. Unless the aim of compulsory engineering credits is to restrict students to these two areas, I feel other courses too should be added to these. Yes there is a Pool C which is much broader but under the present scheme, student not interested in either materials or climate science would be forced to take two courses he does not have interest in. The humanities course did not have an exam in the end and this was rightly so because writing two 1000-word assignments and an exam for a one credit course would have been a little too much. The course itself was a good learning experience and it was interesting to read the views of famous philosophers like Kant, Popper, etc. for the assignments—something which I doubt many would have done without such a course.

PHYSICS

"It doesn't matter how beautiful your theory is, it doesn't matter how smart you are. If it doesn't agree with experiment, it's wrong."–Richard P. Feynman. Therefore, all the physics courses are well complemented and supplemented by experiments and lab sessions.

29

students out of 83 have taken Physics, making it the majority major.

PHYSICS

Writing 3 lab reports in a week was one of the dominant concern of the students majoring in physics.

Semester 1	Semester 2	Semester 3	Semester 4
Relax and explore. Feel the vibes of different subjects.	Resonate with your thoughts & amplify your interests.	Define, discuss, decide and make your choice.	Experience the exciting life of *majors*.

5 Factors that influence the Major decision:

- Student's individual interest
- Exposure to the subject
- Current progress in the subject
- Peer pressure
- Future research and career prospects

Chemistry
7 students

Environmental Science is still not hitting young minds. Attracts only 3 students.

Environmental Science
3 students

Material Science
8 students

Mathematics
14 students

131
Credits to be taken in all.

Biology
22 students

6
Majors to choose from

16
Minimum number of credits required for each semester

Physics
29 students

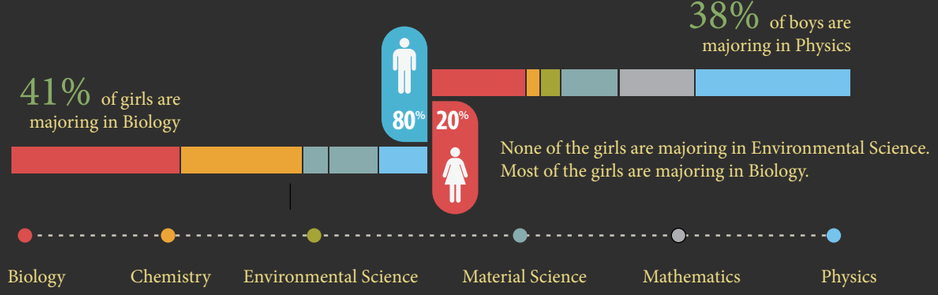
Physics seemed to have attained maximum popularity amongst the young minds!

36
Credits to major in a subject

Here is the distribution of students majoring in different subjects.

83 students
66 boys 17 girls

Here is the gender distribution of students majoring in different subjects.



Know it from us

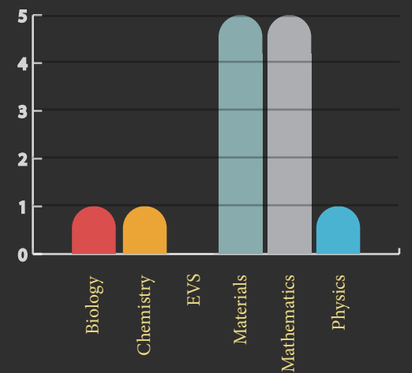
STATS AND NUMBERS

QUARKS tells you all you wanted to know about our major lives.

Eleanor Roosevelt pointed out that we all create the person we become by our choices as we go through life. In a real sense, by the time we are adults, we are the sum total of the choices we have made. Here are the stats of the first batch who chose their love and love their choice.

Proportion of girls is less even in the Majority major—Physics.

Below are the number of mandatory courses need to be taken for each minor.



Biology
10 students

Environmental Science
3 students

Materials
4 students

Mathematics
17 students

Where the 'minority' is in 'majority'?

Chemistry
13 students

Physics
21 students

Undeclared
15 students

Here is the distribution of students minoring in different subjects.

18% of students have their minors undeclared!

15
Credits to minor in a subject

9
Credits of enginerring topics to be taken.

3
Credits of humanities topics to be taken.

QUARKS cannot be held responsible in collecting or stating of any inaccurate data.

Know it from us

WHY PHYSICS?

A question must be rattling in your minds, Why physics is the MAJORITY MAJOR and the MAJORITY MINOR?

The most obvious answer to this question will be "Physics is most interesting."
or if we quote Ernest Rutherford,
"Physics is the only real science. The rest are just stamp collecting."

But, this answer may not score full in most of your question papers so here we bring to you opinions of our very own PHYSICS MAJORS.

S. Sathyawageeswar
Physics major
BS, II Year

I am of the strong view that most students at this stage do not have any strong motivation, or attachment to the subject that they choose to spend most of their time on. Rather, it is a combination of peer pressure (very influential, but often not in any obvious direct way) and plans for one's future, and considerations of career prospects that drives many. The switches of major that we've seen in our batch provide evidence for this. In the recent past, physics has seen a lot of media attention, and indeed, glorification. Physics these days seems to attract students with a sort of glamour that is distinct from the age-old curiosity to know Nature. Silly as it may seem, sitcoms like 'The Big Bang Theory' actually contribute to this image of glamour. And people often don't really know what they're opting for, when they choose a subject—the problem of underexposure. Although we at IISc are lucky to be exposed to a wide variety of subjects and to interdisciplinary research as well, the farthest reaches of knowledge and knowledge creation are still hazy to us. Someone may opt for physics having seen classical electrodynamics, thinking it suits his/her abilities and tastes, but might find out later on that the picture is quite different from what he/she may have imagined. There's also the fact that people sometimes choose what to study based on what they're good at—and contrary to the popular view, what you're good at needn't always be something you like and enjoy.

Irfan Ansari
Physics major
BS, II Year

Physics deals with the practical problems ranging from nano level to astronaut level. It's realistic and almost all of its theorems are strongly backed by mathematical proofs, which are found to be consistent with the practical observation too with pretty good precision.

S. Hemaa
Physics major
BS, II Year

As a future modern-day scientist, according to me, the boundaries amongst subjects cease to exist for all practical purposes. But, when the question of choosing the major arises, I am not surprised that physics was chosen by a relatively large number of students as their major. Physics is a wonderful subject that seeks to answer the fundamental questions about the universe. It has a wide range of highly irresistible disciplines—particle physics, astrophysics, laser optics, condensed matter physics, statistical mechanics and so on. (don't they sound cool?) Each of them brings to light the beauty and symmetry in nature which just astounds the human mind. The results and physical interpretations of various theories and models are a feast to the human intellect. Experimental physics too, is quite fun if you love playing with instruments and like to devise some ingenious experiments (from Cavendish to LHC). Physics has been the reason for progress of many other disciplines such as Mathematics, Chemistry, etc. Each and every moment of our life and beyond is dictated by the physical laws. Also paradigm shifts in physics are the basis of many of the awesome and cool advances in technology. A good understanding of physics will be definitely be helpful to pursue further studies in interdisciplinary fields of research. It's the subject that gives you the license to attempt and understand why everything is the way it is. Physics is ubiquitous. So, it is really not a mystery that such an inspiring and promising subject has attracted the brilliant minds to pursue its study and work further for its betterment. (For juniors, beware: The attraction is like that of strong force when you are highly exposed to physics and physicists—there is a huge probability of entanglement ;))

Mukul Bhattacharya
Physics major
BS, II Year

I do not know the exact reason behind this. I think it depends mostly on the concerned individual's interest rather than anything else. I would not attribute the choice of Majors to something like—there is more research scope in Physics or Physics is more interesting than say Bio, Chem, or Materials (which I consider is a very stupid reason to state). So, I say this entirely depends on the person. The story may well be something different in case of our juniors. ▶

10 REASONS TO CHOOSE PHYSICS

1) It is the most basic and fundamental science.

2) Students get satisfactory answers early in their study.

3) Physics offers a diverse set of fields to work and explore.

4) Physicists are versatile and adaptable so they work in interesting places.

5) It feels good to learn a discipline which is centuries old.

6) Studying physics requires math and engineering apart from physics.

7) Physicist learn how to consider any problem so they are not bound by the context.

8) Physics is the art of understanding.

9) Physicists are cool dudes.

10) Physics helps in understanding natural phenomena around us.

Know it from us

THE TWIST

However, there is an 'O. Henry Twist' in the story! Some students opted for a change in their major subject. Three students changed their Majors.

Sowmya: from Mathematics to Biology
Neha Kondekar: from Physics to Material Science
Apaar Shanker: from Physics to Material Science

Process of change:

- The person interested in the change had to get approval in writing from the coordinator of the subject he/she wishes to switch to.
- That letter along with an application requesting the change, addressed to the Dean, had to be submitted to the UG office.
- The office will, after the Dean's approval, process the change and it will be in effect from the fifth semester.

Ironically, two students opted for a change in their major from the most sought after major. However, the exact reasons for the change in major subject will be evident and justified if we get the opinions straight from them without any attenuation.

"The saddest people I've ever met in life are the ones who don't care deeply about anything at all. Passion and satisfaction go hand in hand, and without them, any happiness is only temporary, because there's nothing to make it last."

–Nicholas Sparks, Dear John

So, let's find out what led them to change their major—passion or satisfaction or both?

Major Change: Physics to Materials
Apaar Shanker

Material Science has always been a fascinating field. It offers the rare combination of usefulness coupled with glamour. This is the field that deals with such varied products as the anti-radar coating of the B-2 bomber, the bullet proof Kevlar jacket, the super strong gorilla glass as also the resilient rubber tire.

We live in a Material world. We are modern not because our values are much different from those of our forefathers a 100 years ago, but because where they used wood we use plastic and the progress of the future generations will be gauged by their use of even more exotic materials.

I say all this and yet at the beginning of the 4th semester, I found myself a physics major with materials as my minor subject mainly because I had this notion that it's better to study a more general subject now and specialize later in a field of my liking. There was also the fact that most guys in my peer group had this combination. However, once we had settled into the semester and I had had sufficient interaction with the professors, I decided it's better to stick with one's strong points and likings. Finally, all it took was a friendly nudge and some counselling from professors, and I jumped ships. It's indeed greener on this side of the fence and my advice to anyone hanging in such a limbo will be to do what the heart desires and preferably take what seems the easier, or if I may, a more pleasant path.

Major Change: Physics to Materials
Neha Kondekar

The reason I am in IISc is to explore what I like, what I want to do with my life. I, like most of us do, chose to take science after class 12th. But the question remained as to what next? Time answered it as taking up a pure science course at IISc, the Mecca for scientists and for the reasons most of us know—it was a great place to seek out answers. Then I chose my major as physics because that was the subject I liked, maybe because I was good at it, not at Bio or Maths or EVS for instance. But again, as they say life isn't about making the right decisions, it is about taking decisions and making them right. I was the one supposed to steer my ship and the stranger tides only made me realize how ignorant I was. Even today, the only thing I know is to follow my heart. I didn't change my major because I was scoring well in it. Rather the only thing I knew was that it excited me. The lectures weren't boring, the labs were fun. The projects were challenging and the assignments weren't a burden.

And as Steve Jobs says, "The dots will join themselves up. You just have to stay hungry and foolish."

Major Change: Mathematics to Biology
Sowmya Indrakumar

Science has always amazed me by its curious and interesting logic. Like my other 82 batch mates in IISc, I too decided to pursue science. It gives immense pleasure and option to explore what you wish. In the first semester, I was in a dilemma whether to opt for Biology or Mathematics as my major subject. Both the subjects fascinated me in their own ways. Eventually, as the course progressed I started building my interest in Mathematics which then did not include a lot of abstract component. Simultaneously, day by day I kept losing my interest in Biology due to the course organisation in the initial semesters. As evident, I landed up choosing Mathematics as my major; keeping biology aside and planned to do PhD in Biology. It was then, I realised that Mathematics is not my piece of cake. It was hard for me to cope with the pure abstract Mathematics and I completely lost confidence in the subject. However, my interest in Biology was rekindled in the lectures of Professor MRN Murthy who redefined Biology in a unique way. And also, I had a talk with many professors regarding this and finally, I decided to switch to Biology. Now, I feel relaxed and amazing about the subject and my choice. ▶

Material's magnet attracts students.

A chance to change major should also be given, maybe at the end of fourth semester.

I didn't change my major because I was scoring well in it. Rather the only thing I knew was that it excited me.

"And that is how change happens. One gesture. One person. One moment at a time."

–Libba Bray, The Sweet Far Thing

Know it from us

WHAT COORDINATORS HAVE TO SAY?

Each major subject has a Professor as the subject coordinator. The QUARKS team interviewed some of them and puts down their comments and opinions regarding various aspects of the UG course in this

Approximate number of seats available in:
Biology: 30–35
Mathematics: 25–30
Chemistry: 20–25

Nature proceeds little by little from things lifeless to animal life in such a way that it's impossible to determine the line of demarcation.

–Aristotle

Prof. Umesh Varshney, our Biology coordinator, interacts with Aditi and Siddharth from the Quarks team about the Major aspect in UG course.

Major: Biology

Prof. Umesh Varshney

Interview team: Aditi Mishra, Siddharth Kankaria
Drafter: Aditi Mishra

1. What are the advantages UG students have at IISc?

IISc provides a very charged and happening environment for all students; for UG students, an added advantage is that they are taught by highly experienced faculty. Availability of experienced teachers matters a lot for the younger students. The UG curriculum at IISc, with interdisciplinary training, is one of the best available anywhere. IISc also offers an unrestricted access to the major facilities. The UG students can walk into the research labs and interact with senior students. And many of you do, in fact, interact with them while doing your projects.

2. Do you expect more of the students without prior knowledge of biology at their +2 to choose biology as their major in the coming years?

That is precisely our effort. And towards this effort, we have now reorganized the three introductory courses to help even the non biology students enjoy biology. Although, I should also say that for biology major, at present, we would not exceed the numbers of 30–35 students in a given year. Biology is an experiment intensive science, and we want to ensure that all our students receive good practical training along with the theoretical knowledge.

3. Compared to physics, less number of students opted for biology as major. What do you think is the reason for this mind-set?

I think at +2 level, biology is taught in a very abstract manner without adequate explanations. Biological systems, by nature, are very complex and if the issues are not addressed systematically, the subject becomes uninteresting. What is important is to explore this complexity in a manner that allows one to ask systematic questions. One finds a subject interesting if one understands it. If you don't understand something, you just don't find it interesting. So, if we approach biology from the familiar grounds of chemistry, physics, maths, etc., the subjects the students are more comfortable with, biology becomes interesting to them. To ask quantitative questions in biology, a sound knowledge of the other subjects is essential. Therefore, we are trying to ensure that biology is integrated with chemistry, mathematics, and physics and so on. In fact, biology is one subject where you will never run out of asking good questions, some thing that keeps the researchers engaged in the subject. Biology offers tremendous opportunities. You can do biology at the level of molecules, at the level of cell, at the level of tissues, at the level of organs, whole organisms and the ecosystem.

Even though there are, at present, 22 students (of the 83 in the first batch) who have taken biology as major, there are a many more who have taken biology as their minor. The reason students find physics more interesting is because, at least at the level you are, you get definitive answers for the questions you ask.

4. There have been changes in the three introductory courses in biology. Are there going to be any changes in the practical courses you plan to offer?

We had initially planned for a number of practical training courses that were to be offered by the individual departments in the biological sciences division. It, however, turns out that to allow enough room for the students to take sufficient number elective courses in theoretical aspects of biology, we will now offer three practical courses to you before you take up your major project. So, the first course will be offered in microbiology and ecology, the second in biochemistry and molecular reproduction, development and genetics, and the third one in molecular biophysics and neuroscience. These courses will now be offered in the 4th, 5th, and 6th semesters respectively. The three courses will cover a wide variety of experimental approaches to research biology. In addition, besides the major project in the 8th semester, we may even have an option for an independent short project. However, this will not be at the cost of the theory courses.

5. What was the procedure used in selection of students for offering a major?

This time, there were no selection procedures required to accept students in any of the majors. We were able to accommodate all students as per their choices. In future, if demand for a particular subject becomes more than the capacity of that subject, selections will be on the basis of overall grade point averages, as well as on the grades secured in the courses of the subject in which a major is being sought. The cut-offs will become relevant only when the demand is more than the supply. There will, however, be more flexibility in offering a subject as minor. ▶

BIOLOGY

Biology is one subject where you will never run out of asking good questions.

Availability of experienced teachers matters a lot for the younger students.

I think at +2 level, biology is taught in a very abstract manner without adequate explanations.

In IISc, most people share the broad vision that there is no distinct boundary between science and engineering and in between the various branches of science itself.

MATHEMATICS

A man must love the thing very much if he not only practices it without any hope of fame or money, but even practices it without any hope of doing it well.

–G.K. Chesterton

Mathematics coordinator Prof. Gadadhar Misra discusses the advantages of UG courses, the major selection procedure and also the impact of feedback given by the students on the upcoming courses. Aditi Mishra from the QUARKS team writes it down for our readers.

Major: Mathematics

Professor Gadadhar Misra

Interview team: Aditi Mishra, Sriram C.
Drafter: Aditi Mishra

1. What advantages do UG students have at IISc?

15 years ago, the only institute with a good UG programme apart from engineering and medical was ISI which had an undergraduate programme in mathematics. Six years ago, the IISERs were set up all over India to provide good quality education in science. When these institutes were set up, part of the agenda was to model them after IISc. In IISc, most people share the broad vision that there is no distinct boundary between science and engineering and in between the various branches of science itself. The UG program in IISc is unique as it aims to integrate science and engineering, giving equal priority to both. Furthermore, students are taught by highly experienced faculty whose specialisations cover a wide berth of science and they can choose their major from six different subjects.

2. What selection procedures will be employed for the students of the next batch?

It is a new program and we are also learning with you. We do not have a strict preconceived notion. However, whatever we do must be fair to everybody involved. While the interest of the student is considered with the highest regard, because of constraints in lab space and assignment of faculty advisors, the grades in the first three semesters will also be taken into account. In case of conflicting situations, a proper counselling procedure involving the faculty advisors, students and the teachers will be followed to reach a consensus.

3. What is the maximum number of students?

25–30 students can be accommodated without any problem.

4. From the feedback received from the students, will there be any changes in the structure of the course?

As for now, there will be no drastic changes in the course pattern as a lot of preparation has gone into finalising the structure. In mathematics, you cannot get on board midway. Things are more or less rigidly defined. Unless you have a certain amount of preparation, there is no possibility that you can pick and choose. Thus, there is very little room for any changes. Any changes that might be considered will definitely be decided before the next batch of students choose their majors.

5. Apart from changing the structure of the course, do you think more choices can be provided in the fourth semester?

That is a good idea. Depending on the availability of faculty, we will try to offer more courses next year.

"We live in a material world" says Apaar Shanker boastfully after interviewing Prof. T.A. Abinandanan and tries to get an emphatic YES from his accompanying interviewer, Tapan Goel. Both our QUARKS team writers describe the interview with its complete essence whether or not Apaar succeeds in extracting a complete agreement or Tapan balances the situation with just a nodding head.

Major: Material Science

Professor Abinandanan

Interview team: Apaar Shanker, Tapan Goel
Drafter: Apaar Shanker, Tapan Goel

Us: The first batch of students were allotted their majors this January. What was the procedure followed for the allotment of majors and will the procedure remain the same in the future?

Prof.: The bottom line is that if the number of students exceeds the number of students the branch can take, then the last people will have to be accommodated in some way and they will end up having to be satisfied with their second or third choice. The first year it worked out fine but I don't know how it's going to work out for the second batch. The official comment must come from the Dean.

Us: There are people who come in with a pre-set notion as to what they want to major in but in this scenario, the allotment of majors is dependent on the performance in the three semesters. So, any advice for people joining in the future?

Prof.: The deal is this—you all went through high school physics, chemistry, biology, and maths and so on, so you come with some notions as to what you like and your notions are restricted to those four subjects. But, in the UG programme there are two extra subjects and unfortunately the first batch had no exposure at all to materials and environmental sciences before they made a choice. ▶

You want a job and you want to get into some industry or the other, maybe in R&D—but still a job. Ph.D. is not something that you are looking for, then all these practical things will be of some help.

The first batch, by the very fact that they are the first batch are also, the guinea pigs—it's a cliché but also a fact.

The first year it worked out fine but I don't know how it's going to work out for the second batch.

MATERIAL SCIENCE

There are at least two things in the BS programme that are truly interdisciplinary by their very nature—Material and Environmental Science.

So, for the second batch, there is going to be a change. Instead of the engineering course on scientific computing that the first batch took, the second batch will have two courses—a two credit course on materials and another two credit course on environmental sciences. The idea is that, we want our students to be reasonably informed about materials and environmental science, both as general subjects and as eventual career options, so that they can make more informed choices at the end of third semester. The scientific computing course is being pushed to either fourth or fifth semester.

Us: Fewer students opted for materials as major compared to Physics and Biology. Any comments on that.

Prof.: Students come in with their prior notions about what it is that they like and well let's face it, physics is seen as an attractive subject. I don't really care one way or the other but we from the materials side are quite happy with the people who have opted for us and in the long run, I think some evening out will happen as people get to know what the other branches are all about. And let's also face it—Chemistry gets a bad rap at high school level—many students think it is a boring, *maggoo* subject and it is seen as unattractive which I don't think is true. So, if you have an aptitude for that sort of stuff, you should just feel happy about doing it.

There is also this thing about KVPY as well—it seems to select people who prefer physics—they do send people from other branches also but mostly from physics. But that's all beside the point—you have come here to do your BS and you've had 3 semesters to look around and figure things out, not just about the field but also what turns you on and people made their choice and we are quite happy with their choices.

Us: We are supposed to take three engineering elective courses—one each from pool A, B and C. What are your views regarding this course structure?

Prof.: In the long run we will dispense with the pools. Some better structure will have to be created. The first batch, by the very fact that they are the first batch are also, the guinea pigs—it's a cliché but also a fact. There are efforts to create more engineering electives. From the Materials side, we tried to rope in engineering faculty who are offering courses that are related to materials but not quite in materials—I'm talking about mechanics, devices, etc. We have spoken to them and some are creating courses specifically for the UG and we would like to take credit for that because Professor Jayram took the initiative to talk to, say, Professor Navakanta Bhat who will offer a course at UG level in IC and Devices and it will be open to all students irrespective of their majors. It will be one of the electives in seventh semester and we will take it as an engineering elective rather than as a materials elective. In addition, there are institute level initiatives in several other interdisciplinary fields like bioengineering and by its very nature, it's a PG course. The institute offers a set of courses and they are PG courses but even so they are fairly introductory in their fields. For example, biomechanics and biomaterials. We are trying to include them as engineering electives. In addition, at the institute level, they are trying to create electives in solid and fluid mechanics. And if electrical engineering plays ball then there may be additional courses from those areas as well. From the mechanical side there are some courses being created for you.

Us: Will the first batch get to take these courses?

Prof.: Yes, hopefully in sixth and seventh semesters and in materials, we would actually encourage people to take the solid mechanics courses.
And in addition, there are PG courses—again—nominally PG courses. Our design department takes students from many different backgrounds and one course in the M.Des. Programme is a combination of solid and fluid mechanics with a soft focus on design. So we are trying to get that course opened up for materials students as well. So, from the materials side we have made every effort to create a good set of electives for our UG students, either as engineering electives or as materials electives. Some of their electives may also become available to students majoring in other subjects but that may take some time. However, we are doing everything possible to make your curriculum as option-rich as possible.

Us: In your opinion, who is an ideal candidate for BS–Material Science at IISc?

Prof.: Well … interdisciplinary. There are at least two things in the BS programme that are truly interdisciplinary by their very nature—Material and Environmental science.
If you take physics for example, you look at problems ranging from Quantum mechanics to Cosmology. But, there is one part in physics, condensed matter physics, that is related to materials. Similarly, in chemistry, the focus is on creating new and interesting molecules and getting different guys to talk to each other. But, one part of it you can think in terms of materials and their properties. So, there is a materials angle there. Biology has a materials angle—in one small part of it—prosthetics, biocompatible implants and so on. So, being interdisciplinary is the key. So, if you're interested in looking at things with a broader impact, than materials would fit the bill, so would environment, or energy or climate change. Material Science has a lot of physics, a lot of chemistry, a lot of mechanics and on the application side, there is a lot of mechanical engineering from one side, devices, microfluidics, MEMS and microelectronics on another. So, you have a fairly nice confluence of things.

If working with materials interests you, it also gives you a lot of option later. And we do sell ourselves on the engineering content of our course—there is a practical side to what we have in the curriculum, there is some processing and there is some connection in between material processing, structure and properties, eventually taking you to the material's performance. So, we do make as big a deal as possible within this paradigm. That brings a certain practical focus to what we teach. There are enough lab courses that you'll go through. It is one thing to claim that our BS program is meant to train you for a career in research. That's nice if everybody opts for a career in research, but what if you decide after three years that you do not want a career in academic research? You want a job and you want to get into some industry or the other, maybe in R&D—but still a job. If Ph.D. is not something that you are looking for, then all these practical things will be of some help. ▶

MATERIAL SCIENCE

If you're interested in looking at things with a broader impact, than materials would fit the bill.

Chemistry is an important allied subject and has many applications in different fields, such as biology and materials science.

Chemistry coordinator Prof. S. Ramakrishnan elaborately discusses the course structure of Chemistry Major and the possibility of further changes in the course with Aditi and Mohsina from the Quarks team.

Major: Chemistry

Professor S. Ramakrishnan

Interview team: Aditi Mishra, Moh Sina
Drafter: Aditi Mishra, Moh Sina

Q: Why is the course designed such that we choose our discipline at the end of three semesters, almost half way through our degree, instead of getting allocated from the beginning itself?

A: This scheme was introduced so that students are exposed to what each discipline can offer; and depending on their aptitude, they can decide what is best for them. Right out of their 10 +2 years of school study, most of the students would choose their discipline either through peer advice or by looking at the job opportunities available to them after completing their course. This kind of decision is not the most optimum, especially because the perceptions of a subject evolve as one goes deeper into it, and at an advanced level, it could turn out to be quite different from what you thought it would be when you took the decision immediately after school.

Q: Is there a limit to the number of students who can take Chemistry as a major? If yes, why?

A: Yes. There is a notional limit to the number of students who can take Chemistry (or any other subject) as a major. The decision to have a limit is based on both the institutional and the departmental perspectives. From the department point of view, the limit had to be placed mainly due to the fact that each student, towards the end of their BS course, should do an independent project under the supervision of a faculty member; the other important limitation would be ability to handle a large class in the advanced laboratory courses. The institute also would like to see a healthy distribution of students in all the six disciplines offered instead of a large number of students populating a particular stream.

In chemistry, we will be able to accommodate 20–25 students; a few more could be considered, if a demand should arise.

Q: Why do you think there are more number of minors in chemistry than majors?

A: Chemistry is an important allied subject and has many applications in different fields, such as biology and materials science. For example, molecular aspects of biology which is a strong area of research in IISc requires a strong foundation in chemistry. Moreover, unlike in some other subjects, in chemistry, it is harder to develop a strong one-to-one correspondence between theory and practicals. In chemistry, there are several simple experimental techniques that need to be learnt in the laboratory which would not be typically be covered in the theory classes in the same semester; this I believe brings a level of disconnect between the theory and lab that the students may find unexciting. Some efforts to remedy this are being contemplated.

Q: Would any changes be made in the course for the coming batches?

A: Changes to the major courses would, most probably, not be done too frequently. The contents of the core courses, once the students take their majors, are designed to cover as much of the essential core material that permits students to have adequate background so as to learn more on their own with little difficulty; further, it was also felt that students should be able to comfortably face the national-level competitive exams, such as the CSIR-NET exam, when they are nearing the completion of their degree. As for the first three semesters, there would be periodic evaluations of the student responses and the faculty opinions; changes will be made depending on their feedback. Needless to add that feedback from the students after they have completed their entire BS course would be more meaningful than just after one or two years, especially, when it comes to making major changes to the course curriculum.

Q: As a chemist why do you think there are more number of students pushing for physics? What made you choose chemistry?

A: When introduced to science in school, most students connect more easily to physics than chemistry because physics teaches you concepts that you can see and feel. Hence, the balance is tilted towards physics in an early stage itself. Moreover, physics is given a lot of importance in our country in most preparatory tutorials. Students also often take a fancy to a particular subject without knowing what it actually offers at an advance level—this is generally true with any subject that students choose just after school. Chemistry appealed to me during my Bachelors degree primarily because of its greater job opportunities. Living in Bombay, the industrial hub of the country, chemistry offered more lucrative prospects than other subjects. It was only later, when I decided to do a Ph.D. and take up chemistry as a career, that the beauty and centrality of the subject revealed itself. ▶

CHEMISTRY

Living in Bombay, the industrial hub of the country, chemistry offered more lucrative prospects than other subjects.

PHYSICS

We could design the content to be fresh and modern compared to many old places which have old syllabi which haven't been revised.

We must statistically evaluate it over a largish number of students, and then settle for the best.

Prof. H. R. Krishnamurthy, while expressing his delight on physics bagging the title of most sought after major, discusses most debated issue of lab reports and emphasizes the way courses should be changed on the basis of feedback. Amogh Kinikar from the Quarks team puts it down for our readers.

Major: Physics

Professor H.R. Krishnamurthy

Interview team: Amogh Kinikar.

Drafter: Amogh Kinikar.

Amogh Kinikar: Are you satisfied with the number of people who chose Physics as their major?

Prof. H. R. Krishnamurthy: We could have accommodated more, but in a way it is good that they distributed themselves over the different disciplines. In the beginning when we polled you guys, we were a little worried because some fifty odd people wanted to do physics, so, in a way it was a good thing that many of them saw that there were research opportunities in other disciplines. In your high school, you are not exposed to other subjects, while physics is generally taught well. But we still got the largest number and we are happy about that.

AK: What would have happened if the number of students who opted for Physics was a little more than what could be accommodated?

HRK: Then we would have had to choose based on CGPA, etc.

AK: No chance of squeezing one or two in?

HRK: It would have been difficult because of constraints regarding the laboratory component of the courses. Although we have multiple copies of experiments, the numbers are not unlimited.

AK: Can we expect any major changes in the course for the next batch?

HRK: We have been discussing that. There are pros and cons. We will certainly fine tune it based on feedback—instructor feedback and student feedback—we will certainly fine tune it. But, we are hesitating to make major changes without going through a process of several batches experiencing the courses and getting feedback from all of them. A lot of thought went into framing it in the beginning. It is not a good idea to make drastic changes without having tried it out and finding out what works and what doesn't. One must understand that each student is a different human being; all of you react differently to any existing setup. So, we must statistically evaluate it over a largish number of students, and then settle for the best. There can be no perfect system—even if it satisfies the majority of the people some students might have complaints and all people will not like it to exactly the same degree.

AK: What were the features which distinguish this course from other taught in the universities?

HRK: Many of the courses are taught like 2:1, with the lab experiments sort of synchronized with what is being taught in the lecture course. I have not seen that in too many places.

AK: In India as well as abroad?

HRK: Yes, even abroad. That is one thing. The other thing is the lab quality, even abroad, very few places have the lab quality which we have managed to set up. In fact we got some feedback from the people who have supplied us with equipment, such as Pasco, Phywe and Leybold, which are global companies who supply all over Northern America and Europe. They were really happy with the way we are using their equipment, and have told us that we are making better use of their setups than most other places they know of. Another thing is the breadth of the training you are getting; the combination of all four subjects—people getting trained in physics, chemistry, maths and biology basics, and then specialization, together with some engineering. It is available to some extent in the IITs, but for example IIT Kanpur had no Biology for a long time so people wouldn't get trained in Biology, in the engineering physics programme at IIT Bombay, again I don't have the impression that people get trained in Biology. And also, because we have started from scratch a brand new course, we could design the content to be fresh and modern compared to many old places which have old syllabi which haven't been revised in a while.

AK: One of the major complains of the physics majors was the lab reports. It was said that it took a bit too much of their time. Are there any changes to resolve this issue?

HRK: We are a little concerned about that, we will try to fine tune the thing. What we will do is to put a limit on how much you can write in your lab report. Because part of the problem was generated by you guys (smiles)—we were not expecting such elaborate reports, but all of you started competing with each other to generate more and more elaborate reports. (laughs) Even if the people who mark it gave some weightage to a big lab report, because somebody spent a lot of effort on it, it is a small percentage of the whole thing. So, all of you needn't have bootstrapped yourself competing with each other in order to write the best lab report! If you enjoyed doing that, that should be okay, but you needn't compete and then complain! We are going to control that by limiting the number of pages. But it is, you know, a dual thing, our experimental colleagues were anxious to give you an experience in doing that, doing a little bit of investigation on your own, and writing lab reports. It does give you more work but teaches you things. We could have made it all something like filling in the blanks during the lab, then it wouldn't have given you that training but it would have saved time. ▶

ENVIRONMANTAL SCIENCE

If you have an inclination towards a strong interdisciplinary program, then you will enjoy the Major immensely.

ENVIRONMANTAL SCIENCE

It is truly an interdisciplinary subject drawing knowledge from a variety of departments.

Prof. Sudhakar Rao, the coordinator for Environment Science while expressing his disappointment at the less number of major students, explains the need and unveils the beauty of the interdisciplinary subject.

Major: Environmental Science

Professor Sudhakar Rao

Interview team: Aditi Mishra
Drafter: Aditi Mishra

What do you think are the advantages that UG students have in IISc?

In IISc, you are being taught by faculty who are able to provide you with cutting-edge knowledge as they are immersed in the field. This, I believe is a definite advantage to undergraduates here. Sometimes, faculty may delve deep into a subject as they believe that you can grasp some parts of it, if not the whole. The feedback of students is extremely helpful in shaping a course.

According to the feedback received, are there any major changes in the course in the first three semesters?

Yes. We have now included a 2:0 course in the third semester, titled "Introduction to Earth and its Environment", effective from August 2013. It will cover topics like evolution of earth, ground water and sustainable environment from a science and engineering perspective so that students are adequately exposed to the subject before choosing their majors. Even though the course does not have a lab component, there might be a field trip. Environmental science is not taught by a specific department. It is taught by faculty from Chemical engineering, Civil engineering, Materials engineering, CEaS, CAOS, CST and Organic chemistry. A good knowledge of Biology, Chemistry, Physics and Mathematics is essential. It is truly an interdisciplinary subject drawing knowledge from a variety of departments.

Is there any selection procedure specific to Environmental Science?

There is no specific selection procedure for choosing Environmental Science major. We can accommodate 20–25 students and a reasonable number of minors.

How many lab components are there in the subject?

Labs are the backbone of any Undergraduate course. Both majors and minors will be required to attend labs. There are three labs currently—Geology, Geochemistry and Environmental Science.

Are you satisfied with the number of majors? What is the number you expect from the second batch?

We were disappointed that few students opted for the subject as a major. Environmental science talks about understanding and protecting the earth, water and air. We need strong environmental undergraduates to address the rising issues in the environment—from atmosphere to earth and help tackle them in a scientific way. We do expect more students from the coming batches. You talk of landslides, floods, hurricanes and so on. In one of the courses we teach the 'Hows' and 'Whys' of these events. If you have an inclination towards a strong interdisciplinary program, then you will enjoy the Major immensely.

At the school level students are taught environmental science on an awareness basis. Can the system be modified in anyway?

Very few institutes offer environmental science as a major subject. I would encourage the undergraduates to create a web page to interact with interested prospective students.

If possible, would you agree to introduce environmental science courses in the first two semesters as well?

Definitely. We would love to offer courses in the first two semesters provided the constraints of time and credits are sorted out. It would be a wonderful opportunity for us. ▶

ENVIRONMANTAL SCIENCE

Environmental science talks about understanding and protecting the earth, water and air.

ENVIRONMANTAL SCIENCE

We do expect more students from the coming batches.

Know it from us

A GLIMPSE OF THE FUTURE

In a nutshell, UG course at IISc is spreading its wings and taking a flight high up in the sky. This particular event of major selection by the first batch is undoubtedly a significant step towards the success of this course and in achieving the basic aim of the course 'training young minds in Science'.

Our junior batch and the second batch of IISc shall witness the same event with equal fervor and enthusiasm in the coming year 2014. Time only shall reveal if our juniors will inherit the wind in terms of the most sought after major or shall define it otherwise.
However, we can give our readers an update about their current thought process regarding the matter.

Will the 2012 batch kill the mockingbird of most sought after major, or will it inherit the wind?

Ankush Sood
UG I Year

Choices of all students and their performance in three semesters have to be considered before allotting Majors. As such, this decision could not have been made before November. Also 1st batch had an enrolment of 83 (much less than 120) which probably made things easier for them. I do not find anything wrong with Dean's mail except that he could have waited a little longer for exams to finish. Also UG office's actions were in agreement to the guidelines issued before the commencement of the course. They have to work considering the worst possibilities, for example, 60 students choosing physics etc.

Since, it was the first batch there were no trends available to help students estimate. Asking students for their preferences at the start of every semester might have helped to estimate but the purpose of first three semesters itself is to introduce them to all fields and thus, preferences are supposed to vary semester to semester.

Siddharth Kankaria
UG I Year

I'm personally interested in taking up a Biology Major in my 4th Semester. The number of people who opted for Bio majors was almost 25%, and the people who opted for Bio minors was also a very encouraging number. The fact that everybody got their choice of majors for the 2011 batch, does not necessarily imply that the same would happen for the 2012 batch. However, if the number of students wanting a Bio major exceeds the administrative limit to accommodate the same, there would be a requirement to enact some selection procedure to choose the most deserving candidates. Now, in my opinion, though there are no second thoughts about the need for such a selection criteria, the basis of such criteria must be made fair, efficient and transparent to all the applicants. It must not be chosen just on the basis of the applicant's GPA, but also on their interest and inclination towards the subject, as suitably judged by the professors and instructors. Also, we should be given more time and resources to opt for extra optional courses, both theoretical and laboratory ones, as per our need and interests. The course structure can be made more fluid and amenable to the student's interests. That said, I think everybody would end up just fine in their respective choice of courses!

Suhas M.
UG I Year

The undergraduates of IISc are undoubtedly the crème de la crème of Indian youth who have given up offers from other prestigious institutions like the IITs to pursue their passion for science. It would be shame, not to mention disservice to the nation, if they are forced to take up subjects which they do not prefer. If lack of resources to accommodate more students for the particular major is the issue, then something must be done by the administration to fix the same.

Tapan Goel
UG I Year

"While it would be great to get a major of my choice, I am not too worried about the allotment. somebody once told me that Undergrad is not about what you learn, it's about how to learn and this exercise can be done with any subject—so it really doesn't matter too much if I don't get the major of my preference and besides I can always take my favorite courses as minors."

Milind Hegde
UG I Year

First of all, the major/minor issue will not be having a huge effect on me personally, since I'm planning to major in mathematics (which has neither the capacity problems nor the huge potential number of students). But I can see why this is important to my classmates. Nevertheless, I don't think it will be a huge problem or harm any of us in the long run. I like to point out the example of Dr. Eric Lander: he started out as a student of mathematics, writing his Ph.D. thesis on the topic of algebraic coding theory, from Oxford, no less, but ended up as a professor of biology at MIT and one of the authors of the paper announcing the completion of the Human Genome Project. If those topics seem related, I don't know what doesn't.

From this example, (and many others: for an example of another example, Tom Apostol, who wrote one of the textbooks on analysis used in the first two semesters, originally got his Bachelor's degree in chemical engineering.) I think it's clear there's huge potential for us to end up far from where we expect, so it might not be a bad idea to keep the major/minor decision in that context. The world clearly doesn't care as much about what we study as we do. ■

It must not be chosen just on the basis of the applicant's GPA, but also on their interest and inclination towards the subject, as suitably judged by the professors and instructors.

Undergrad is not about what you learn, it's about how to learn and this exercise can be done with any subject.

Is it possible to take more than one minor?

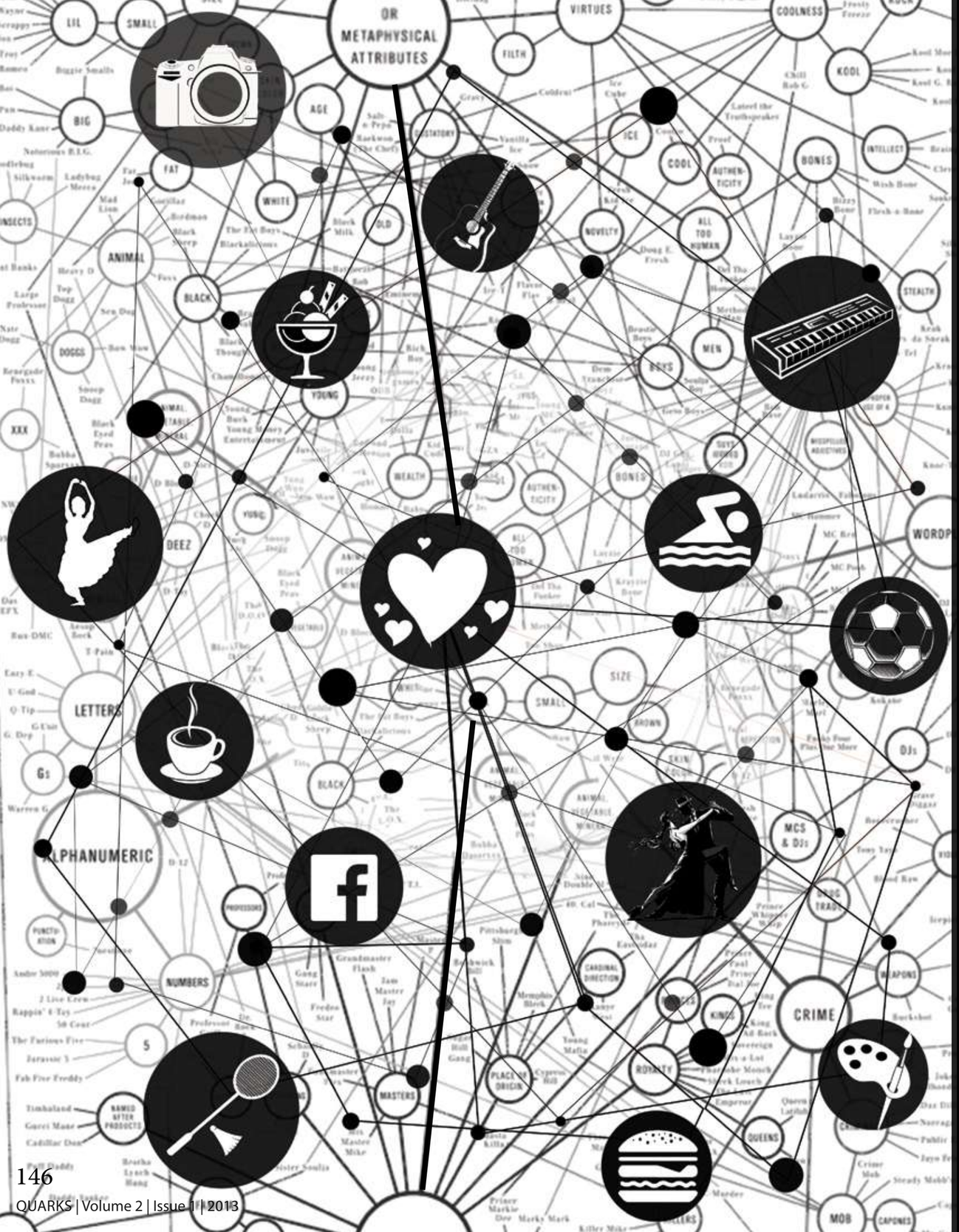
– Yes

Is it compulsory to take engineering courses from each pool?

– No

If I do not declare a minor subject, but, I happen to gain 15 credits in a particular subject. Can I declare it as my minor?

– Yes



a palette of experiences

As I wake up, a sharp pain twinges in the mid-lumbar region of my back. Opening my eyes to the gold-shot sunbeams bravely pushing through into the undulating darkness hanging above my bed, I feel a distinctly dark shade of blue. You see, after playing badminton a few days ago, my back had resolved to take a break; apparently it decided that if its foolhardy owner wanted to do some vigorous bending and twisting, he could bloody well do it without its own poor overworked self. I had been to the Health Centre, where the doctor commented on how I looked much older than I was, about the age of a Ph.D. student, which cheered me up, until she cheerfully explained that this was due to the excess weight I sported. As I'd gloomily put on my shoes and taken her prescription, she meditatively told me that badminton was probably a good idea. After this little episode of laconic humiliation, I'd been to see the physiotherapist too.

"You should not be having back pain at your age, man. You're like an old man—you have to get rid of all this." he'd said, motioning to my sagging belly. After I somehow hoisted myself off the bed, wincing at the pain in my back, not to mention my deflated ego, he'd told me to see him the next day, and the day after.

Remembering all this, I feel as though I simply can't get up—my back hurts too much, I slept too late last night, the first lecture, being a tutorial session, was not really that important … then, as it strikes me that today, in fact, is not a weekday, but a holiday twinkling with the promises of untold possibilities, the sleep fogging my brain seems to magically evaporate, my pain diminishes, and I spring out of bed, as though I have been rendered temporarily weightless. I beam at my sleep-tousled self in the mirror, and turn to look out of the window. The sun-dappled leaves waving merrily at me sing of a day of sunlit warmth, and perhaps a few cool breezes; the erstwhile dark blue of the past few days is by now but a distant cloud in the horizon—I now feel a vigorous shade of sun-yellow, energy flowing through my entire being.

As I check the time, absent-mindedly thinking of breakfasting in the mess today, I receive a rude shock as my watch blinks ten a.m., reprimanding me for this unforgivable tardiness. This is in fact rather late for me, and I realise that the mess is probably closed by now. Oh well, c'est la vie, and though I consciously attempt to keep my sunny mood from flagging, it is now touched with a pale blue feeling of loss at the thought of spending such a beautiful day sleeping in late. I go find Varun, who it turns out has also missed breakfast, and together we go off to Prakruthi, a restaurant/cafe close to the main gate of our campus, and a pleasant five minutes away from our hostel.

Once at Prakruthi, we order a pair of masala dosas, one vegetable sandwich, and a pair of 'veg puffs' between the two of us. Being very hungry, I quickly demolish my half, and now a content hue of well-fed purple, I wait for Varun to finish. I cannot help but notice that our Chemistry professor is sitting but a few tables away, along with what appear to be quite a few of his doctoral students.

A swish of leaves and branches causes me to turn, there seem to be a couple of monkeys sitting just beyond the fence. Fellow breakfasters look around, some amused, a couple alarmed, but the majority used to this spectacle. Suddenly I see that our Professor is leaving, along with his students—they seem to be laughing, looking warily at the monkeys, but also darting quizzical glances in our direction. Suddenly, a sallow hued feeling of suspicion grabs me. As I turn to Varun, to alert him to my suspicions, there is a streak of brown in the corner of my eye. A monkey jumps onto our table, picks up Varun's puff, and leaps up onto the fence, and from there to the asbestos ceiling on the other side. There he crouches, glowering at us, veg puff in hand, as though offended by the effrontery of two undergraduate students who seem to have not wanted to share their food with him.

Peals of raucous laughter resound, Varun and I in the heart of it; this being the first time either of us has been victimised by a monkey, we don't mind too much. Indeed, as we walk back to our hostel, the backdrop of my thoughts is a humourous sparkly sort of orange. I feel ▶

satiated with the food I've had, and the beautiful day that this is turning out to be.

It is almost one o'clock when we return to the hostel. There is a lecture at CCS on 'Science, History, and the History of Science'. Despite the rather unpromising title, I decide to go and see it—perhaps learn something new about something that I would not have considered learning at all. This is a fine intention, but the lecture turns out to be rather dull—a lecturer who is unprepared and an audience who seems to be desperate to ask irrelevant and deliberately obtuse questions. By now I feel a rather dull, boring grey—the lecture seems to have put me in a stupor—I spend the time drawing fractals in my notebook. All this changes as I get a call, just as the lecture is about to conclude.

A friend of mine, Naren had recently discovered that Tango classes are being scheduled in the IISc Gymkhana. He has cultivated an avid interest in Spanish culture—he learnt the language off the internet during the time between the conclusion of our entrance exams and the commencement of our term here. He decided that he wanted to learn how to Tango too. I decided to come along, for the same reason that I went for the lecture in CCS—to try something that I wouldn't know anything about otherwise. And of course, it didn't hurt that statistically there would be a lot more girls there than one is usually likely to meet here at IISc.

So, I leave the lecture hall, go off to my room to collect a pair of socks, and finally off to the Gymkhana. When I reach, I find Naren sheepishly standing at the entrance to the building. He hurriedly thrusts me into the dance room ahead of him—the prospect of entering a room filled with two girls alone was evidently too daunting for him. The two girls in question are dressed in traditional attire—probably for Bharatnatyam.

"Is this the place where the Tango classes are scheduled?"

The two girls look at each other quizzically and intone in a harmony of confusion, "Tango classes?"

Naren and I apologise and leave the room, and hang around in a state of high emotion, blaming one another for this situation. He points out the sign for the Dance classes on the door of the Dance room—the day and time are both correct. Then a very pretty girl, walks into the Dance room. Suddenly it seems worth another try to find about the Dance classes. We walk in again, to ask. This time we show them the sign on the door of their own practice room.

"Oh, that's from last year!" they giggle, and rip the sign off the door.

As we walk back to our hostel, dejectedly blue and embarrassingly pink, wallowing in self-pity, I am further piqued by the fact that Naren seems determined to share this little incident with each and every one of our acquaintances who happen to pass by.

Back in my room, I lie down on my bed for a while, wearily flipping through R. Shankar's Introduction to Quantum Mechanics. Line after line of equations, promising comprehension of the very fabric of reality … my weariness starts to lessen, as I pick up where I left off before. Concentrating on the task at hand, all my distractions fade away, what tripped me up before becomes easy to see. My thoughts uplift, becoming a pure, vivid hue of clarity. At the end of the day, all that I need for self-affirmation is my work—everything else fades in the larger scheme of things.

As I look back over the past few days, it seems as though time itself has painted a mural of unimaginable complexity, arising from the simple palette of emotions and experiences that define us all. As I think about this, about the difficulty of understanding things that one takes for granted, such as one's own motives and actions, I despair of ever succeeding to understand the purpose of my existence, of the reason things are the way they are. In effect, I doubt the purpose of even trying to think about this … perhaps we're all crazy, just bumbling along, following any old whim that enters our heads. But the shared laughs and sorrows, the peace of solitude and solace of companionship all go on to remind me of the pleasure of just living. Perhaps it is meant to be so; an infinite plane without any definitive or absolute landmarks—we all start at different points, take different paths and cover different distances, but the unending nature of the road means that it was never about where you got to that counted, only the sights you get to see along the way … this is perhaps the only true freedom we have—not have our path marked out for us, but to go wherever and however far and fast as we ourselves wish to. ■

Anamay Chaturvedi

Pluck it while there is time

BHAVNA KANDRA

CLUBS of the undergraduates

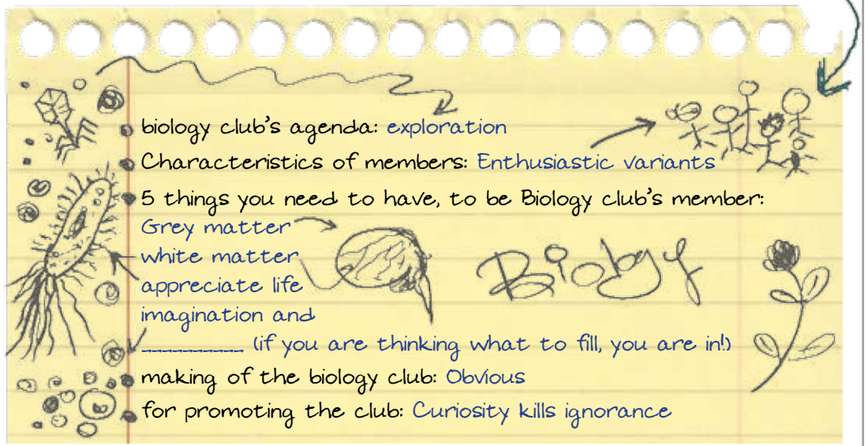
From the very outset, the Undergraduates of IISc have found their place in almost all aspects of IISc life—from Jhankaar to Rangmanch to the sports teams. What was conspicuous though was the absence of UG initiatives—all these were primarily postgrad clubs. But with the coming of the second Batch, the Undergraduates seem to have hit the critical mass required to form their own clubs and share ideas. Indeed, the previous two semesters witnessed a large number of UG initiated clubs and activities. UG Kannadigas conducted spoken Kannada classes in the odd semester. The astronomy club was launched with the blessings of Prof. Arnab Rai Choudhuri. A Film Making Club was also initiated. Clearly, the two hundred odd undergraduates of IISc are a versatile lot! Currently, the clubs are not well-publicized affairs and the meetings are conducted with ad hoc rules and timings. Of course, this is bound to change as the UG crowd builds up in the coming years. In this feature, QUARKS brings to you the four most active clubs of IISc UG.

Read and enjoy! –Suhas M

The Naturalists

Started: feb 2013
Coordinator: Siddharth Kankaria
Member count: 16
Find us at: UG building on saturdays

The Biology Club is a relatively young entrant to the growing chain of Clubs in IISc UG campus. The club was started in February, 2013 by Siddharth Kankaria and Subhajit Dasgupta who requested the UG Biology Laboratory instructors to spare some time to teach them about more things in Biology than could be covered in the theory classes. Dr. Srinath immediately showed interest in undertaking this journey and a small group of biology enthusiasts soon met him in the UG Biology laboratory. What was intended to be an extension of theoretical principles and concepts instead turned into a fun-filled gathering of bio-enthusiasts discussing hypothetical funky problems, and speculating innovative solutions to them. One of the sessions actually had them sitting and trying to decipher a page filled with hundreds of random alphabets. It was a small minute sample of a genome, comprising of DNA code, from which they had to distinguish and segregate the functional portions from the dormant ones, the start codons from the stop codons as well as other small factors that were discernible to the human eye, in this sea of ATGCs! Some amazing phenomena like apoptosis, novelties of the transcription and translation machinery, and even practical techniques like PCR and primer synthesis were discussed in the next few sessions. One of the rather interesting sessions had the members discussing ways of stopping the production of certain protein in a cell. So, about 12 people rattled their grey cells together and finally came up with some roughly 12 ways to achieve the same, but to their pleasant surprise, Dr. Srinath stepped forward with a grin on his face and revealed another 10 or so, rather novel and unthought-of-methods to do the same. Every bio-club meeting leaves the members with a sense of amazement that there is so much more to life and its intimate intricacies that our abilities and comprehension have only just begun to permeate the outer membranes of life.



Illustrations: Naveen Sendhilnathan

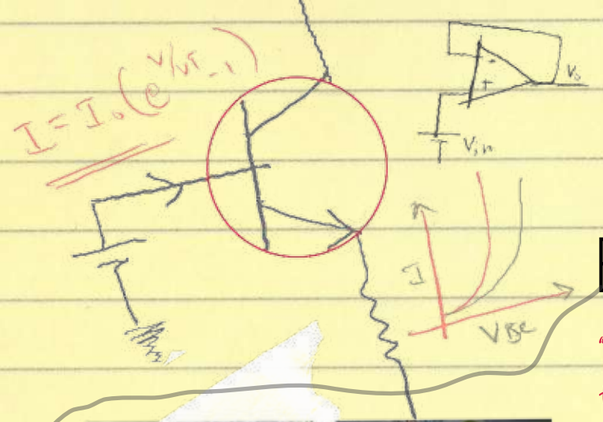
Experiment is at the heart of Biology. The club gave us insight into how one must approach a problem and about techniques to be used in different scenarios.

Sahana Rao (UG 1 year)

Biology club started all because of few students who had questions, questions and more questions. These questions were course related and unrelated, the latter was more often. At times I answered then and there or after searching for it. This was happening at an individual level and in due course of time when students came up with the idea of a Biology club, I agreed to be part of this forum which would benefit these curious minds.

At present, we are exploring concepts, tools and methods used in molecular biology. Usually it is done as a problem solving module and looking for more than one method for solution. I am planning to broaden the realm covered by having my colleagues joining in. If Ph. D. students of the institute wish to contribute in the UG-Biology Club for enhancing the scientific temperament of the UG students, they are welcome. As students of the first batch (2012) have 'differentiated', I expect them to contribute to some extent to the club. Once the new batch comes in August, there will be a lot more hustle and bustle in the Biology club.

–Srinath Thiruneelakantan
(UG Instructor)



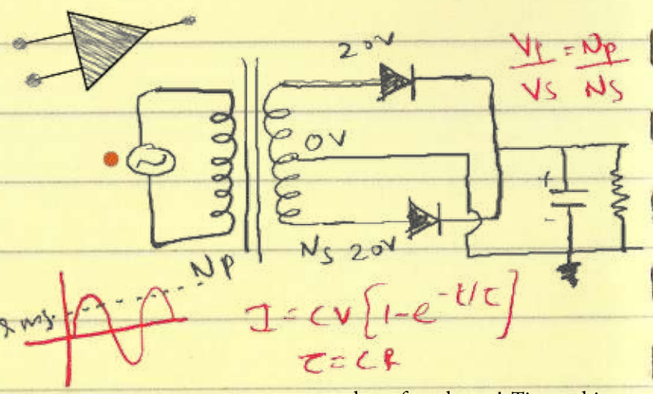
if you're an engineer at heart who loves tinkering, hacking and getting your hands dirty, then this is the place to be!

Engineering club

"The club gave me confidence that I too can dabble in Electronics and it's a beautiful subject! The way Suhas taught all of us was very innovative and he gave us a free hand to experiment."

–Sampada Kolhatkar, UG I year

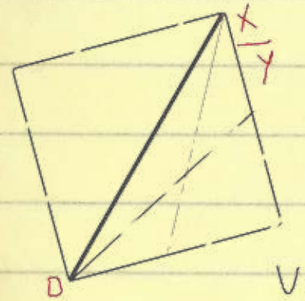
Before the students broke for their summer vacation, the Engineering club gave all its members a little packet with electronic components and one unique chip each. "The hope was that every member would find himself sufficiently inspired to fiddle with their chip and get it to work during the summer vacation. After all, there is no substitute for practical learning in electronics!" remarks Suhas.



Started: Jan 2013
Coordinator: Suhas M
Member count: 29
Find us at: Tutorial room, UG building
Agenda: to learn "the art of banishing demons that conspire to make circuits mysteriously malfunction."

The Engineering Club is a forum for all enthusiasts who love getting a little grease on their hands and making objects that come to life, whiz and bleep (and occasionally, go bang!) The idea behind the club is to get a feel for transforming ideas on paper into reality—an indispensable skill for a scientist. The proceedings of the club are conducted solely by members who share ideas and skills with others. The club, which was born in January 2013, took up "Practical Electronics" as the topic for the even semester. The proceedings were conducted by a member, Suhas, who is an electronics enthusiast and it promised to teach "the art of banishing demons that conspire to make circuits mysteriously malfunction". The sessions were completely hands-on with the intention of giving the participants a taste of practical electronics. With over 25 consistent attendees, it was easily the most active UG club in the semester. Though meetings were planned of 90 minutes duration, they would often prolong to as much as four hours! Time whizzes by when you are having fun! "The club gave me confidence that I too can dabble in Electronics and it's a beautiful subject! The way Suhas taught all of us was very innovative and he gave us a free hand to experiment," says a happy Sampada Kolhatkar. "It definitely made our regular electronics Lab more interesting and less scary," adds Sahana Rao. The club intends to explore other branches of engineering such as Android development, robotics, CAD and scientific engineering in the upcoming semesters. The administration has also offered support for any projects the club would like to take up. In short, if you are an engineer at heart who loves tinkering, hacking and getting your hands dirty—then Engineering Club is the place to be! For more info, drop a mail to: ugengg.iisc@gmail.com (Suhas M).

Illustrations: Naveen Sendhilnathan



aha !!!

Samasya is the Samadhan for all those who seek some mathematical fun.

Samasya

Started: Jan 2013
Coordinator: Sabareesh Ramachandran
Member count: 7
Find us at: UG Lecture Hall
Agenda: To take up challenging math problems, discuss and explore them, and obtain their 'aaha' solutions.

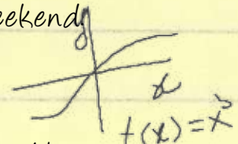
Samasya is the right solution for anyone yearning to take on challenging math problems. It is a forum of IISc students, where interesting math problems are posed, discussed, and solved. Srikant Pai, a Ph.D. student from ECE Department moderates the discussions. The questions are posted online about a week in advance; everyone attempts the problems and the solutions are discussed during the Samasya session the following weekend. The session is not just about solving problems, but learning several concepts and tricks in math. Members have explored several concepts of abstract algebra like group theory, tricks to solve problems involving matrices, Andre's reflection trick, etc. Problems from all fields of mathematics are posted and solved. The best among them are problems that appear so complicated that you spend days trying to solve the problem only to discover that the solution is merely one line long. Such brilliant and unexpected solutions have a name—they are the 'Aha' solutions! Often problems are worded such that they appear to be from some particular area of math, like number theory, but turn out to actually have come from a different area, usually algebra. Having seen many such problems, the members first approach solving problems by trying to see if some tricks of linear algebra will prove useful. The sessions go on for hours but one barely feels tired. The crazy solutions motivate them to solve more problems and look to apply similar tricks to variants of the problem. From the problems, the discussion often leads to lives of scientists, documentaries of various kinds, and even, on occasion, the pronunciations of mathematicians' names! Thus Samasya is the Samadhan for all those who seek some mathematical fun. ▶

4 things one needs to know to join Samasya, hear it from a member:

a) Math is FUN.
b) Solving problems is a great challenge.
c) Knowledge about lives of great mathematicians is equally interesting.
d) And the best part: the Aha solutions! If you are struggling with a seemingly simple problem in combinatorics for an entire week, remember that it is very likely it has an Aha solution in linear algebra.

Crack the Samasya!

1. Problems are posted online.
2. Members attempt it in a week.
3. Discussed on the weekend.



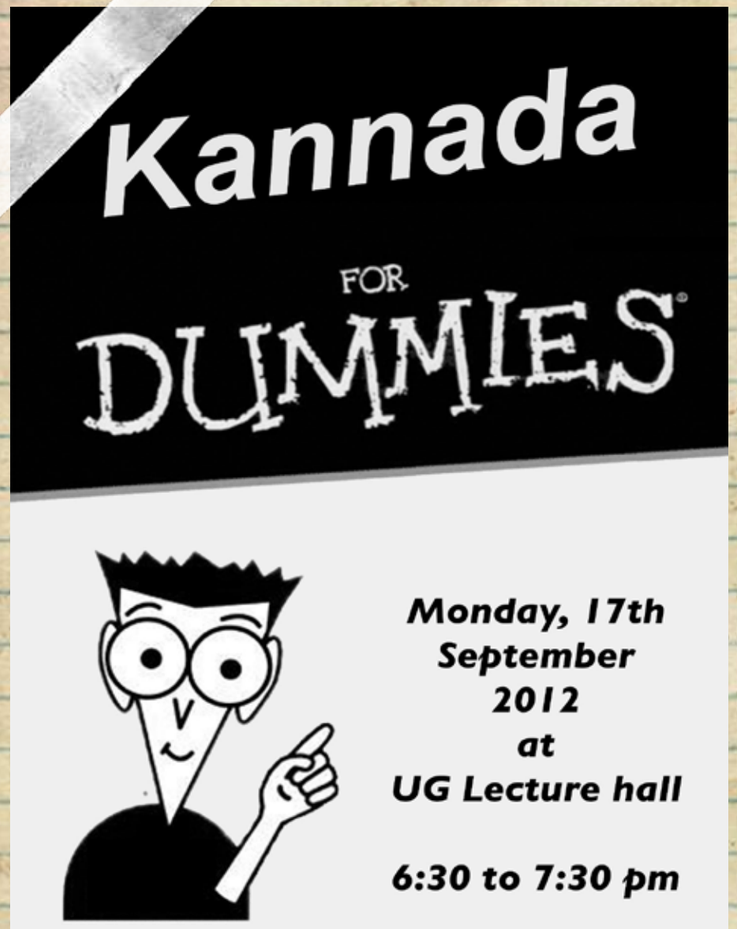
In a Samasya session:

1. Get 'Aha' solutions to problems.
2. Expertise in cool math tricks.
3. Grasp new concepts.
4. Discuss lives of scientists and much more...

"Some people seem to think Samasya is a bad name for a club. I think that it's very apt for our club, because we really consider math problems as seriously as one would a 'samasya', and that's what makes it interesting and fun."

–Milind Hedge, UG 1 year

Illustrations: Naveen Sendhilnathan



Kannada for Dummies

Find us at: Odd sems

Agenda: To teach Kannada to a highly diverse crowd.

Still struggling with auto drivers, shopkeepers, bus conductors, fruit vendors and many more because of language? Then, what are you waiting for?

Kannada for Dummies was a series of sessions on Spoken Kannada conducted in the odd semester. The IISc undergraduates are a highly diverse crowd with varied lingustic backgrounds. Within the first month, it was obvious to all that knowledge of the local language is invaluable in many aspects (mostly in avoiding getting fleeced by opportunistic auto drivers). No wonder, the Kannadaloquists were being constantly approached informally by their classmates who wished to learn Kannada. Seeing this, Suhas, who is a Bengalurean, decided to launch Kannada for Dummies. "I already had some experience teaching Spoken Sanskrit and this left me with a fair idea about how languages should be taught," adds Suhas. And what do the participants' opine?

"Suhas taught us in an extremely innovative way in which he would only speak in Kannada—and yet make us understand. I thank all the Kannadigas for encouraging me to learn this beautiful language and allowing me to eavesdrop on their regular conversations," says a grinning Sampada Kolhatkar.

The Kannada for Dummies sessions will be restarted in the upcoming odd semester.

For more information, drop a mail to suhas.msh@gmail.com. ■

Do you know all of them?

Illa – no
Swalpa adjust maadi – Please adjust a little
Tindi ayta – Had breakfast?
Gothilla – Don't know
Howdha – Is it so?
Namma – Our.
Parvagilla – It is okay.
Baa – Come.

Join and learn many more …

To stay stationary you have to accelerate

Pravega

The first National Science, Technical and Cultural Fest of IISc

With the arrival of Undergraduates, IISc is now getting ready to start a national level fest this year. Titled Pravega 2014, the fest promises to be an eclectic blend of science, technology and culture all packed into three pleasant winter days: 31st–2nd of January and February. The fest is the brainchild of the IISc undergraduates and is being actively supported by the IISc community. IISc being India's premier research institute, the fest's technical events will revolve around cutting edge science and engineering. We also plan to rope in some of the biggest names in academia and industry as judges and speakers.

Anamay Chaturvedi, Milind Hedge, Siddharth Kankaria and Suhas Mahesh from the Quarks team bring to you an exclusive behind-the-scenes account of the making of Pravega–2014!

The feature is divided into 5 parts:

The inception by Milind Hegde describes the beginning of the fest, the initial steps.
The naming ceremony by Suhas Mahesh brings out the twists and turns, ups and downs encountered by the Pravega team and all the UG students while naming the fest.
The Genesis of Events by Siddharth Kankaria unveils some details of the events planned for the fest.
The Logo design by Milind Hegde covers the process of logo design.
The Present and the Future. As the title suggests, Anamay Chaturvedi talks about the current proceedings of Pravega and also throws some light on the future.
His perspective contains the views of Pranav Mundada, Chief Coordinator who envisioned the fest and set the wheels in motion.

As you read through, you will also get to see what the core committee members, mentors and fellow IIScians have to say about Pravega.

Fasten your seat belts because we are taking you on a roller coaster ride in Pravega world!
Feel the chill,
Get charged up with enthusiasm,
Shout out loud the spirit,
Appreciate the hard work,
And wait eagerly for Jan 31st!

–Pratibha Mahale and Suhas Mahesh

The inception

The idea of a technical festival hosted by the undergraduates of the Indian Institute of Science was not a new one; it had been floating around the collective mind of the 1st batch of UGs from the very beginning, but it was immediately apparent that they would need more people. And so, they waited.

Though the idea was floating around in the collective mindscape of the community, like most big ideas it only began take tangible shape in the mind of a young college student—Pranav Mundada.

On July 2nd, 2012, the Student Council held a Chairmen of Departments meeting. One of the pieces of news reported was from the director: he had given the green light to the Student Council to go ahead with organizing a technical fest. On reading the minutes of the meeting nearly a month later, Pranav's interest was piqued. He talked to one of his classmates, Krishnan Iyer, who was a UG representative at the SC, and found out that Krishnan was only too glad to give him the reins—just in time for the new batch of students to join the institute, and, eventually along with it, the Pravega team as well.

We, of course, were among this new batch of students. While many students perhaps saw IISc's lack of the same magnitude of clubs and student traditions as what other undergraduate programmes boast about, we saw it as an enticing opportunity. It was an opportunity to potentially make a lasting mark somewhere, without prior customs holding us back. The idea of our very own tech fest was the biggest, brightest, and most attractive place to start—and in a big way.

First email that marked Pravega's beginning:

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Hi,

We (Undergraduates) are organizing a techfest in IISc next year. This event would be totally organized by undergraduates with support of Student Council. We want dedicated volunteers for making it a success. It would be a bit tough but we believe we can do it.

So who ever is interested in working with us, please fill out the attached form.

https://docs.google.com/spreadsheet/viewform?formkey=dE91eVJUd0g0Ry1Sbnp5YzFaWE5FWnc6MQ


--
Regards,
Pranav Mundada,
IISc.
07795626776
```

Nothing happened until September, at which point the first email confirming the very existence of the fest and the need for volunteers was sent by Pranav. Up till this point, Pravega was thought of by all involved as purely a tech fest, similar to what was common at other colleges like the IITs. It would be nearly a month—making it October—before the first meeting for the fest would be held, and it was only here that it finally became obvious that the Indian Institute of Science should hold a science festival, without the primary focus being on technology and culture.

Meeting sessions:

Brainstorming,
filtering,
short listing modification,
finalising

The primary objectives of the initial meetings were to create and decide on the events that would make up Pravega. These would be the core of the fest, of course, and would almost single-handedly decide what impression would be made on the visiting students about our fest—and IISc itself. The events had to be good.

Most people had an idea of the kind of events one would normally find at other college tech festivals. But ours was a science fest, and more importantly, no one wanted Pravega to include events that might be found in other colleges. We wanted interesting, fun, creative events, which would stick around in the memories of participants well beyond the conclusion of Pravega.

No one wanted Pravega to include events that might be found in other colleges

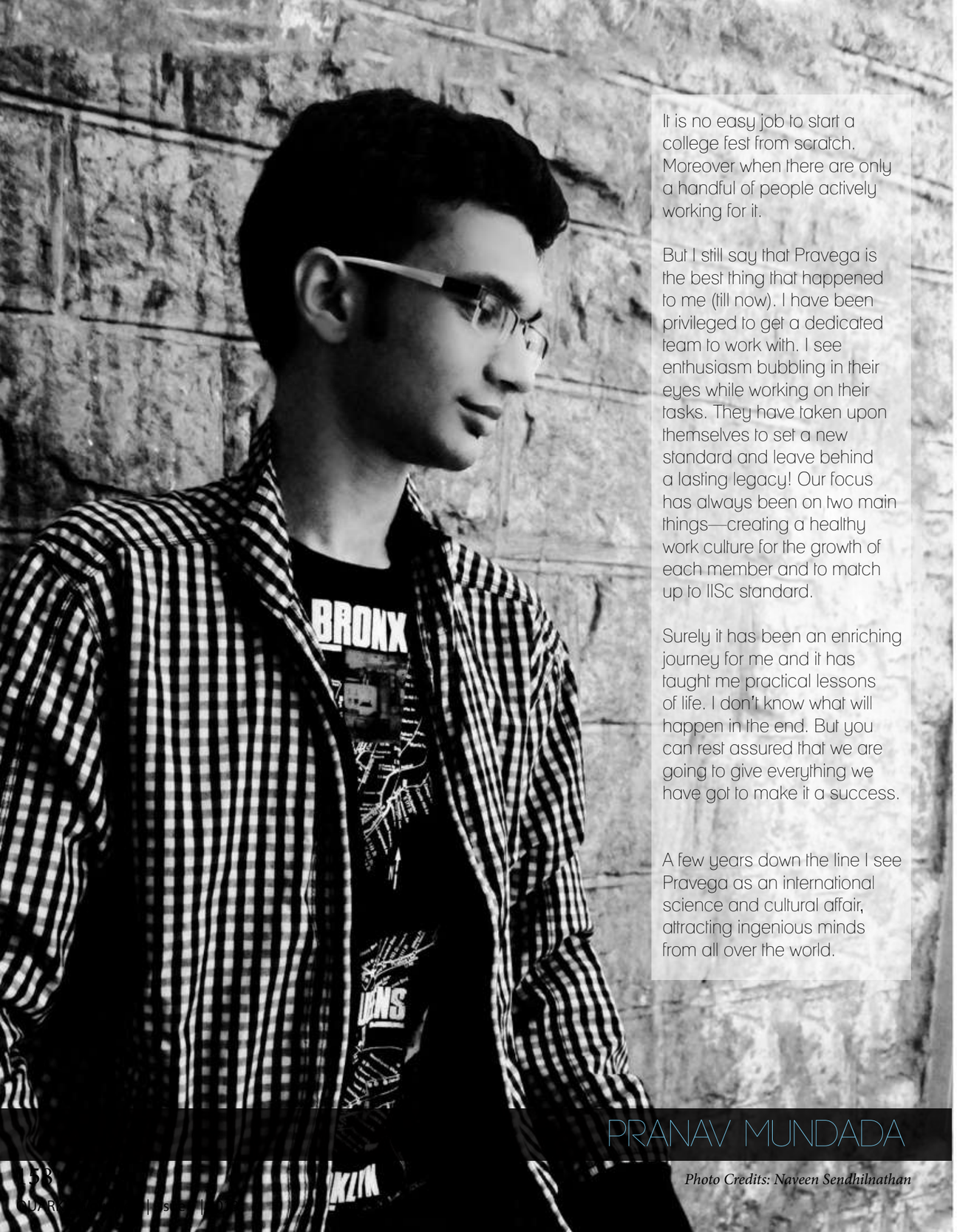
The desire for creative events led all the ideas that were proposed to be continuously and constantly modified and improved. Plenty of events were proposed in a meeting, only to be further considered and rejected by the time the next meeting came around, barely a week later. One example was an idea to have an engineering event involving an underwater line follower submarine—The traditional line follower competition common in other fests, but one that would be made to follow a rope underwater. This was of course scrapped as soon as the magnitude of precise engineering that would be required—making the robot not bob up above the water, having it propel itself in three dimensions underwater as opposed to move on 2-D ground, ensuring that the entire structure would be waterproof, etc.—was comprehended.

Plenty of events were proposed in a meeting, only to be further considered and rejected by the time the next meeting came around, barely a week later.

Other events underwent huge transformations, ending up in a form which was practically unrecognizable from the original idea. One event started out as a graph theory competition. It was based on some vague notion of minimizing the sums of things like the Erdős numbers of IISc professors in a graph connecting them. This hazy idea one day, suddenly, transformed into a queuing problem in which an eccentric professor would select certain queues with a probability based on his previous selection—a Markov Chain. But soon this too was abandoned in favour of a simpler method of assigning probabilities when certain difficult issues with the game strategy were encountered. But two huge revisions weren't enough: the final form of the event was finally decided upon and made official with the wonderfully apt title which is its name in Pravega today—Publish or Perish. Though some students will still recognize it as "the Markov Chain Event", the stage at which the most time of its journey was spent.

Fortunately as the weeks progressed, the process of event creation became more mature, and attention began to shift to a more central problem: our bubbling little fest was growing up fast—but without a name. ▶

The idea of our very own tech fest was the biggest, brightest, and most attractive place to start—and in a big way.



It is no easy job to start a college fest from scratch. Moreover when there are only a handful of people actively working for it.

But I still say that Pravega is the best thing that happened to me (till now). I have been privileged to get a dedicated team to work with. I see enthusiasm bubbling in their eyes while working on their tasks. They have taken upon themselves to set a new standard and leave behind a lasting legacy! Our focus has always been on two main things—creating a healthy work culture for the growth of each member and to match up to IISc standard.

Surely it has been an enriching journey for me and it has taught me practical lessons of life. I don't know what will happen in the end. But you can rest assured that we are going to give everything we have got to make it a success.

A few years down the line I see Pravega as an international science and cultural affair, attracting ingenious minds from all over the world.

PRANAV MUNDADA

Photo Credits: Naveen Sendhilnathan

Words of the Chief

It is a common knowledge that IISc has good labs, great professors, talented students and useful technical/scientific projects. In fact they even have undergrads now! So we asked the question "What next?" and the answer was very obvious. We needed a Science and Cultural Festival in IISc to make our experience as undergrads in IISc more fulfilling. This would inject colour in daily routine here along with enhancement of our team spirit and managerial/organisational skills. The fest would promote this UG programme at IISc by increasing its visibility in Indian college scenario. This will transform into an excellent platform for overall development of students through exchange of culture and ideas.

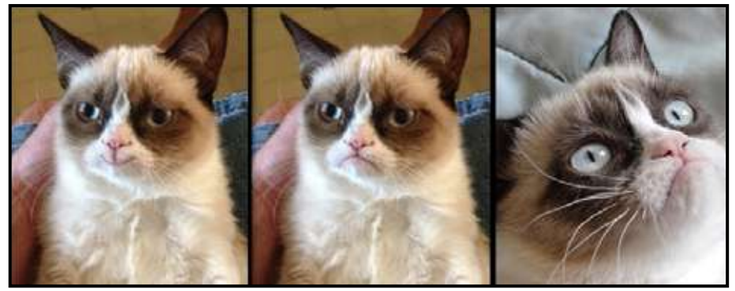
Thus Pravega was born on 1st September, 2012 to satiate this need. Regular meetings were held to brainstorm, debate, discuss and finalize competitions to be held. We didn't want to simply copy the competitions held in other fests, we wanted our competitions to be unique, challenging as well as enjoyable. We are proud that we have succeeded in creating such competitions. Though majorly organised by UG, people doing their post graduate, working on their Ph.D. thesis and even professors of the institute have all become an integral part of this organisation. Currently everyone is working hard to make Pravega, which is scheduled for 25–27 Oct'13, a successful event. The fest comprises of science, technical and cultural competitions, lecture series by eminent speakers, workshops for hands-on learning, exhibitions to keep track of latest updates in science, entertainment events and pro-nights to wrap it up. There is no restriction on age for participation in events and is open to all.

We are grateful to Student Council, Gymkhana and IISc for their strong support throughout. Pravega is our gift to this wonderful institute. We are looking forward to the first edition of Pravega and are uber-excited about it!

The naming ceremony

Conceiving our baby was the easy part—Pranav Mundada had done the work. Now, for the hard part—the naming ceremony. Naturally, everyone—the Sanskrit squad, Hindihorde, cool contingent, the science swarm, the buzz-word band and the Latin legion—wanted their say in naming the baby. Names were discussed, debated and discarded in the hostel TV room, at mess tables and in sleepy Biology classes. Clearly, the name was on the top of everyone's mind. Our enthusiasm was fuelled by the fact other institutions didn't exactly have a glowing track record in choosing names—Techfest (How imaginative!), Shaastra (First entry for Science in Monier-Williams Sanskrit dictionary) and Alcheringa (A tropical fruit?).
We could surely do better!

Then suggestions started pouring into the Chief's inbox.
And he began reviewing them



Before During After

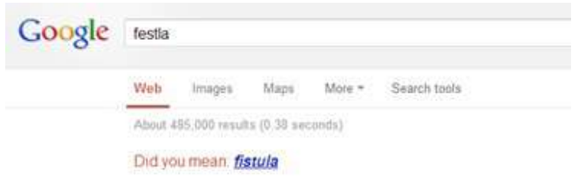
"The emotional trauma! At that point, I would rather we named our baby Eyjafjallajökull than any of the bizarre names that had been suggested," Chief recollects. Clearly we were no good at picking names either.

Soon, the deadline was up; And in true spirit of democracy, Chief called a meeting to wade through the pile of entries to agree upon a name. Sanskrit names were conspicuously absent from the list. The neighborhood Sanskrit aficionado, Suhas, had refused to contribute. "People throw Sanskrit names around too much because they sound all profound and goodly. I don't want a Sanskrit name for our fest," he said. And so, the Sanskrit Squad of One was out.

A meeting was convened one lazy Saturday afternoon to decide upon a name. Exactly 26 people were invited to the meeting. And then they began proposing and examining names one by one. ▶

Picture source: Internet

"Sparx" proposed the Cool-Contingent. "It's the name of my chappal brand," retorted Milind Hegde. "Festla," suggested Sri Vamsi and was met with murmurs of approval from some quarters (and loud sniggering from others). But a quick Google search by Shashank HR settled the issue.



"Unmaad"– Shot down immediately by a loudly protesting Suhas. One of its meanings is "Lunacy" in Sanskrit, apparently. (We later got to know that it is the annual cultural festival of IIM-B!)

"$i^2\psi$ Fest" – Let's just say that good sense prevailed, and leave it at that. (The author personally believes that there is a special hell for those indulging in such contrived puns.)

"The Indian Institute of Science Undergraduate Festival for Science and Technology" – "This name's a sure sign of someone who wears his underpants on his head," commented Suhas.

An hour of such fruitless discussion made it evident that the committee needed some guidelines that they could follow to zero in on a name. The following ad hoc rules were formulated:

1. The name should not be a trademark (Goodbye, Oktober Fest).
2. The name should not be previously taken by a fest (So long, Shristi).
3. It should not be impossible to get ranked first on a Google search (adieu, Explore).

By this mandate, several names like "Fest", "X-Fest", "Best Fest", "SciFest" were all disposed of (rather gleefully, infact), while their advocates wiped their tears and blew into handkerchiefs.

At this point, Suhas decided to jump on the bandwagon and started suggesting Sanskrit names. "I was tired of all the pretentious Pig Latin names. I didn't want such a name. I would rather have had a Sanskrit name—despite how clichéd it is," he recollects. Several names were suggested by him— "Gyanaveechi", "Jigyasa", "Shodhavedi", "Pravega", and "Samvega"— and mostly rejected.

After several rounds of heated debate, most names had been rubbished. In the end only four names remained—"Renaiscientia", "Pravega", "Catalyst" and "Entropy".

Renaiscientia was the brainchild of the Cool Contingent who insisted that the name of the fest sound "cool". A portmanteau of Renaissance (French for re-birth) and Scientia (Latin for Knowledge), the word is supposed to signify a rebirth of Science that the fest will herald.

Pravega was proposed by Suhas and it means "acceleration" in Sanskrit. Vega is speed. By adding the intensive prefix pra we get the first derivative, acceleration i.e. pravega. Curiously, the English word acceleration has a similar structure. Latin celerare is speed. By adding the intensive prefix ac, accelerare is obtained. From accelerare we get acceleration.

Catalyst was proposed by the Science swarm and was supposed to signify that the fest would be a catalyst for innovative scientific ideas.

Entropy has an interesting back-story. When someone had proposed the name "Energy", or alternatively the Sanskrit word for "energy", a disagreeing Milind had commented sardonically "Yeah. We might as well name the fest Entropy." But the Science Swarm could not detect his sarcasm and unanimously started pushing for the name Entropy. They even gave it a tagline "Not just another random fest". And by their efforts, Entropy managed to sneak into the final four.

These four names would be put to vote amongst the whole Undergraduate population.

Since there was no time to waste, it was decided to take a poll that very evening in the hostels by going from Room to Room. Suhas, Milind and Sri Vamsi decided to do the job. So that evening, every corridor witnessed the silhouette of Sri Vamsi's obelixesque body flanked by two reedy figures knocking on each door and collecting votes for the names.

By the time they were done with two corridors, it was evident that either Pravega or Renaiscientia would win. They had left Entropy and Catalyst behind in the dust. When the boys' hostel poll was done, Renaiscientia was in the lead by a very narrow margin. Poor Catalyst had bagged just 6 votes.

The poll then happened in the girls' hostel who swung the result in favor of Pravega by a very comfortable margin.

And so, the Sanskrit squad had ultimately triumphed. Suhas Mahesh was spotted doing a little jig in the air. The IISc Fest finally had a name—Pravega!

Pranav initially didn't seem particularly enthusiastic about Pravega—not because he didn't like the name, but because "while naming the fest, I really didn't care what it was named. I only wanted to finish that task and focus more on the organization of the fest." But he too grew fond of the name, for he now feels that "Pravega accurately describes the sentiment of the work culture in the organizing team—to accelerate in life." ▶

Pravega accurately describes the sentiment of the work culture in the organizing team—to accelerate in life.

The logo design

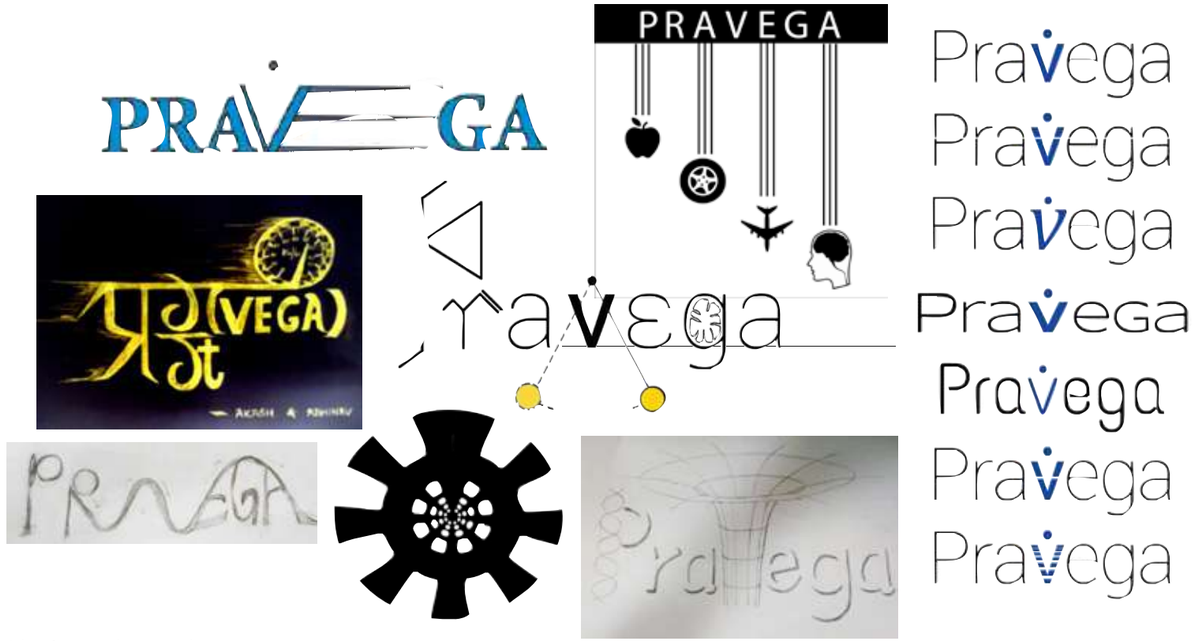
After being named, of course, Pravega needed a logo—something simple but elegant which would represent our fest in the public mind. It was the beginning of February and we had to move fast.

Entries and ideas started to slowly come in. A couple of weeks earlier, shortly after the naming, Milind had suggested using the v in Pravega as a v-dot—to incorporate acceleration, the meaning of Pravega, directly into the word. The idea gained some popularity and it reflected in the entries; almost all contained a v-dot.

After the first round of entries, the design team of Pravega was not very happy. While there were some interesting and good ideas in the mix, no entry really stood out and grabbed the attention. There was some hope that this would change when Naveen, our very own Quarks designer, submitted his entry.

To make a long story short, the hope came to be fulfilled; Naveen's idea, which is now the logo you see next to Pravega was decided as the official logo of Pravega. The beauty of the logo was that it was simple, but not simplistic. Its central feature was the figure of the man, drawn with only two identical strokes, but nevertheless contained every letter of Pravega, including the v dot. Look closely for yourself and find them all!

In fact, the initial logo did not contain the v dot (in the Pravega text) that you see now. In the first draft, it was written in the same font as the rest of Pravega, Roboto (which is well-known as the font used by Google in Android). The change of v to a more prominent font, to make it stick out more, was taken at the last minute in a final meeting, while designing the first poster to put up in the campus—only at this point was the entire logo completely finalized. ▶



The inoculum of ideas for all the events of Pravega were a result of a long and intensive process of brainstorming, discussion and "aha!-moments", initiated as a result of a cascade of meetings since last October. We decided to meet in short groups, subject-wise and come up with preliminary sketches of the events we wanted to have in our grand to-be fest, the first of its kind in IISc. There were a lot of innovative, fascinating, and downright superb ideas in the pipeline—though perhaps some were a little impractical or far-fetched. After about a month's churning of a heady cocktail of ideas, we decided to re-evaluate our suggestions and focus on short-listing from our assemblage the more dependable, feasible and yet still exciting and novel set of events. A large number of factors went into deciding which events were to be chosen, including all sorts of practical constraints, such as venues, funds, the number of people required to design the events and its questions, judges, prizes, and, most importantly, the target audience. Not to mention the ever-present requirement of the originality factor!

The Mathematics committee, coordinated by Sudhanva, was one of the first to meet and start coming up with events. Their ideas were very innovative and intriguing, even though some initially seemed a little far-fetched. The pace of incubating ideas was accelerating so quickly that most of the committee members kept discussing their ideas and ways to convert them into feasible events even during our classes, sitting right under the Professor's nose! Out of the many competent contenders, the final selection of events was Publish or Perish, Tri-D Chess, Apocalypse Now!, Crypto and the Mathematics Olympiad.

Break a leg, dear mathematicians in these events:

Publish or Perish
Tri-D Chess
Apocalypse Now!
Cryptography
Mathematics Olympiad.

The Biology committee, coordinated by Siddharth, was the next in line to come up with an enviable inventory of possible and probable events, many of them quite ingenious. A lot of effort was put into ensuring that the mixed bag of events sufficiently catered to the delicate equilibrium between attracting two kinds of participants. The events were made adequately non-technical as well as exuberantly interesting and exciting to attract students from a non-Biology based background (like engineering colleges), but were simultaneously kept amply challenging and thought provoking to attract people from a more hard-core Biology background—and give them a run for their money! The final choice of events had an ideal mixture of conceptual mettle and fun-quotient, namely Colours from the Grey, The Idea Within, The Fourth 'R': Re-Envision, TurnCoat, Poster Presentation and Lexico Bio. ▶

Watch out for these, Biology enthusiasts:

Colours from the Grey.
The Idea Within
The Fourth 'R':
Re-Envision
TurnCoat
Act of Life
Lexico Bio.

The genesis of events

"It is absolutely wonderful that Pravega will give our century-old, tradition-rich Institute a chance to showcase its vibrant and youthful side—not just in science, engineering and innovation, but in cultural pursuits as well. I see this year's Pravega as the first step towards becoming a top scientific and cultural festival. With our students' tremendous enthusiasm and tireless efforts, I'm confident that this goal will be reached within a few short years.

–Prof. T.A. Abinandanan, Materials Engineering, IISc

Pravega

The first ever Nationwide Science, Technical and Cultural fest hosted by the undergraduates of the Indian Institute of Science. Pravega is a perfect amalgam of fun, knowledge and never ending excitement sure to entertain anyone and everyone.

Science Technology Fun

Pravega is an upcoming annual fest of IISc organised by the undergraduates of IISc. It will be held for the first time in 2014 for three days—31, 1 and 2 of January and February. Feel the chill, Get charged up with their enthusiasm, Shout out loud the spirit, And wait eagerly for Jan 31st!

Like us on Facebook follow us in Twitter Visit us at: Pravega.org

The Cultural committee, coordinated by Madhwesh, also did a great job of coming up with a lot of exciting events, although the number of people who took part in the meetings was clearly larger than any other, for obvious reasons!

The decision of the final events for this committee was faced with the most number of practical constraints, but this was only the second most important factor guiding the selection. The first was very clearly the cool-quotient and novelty of the events! The final events decided were Music with Junk, Viral Video Contest, Temple Run, Battle of Bands, Dance Competition, and 30 Seconds to Fame.

"It's been a long time since I rock-and-rolled It's been a long time since I did the Stroll."

Get ready to Rock and Roll with: Music with Junk, Battle of Bands, Dance Competition, and 30 Seconds to Fame.

The Chemistry committee, coordinated by Aravind, started a bit late, but they were soon bubbling and fizzing with new ideas. Till date it retains the repertoire of the largest number of events, including Carbon, Carbon, Everywhere; Kitchen Chemistry; Chemistry Olympiad; Celebrating Chemistry; Chemical Painting; and Synthetic Chemistry.

Are your labcoats washed and goggles cleaned? You might need them here!

Chemistry Olympiad; Celebrating Chemistry; Chemical Painting; and Chemistry quiz.

The Physics committee, coordinated by Suhas, was rather secretive in their approach, but nevertheless managed to come up with a short and sweet list of events, out of which Hands on Physics, The Armchair Physicist, Master the Tides and May the Force be with You! were finalised.

"It is a collaboration of minds that requires skills that extend through general science and far beyond—cooperative, management, leadership and communication skills" –Krishnan Iyer

Get all charged up, fun awaits you here!

The Armchair Physicist, Floating Platform and Experimental Physics.

The Engineering committee, headed by Suhas, Pranav, and Amitabh, came up with a rather novel assortment of events, which will definitely attract any programming geek or electronics buff like an electromagnet! Their list of finalised events includes The PacBot Challenge, Anything from LEDs, The Engineering Challenge, Connect the Dots, and Reverse Coding.

Engineering in action! The PacBot Challenge, Anything from LEDs, The Engineering Challenge, Quiz Buzz or Quiz wiz: General Quiz, Pravega Science Quiz Brush up on your knowledge, sharpen your decoding skills: Multidisciplinary Treasure hunt challenges you!

Apart from these specialised events, there is also an eclectic set of general events meant for anyone and everyone! These events include a General Quiz, a Science Quiz and a Treasure Hunt. These events were conceived as a result of contributions from people of all the subject committees, to bring out their true multidisciplinary flavour.

A lot of emphasis was laid upon making these events challenging, demanding not just exposure to multiple subjects, but also the ability to integrate and unify them to come up with ingenious solutions and answers to the problems posed. In terms of creativity, the Pravega Science Quiz is particularly interesting. Everyone knows how a quiz plays out—there are a set of rules and types of rounds which are used in practically all quizzes, and it would seem there isn't much room for variation. In spite of this, the Quiz committee has come up with special rounds which have never before been part of quizzes anywhere—and they're sure to delight everyone, whether they're hard-core quizzers or not. And with ingenious questions to match, the Pravega Science Quiz is definitely expanding the boundaries of quizzing.

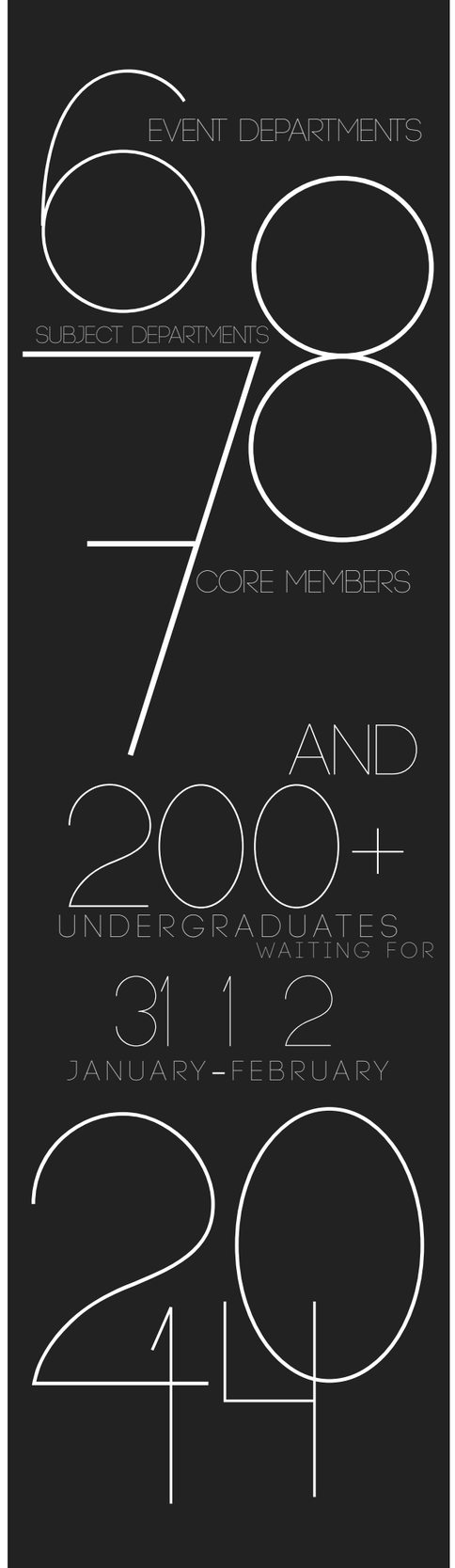
The final collection of events is amazing—each one is creative, well-thought out, and has evolved for months to increase its refinement. And this shouldn't be a surprise; ask any student of any college at what point prior to the fest they start working on events, and the answer will be in terms of weeks. Here at IISc, the answer is over a year, and the effort shows.

"We are all working on Pravega and it has become a continuous thinking process. We think about it in breaks, in the mess and even on chat. We are working day and night and can't wait anymore to see it as a full-fledged successful event.

It wasn't that easy to get involved into Pravega but once the name was assigned we got emotionally attached to it and then just geared up the work!

Pravega is the only reason for bridging gaps between me and seniors. It helped in interaction with them and now most of us have become good friends.

Pravega preparation has changed entire atmosphere of UG and brought me close to many like-minded people. I really enjoy working as a part of Core committee and am committed to bring up a good fest though I often spend sleepless nights," says Sampada Kolhatkar, one of the core committee members. ▶



The present and the future

For Pravega, we have organized lectures by several distinguished speakers as well as various workshops, apart from the many, many events. Students from the best colleges in the region will pit their skills and wits against each other in a variety of events that we have designed from start to finish for them. Apart from the academic events, a cornucopia of cultural events and performances are also scheduled for the evenings of the three-day fest.

But the students are up to the task; with one more batch of young undergraduates joining them, Pravega is sure to invigorate and energize all of IISc like nothing else, even those not involved in the fest. It'll be an Open Day on steroids, a chance to educate and display the quality of the institute to the college students of India who have barely been exposed to the unique and powerful IISc culture. As Pankaj Jain, a previous member of the Student Council notes, "The vigour and passion with which students' volunteers are into its preparation … will certainly create a vibrant atmosphere in the campus." Sampada Kolhatkar, a member of the core committee, agrees, saying Pravega has already "changed the entire UG atmosphere."

Pravega 2014 draws upon the strength of an undergraduate student community of about 200 students. As the student community grows with the progress of the undergraduate program, the fest is bound to increase in scope and participation. This being our first attempt at a fest, a great number of new ideas have been incorporated in the events. As time progresses, these fresh events will become the mainstay of Pravega, resulting in a fest unique on the Indian college scene—and maybe even beyond that, for as Pranav Mundada says, "A few years down the line I see Pravega as an international science and cultural affair, attracting ingenious minds from all over the world."

A role, as everyone will agree, befitting IISc and its unique students, programme, and atmosphere. ■

THE CORE MEMBERS

Excited Awaited Loads to do
Amazing Hope for the best
Legendary Will create history.

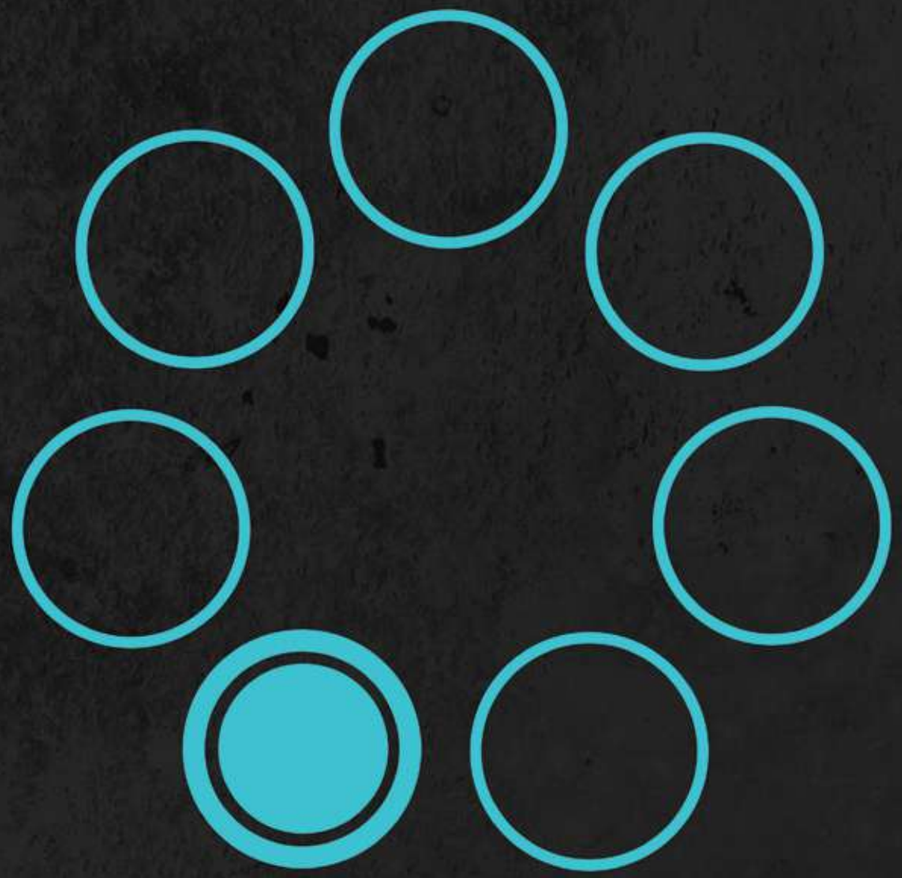
Pravega

The undergraduate batches of 2015 and 2016 have spent much of the academic year developing new and varied events for the fest. Committees have been set up for hospitality, logistics and sponsorship, apart from the ones working exclusively for the events in specific subjects. The blood, sweat and tears they expended during the development are bound to ensure a smooth and efficient execution of the fest as it finally rounds the much-awaited corner!

As the all-important date—January 31st—approaches, the work and energy that will be needed will only increase.

> "Our focus has always been on two main things—creating a healthy work culture for the growth of each member and to match up to IISc standard. Surely it has been an enriching journey for me and it has taught me practical lessons of life. I don't know what will happen in the end. But you can rest assured that we are going to give everything we have got to make it a success." –Pranav Mundada

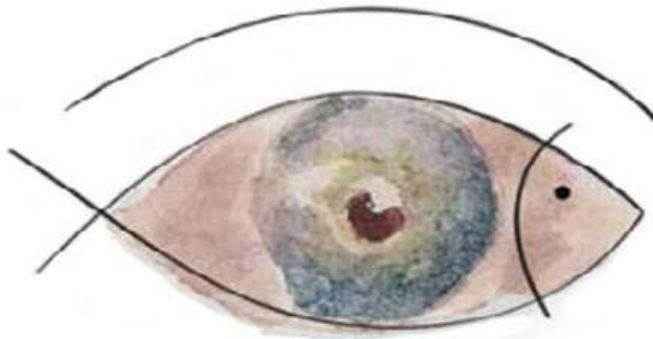
Photo Credits: Siddharth Kankaria



Expressions

Expression is never helped by suppression. There is a vitality, a life force, an energy, a quickening that is translated through you, and because there is only one of you in all time, its expression is unique. And if you block it, it will never exist through any other medium and will be lost. Our writers here realised this and have used words to express. Read here, words to intrigue, inspire, examine, question, praise, enlighten, rationalize. A diverse set of literary work having one thing in common: Expression.

The Eye of an Artist



I see depth,
I see colours,
I see unspeakable emotions.

I see you as you,
Disoriented yet complete,

I see art in everything,
Comprehensible yet confusing,
Meaningless yet meaningful..

Apaar Shanker

Picture source: Internet

Mahaveer Chilarai: The "Kite Prince"

"Do you have any history?" "Was there any king in Assam or North East?" "I thought there were not that many people like other parts of the country who lived in Assam until independence!" "I thought Assam and the rest of North East are just hills and jungles inhabited by tribal groups," and so on and so forth.

Well, it was really surprising and shocking for me when some of my friends asked me questions like this here in IISc, after I joined here but I soon realized it was not their fault. It was the result of the non-inclusion of the history of North Eastern region in the mainstream Indian history, because of which the glorious past of Assam and the other North Eastern states has not appeared in national text books.

We also have a celebrated history. We also have had great men. Great reformers like Mahapurush Srimanta Sankardev and Madhavdeva, the great Vaishnavaite saints, great rulers like Maharaja Naranarayana and Swargadeu Rudrasingha, great warriors like Veer Chilarai and Lachit Borphukan (the great Assamese general of Ahom kingdom whose brave leadership made possible the defeat of the Mughal army of Aurangzeb headed by Ram Singh in the Battle of Saraighat in 1669), Sati Sadhani, Sati Joymati and Sati Beula and many others. Today, I will try in spite of my limited knowledge to present the chronicle of one of the greatest generalissimo of Assam to my friends, although I realize it is quite a formidable task to condense his vast legacy into a few pages of our magazine.

Veer Chilarai (original name Shukladhwaj) was a great general who belonged to the Koch royal dynasty of Assam. He was born in 1510. His father was Maharaja Viswa Singha and mother was Padmavati Devi. The reign of Maharaja Viswa Singha heralded a glorious episode in the history of Assam as he was the founder ruler of the Koch royal dynasty, who established his kingdom in 1515 AD.

Shukladhwaj along with his brothers learnt warfare and they all mastered the art very well. Shukladhwaj with his elder brother ▶

Picture source: Internet

Malladhvaja went to Kashi and studied different religious books, scriptures, grammar, astrology, logic, philosophy and politics under the guidance of Guru Brahmananda Visharad.

After the sudden death of Maharaja Viswa Singha, his son Malla Dev ascended the throne in 1540 AD. He was better known as Maharaja Nara Narayan. Shukladhwaj was appointed as the army commander and prime minister and he played a significant role in expanding the kingdom. Becoming the chief of the Koch army, Sukladhwaj organised it as one of the mightiest forces in eastern India. His big contingent of troops consisted of 2,00,000 infantries, 4,000 horses, 7,000 elephants and 1,000 war boats. He also raised a 6,000 men strong naval force. He successfully adopted guerrilla warfare too which is known as commando action in modern parlance. A brave warrior and an exceptional general, Shukladhwaj was extremely quick in his actions. He came to be known as 'Chilarai', which means "kite prince" as he was swift like the bird chila or the kite in capturing the foes.

Chilarai was perhaps the greatest general that the mainstream Indian history has ignored. He was a master military strategist. Chilarai's valour ensured Koch supremacy over the Bhutia, Kachari kingdom (of Hadimba, now Dimapur) and the Ahoms(though several battles were fought between the Koches and Ahoms with countable victories for both sides).

In 1562 AD, an intense battle took place when Nara Narayan crossed River Brahmaputra and attacked the Ahom kingdom. Chilarai commanded his soldiers to fight both on land and through water. He occupied Gargaon, the capital of Ahom. The defeated king finally fled with his army and Nara Narayana achieved victory. Later, a truce followed between them.

Nara Narayana defeated the king of Cachar and brought his kingdom under his (own) rule. The king of Manipur surrendered as he decided not to combat with such a powerful ruler. Chilarai then attacked the states of Jayantia, Tripura and Sylhet. He defeated the kings in the battles and killed them. Observing the condition of the neighbouring states, the rulers of Khairam and Dimoriya submitted their petty states. Thus, with the help of Chilarai's heroism, Maharaja Nara Narayan extended his vast empire and earned revenues from several rulers. It is worthy to mention that Chilarai never committed brutalities on unarmed common people and even the kings who offered to surrender were treated with utmost respect. Only those kings and soldiers who refused to surrender were treated with strong hands.

In 1568 AD, the duo (Chilarai and Nara Narayan) turned towards Bengal but due to unforeseen circumstances, Chilarai was captured by the Afghan Sultan Sulaiman Karrani while Nara Narayan retreated to his capital. Much of the Koch kingdom was captured by the Afghans thereafter. However, Chilarai and Nara Narayan later rebuilt the Kamakhya temple that the Sultan's army had destroyed.

Nara Narayan attacked Gour for the second time when Akbar, the Mughal emperor, sought help from him. They had an alliance with Sisya Singha Raikat and Debraj, the king of Bhutan, while invading Gour. Chilarai captured Ghoraghat and seized the whole area of Gour. After defeating King Gourpasha, the kingdom was shared between Nara Narayan and Akbar.

During the second invasion of Gour, Chilarai breathed his last on the banks of River Ganga in 1577 as he suffered from smallpox. After his death, battles subsided. It was the courageous deeds of Chilarai that led the Koch kingdom reach the zenith.

Thus, Chilarai's heroism let Maharaj Naranarayana to rule over whole of "Greater Assam" comprising of present North-East India (7 states now), some portion of present Bangladesh and Bhutan and a part of present West Bengal (North Bengal). Later, Nara Narayana divided his kingdom into two parts namely, Koch Bihar (also known as Cooch Behar) and Koch Hajo. He kept Koch Bihar, the western part under his authority while Koch Hajo, the eastern part was given to Raghudev, the son of Chilarai.

Bir Chilarai was a man of versatile genius. He was not only a great warrior, mighty general or a military leader but also a scholar, social reformer and an exponent of the neo-Vaishnavite movement initiated by the great saint Mahapurush Sankardeva. Chilarai and Naranarayan offered royal patronage to the great Vaishnavite movement of Mahapurush Srimanta Sankardeva. In a secured and congenial atmosphere provided by Naranarayan and his brother Chilarai, Sankardeva concentrating himself in propagating the neo-Vaishnavite movement in Assam. He wrote a number of books, dramas and songs at Coochbehar and enriched Assamese Vaishnavite literature. Collecting the summary and substances of the Bhagavata, he wrote Gunamala. It is regarded as an elephant encapsuled in a Lime-pot. Taking a glorious chapter from the Ramayana, he wrote his last drama called Ram Vijoy and displayed it at Coochbehar. In the drama he described Chilarai as 'a great appreciative person'.

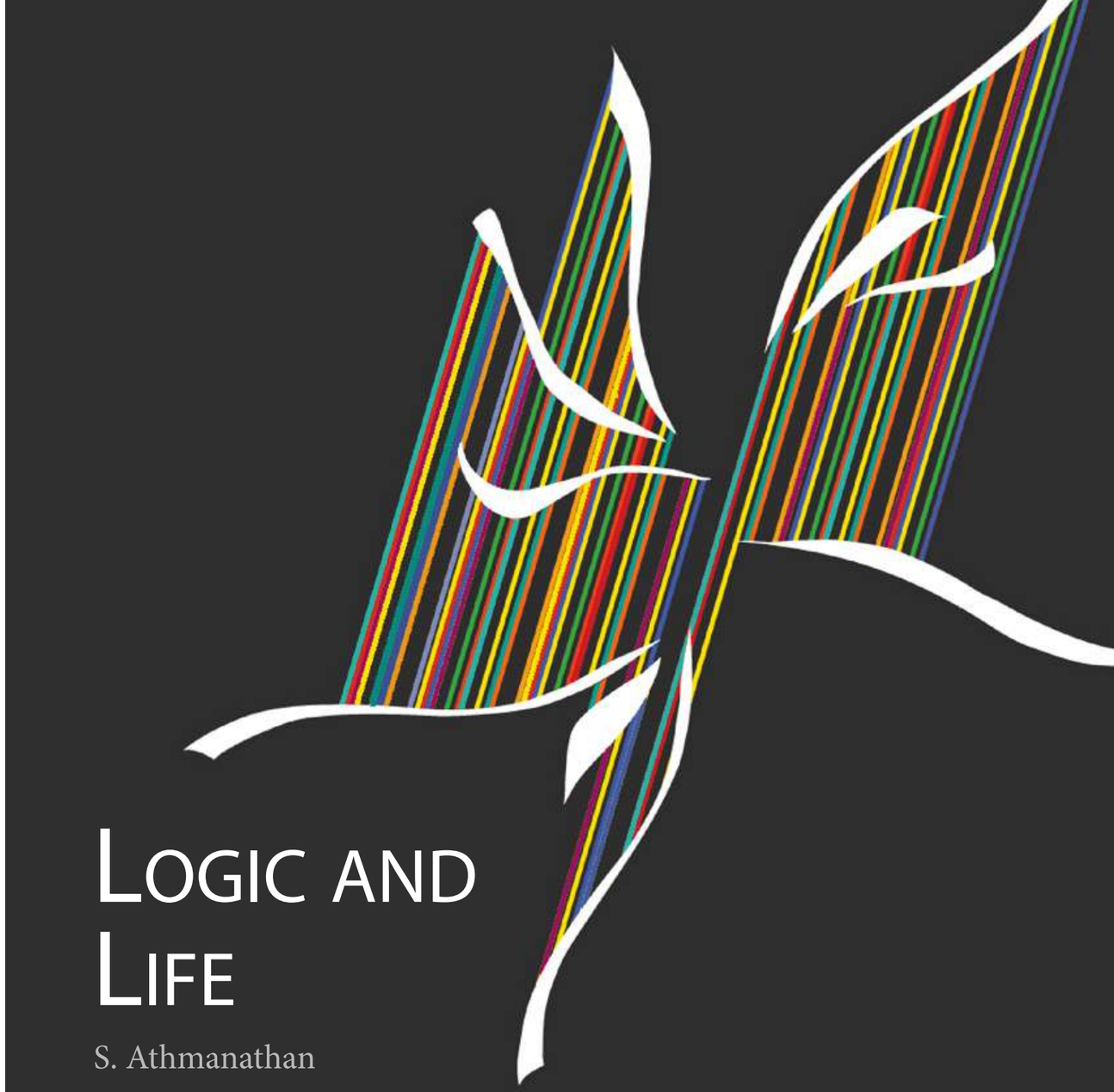
Following the request of Maharaja Naranarayan and Chilarai, Sankardeva drew a picturesque alluring scene of Brindavan, the abode of Lord Krishna, on a piece of textile cloth. Popularly known as Brindavani Bastra, there he artistically designed different acts of Lord Krishna with the help of local weavers at Tatikushi near Barpeta. It took about a year to complete the 180 ft long and 90 ft wide wonderful piece of textile work. Regarded as a rare treasure of Assam, the cloth is now carefully preserved at the British Museum in London.

Apart from Sankardeva, a galaxy of saints and scholars freely studied art, culture and literature at Coochbehar, making it a centre of Vaishnavite learning and teaching. They also brightened Maharaja Naranarayan's Royal court. For the housewives, Madhabdeva wrote Janma Rahashya following the request of Kamalapriya, the wife of Chilarai. Chilarai requested Ram Saraswati to translate the verses from the Mahabharata. He also encouraged Purusottam Bhattacharya to write Ratnamala Byakaran and asked Sridhar to write Jyotish Sastra. Following his request, Bakul Kayastha wrote Lilavati, a landmark in mathematics. A scholar par excellence, Chilarai himself wrote an analytical annotation of poet Joydeva's Geet Govinda as Sarabatisar and left an indelible imprint in Sanskrit literature.

The famous British historian Arnold J. Toynbee(1889–1975) mentioned 'Chilarai' as one of the world's three greatest warriors of all time; the other two being 'Chattrapati Shivaji', Maharaja of the Maratha empire and 'Napoleon Bonaparte', the emperor of France—in chronological order.

The birth anniversary of the great hero is celebrated every year as Bir Chilarai Divas. From the year 2005, the government of Assam has been conferring Bir Chilarai Award, the highest honour for bravery, to individuals. The gallant accomplishments of Bir Chilarai in the regime of Maharaja Nara Narayan shall be remembered forever. ■

Padma Bhushan Borah



Logic and Life

S. Athmanathan

Logic is probably one of the key characteristics of human beings. It is well known that humans are living things who can "reason". People also keep using the word "intuition" quite often in day-to-day life when they answer questions or more generally, when they make decisions. "Use your common sense" is also a general phrase used to comment on people's decisions when they seem wrong to the one who used the phrase. What is exactly the difference among these different terms? What are usually the deciding factors in making decisions and how exactly are the above terms involved in decisions?

Logic, reason, intuition, common sense are all words in a language. These are words used in several contexts that even contradict themselves in few cases. Logic and reason are interchangeably used in situations where one tries to solve a practical problem (a problem in one's social life) in a very structured and rational way. I prefer to stop with the above four terms (the reader can think of many more used in similar contexts in an interchangeable way) as these should serve the purpose. Let us use the example of classifying objects (like deciding between right and wrong, cause and effect, etc.) when discussing these words. ▶

Picture source: Internet

Deciding whether something is right or wrong, good or evil is a deeper philosophical question which won't be addressed here. Similarly, you can ask a question about bias when making a decision. As bias is an inevitable factor in human life, everyone is biased to an extent and it might affect one's judgment drastically. Bias, like morals, is also a bigger topic which needs deeper thought.

Reason is the basic step in answering a question in a proper foolproof way. Logic is, in a way, structured reasoning. It has elements of deduction and also analyses the reasons one may come up with for a particular answer. Intuition is a highly ambiguous word as it is used in a variety of independent ways. The word when used by people while deciding things based on experience is a totally different thing which is not the usage of the word in the rest of the article. Intuition as a blind way of guessing a solution is highly dangerous and it is usually better to leave the question unanswered than to answer purely based on intuition. Some ideas indeed come out of the blue but they should not be blindly used or accepted as the supreme truth. Common sense is a better form of intuition. It can be gladly used in situations which are lighter and demands a quick decision. Common sense is something which is acquired by a man in his right mind during the transition from childhood to adulthood and in some cases even beyond that.

Any decision can be made based on one particular reason. This is not a good way as the reason may be any consistent statement which lets your decision pass. The most trivial reason may be the use of intuition. The person may sincerely feel that an option is good and pick that because of his intuition or personal feeling towards the option. Clearly, it will lead to a disaster in case of a bad intuition or inconsistent strong biases. So logic is the necessary tool which analyses and puts together reason and gives it a stronger meaning. Intuition is highly dependent on the individual and may lead to a sticky situation due to the heavy bias it provides. The individual may see a clear logical solution, but if he gives the slightest importance to intuition it might bias delaying the process of decision making. Even as the individual finally makes a decision, it is an unsatisfactory one as there was a contradiction during the course of the process. This contradiction is different from the one which might occur during the course of logical reasoning as the problematic one is due to intuition. Unless the individual thinks purely logically in which case intuition will be rejected at the first glance, the contradiction cannot be resolved to provide a satisfactory solution.

"Experience helps a man make wise decisions" is also something many people believe. And one might say it is better not to use logic when you are experienced. It has to be noted that if the experience is just a bunch of observations made by the concerned person, then it has nothing to do with decision making. But if it is a collection of logically studied observations then one may use that as a starting point while making decisions. It is now arguable as the reader might say that such structured experience is wisdom and it can be used even in the absence of further reasoning. This is something which can be considered similar to the use of common sense. This structured experience can even be thought of as armoured common sense.

"The right use of reason is the inquiry after truth" –Isaac Watts. The use of logic to make decisions (which is a crucial component in life) is certainly the best way but common sense can be used in a few circumstances. The above conclusion is certainly vague and it is good to note Russell's words, "nothing is correct in philosophy. Every philosophical proposition is bad grammar." But it is quite clear that decisions based on blind intuition and personal feelings should be forbidden. ■

Picture source: Internet

Maths colors in life

SIDDHARTH KANKARIA

colours in WHITE

Siddharth Kankaria

I just had a vivid dream some days back, a dream very much rooted in my present and of immediate relevance to my future. In my dream I was asked to be a part of the Editorial team of Quarks, the annual magazine of the Undergrad school of IISc. I was requested to write an interesting article or an editorial piece for one of their columns. I wrote no less than a dozen draft entries, but in the end, none of my endeavors seemed satisfactory to me, and I ended up dismissing all my potential articles as too bland, monotonous or lengthy. I kept trying to write something appropriate, but myself kept fussing with whatever I could come up with.

Finally, what came out in the magazine, after great hurdles and innumerous long sessions of convincing the entire Quarks editorial team, despite my own cluelessness for doing so, was a completely blank column with just the title of the article and my name in a very tiny print, which seemed like an island in the vast white expanse of the column dimensions.

Very soon the magazine was completely drafted, and went for print, after which it was published and distributed to all and sundry. What followed next, was that I got a few calls and a lot of emails from the various readers of Quarks, which I *was* expecting in a way. But what truly surprised me was the content of their emails and the kind of questions posed by an assortment of people, as diverse as professors of different departments, a psychologist, businessmen who had sponsored our magazine, a few students who were apparently atheists, and even people involved in politics (a rather pleasant surprise to have people reading our magazine instead of rallying around!). Each one of them seemed to have interpreted the significance of the blank column (well almost!) according to their own sweet line of reasoning, and all I got was, praises and compliments which were completely unanticipated and unasked for and which left me utterly baffled!

The news about my blank article spread like wildfire on the internet, due to the large readership of Quarks, both in its printed and online forms. Soon, I got a call from a famous Bangalore-based news channel who wanted to take my interview. These utterly bewildering surprises were followed by offers from various prestigious newspapers who wanted to publish a similar blank column with my name. I was shocked by their sheer enthusiasm to lay waste precious *"reading real-estate"*, when people pay lakhs of rupees for a small advertisement in the newspaper. Finally, after a few TV interviews and some more blank columns being published in national dailies, I finally awoke from my high-spirited dream!

As I lay awake on my bed, trying to make sense of what just happened, even though only in a dream, I was nothing less than flummoxed. I kept on pondering on the significance of my dream, the meaning of my publishing a blank white column, and the reason for everyone else's appreciation of so lunatic an act! After all, no one had even asked me, even in my dream, on my views for doing the same; everyone had just invented or rather discovered their own interpretations in the simple absence of my words and thoughts. The professors thought it was to emphasize on the unity between the different sciences, since white light is derived from mixing all colors together; the neuroscientists and psychologists believed the white column was a piquant comment on the need for humans to slow down and relax in this competitive world; the political activists assumed it to be a non-violent demonstration against inflation, corruption and what not; while the elites and the connoisseurs of art interpreted it as a piece of modern art! But deep within, this absence of words and thoughts was haunting me, provoking me, making me restless, to the extent of driving me crazy, as I just could not figure out the reason behind my own decision, even though just in a dream.

I desperately tried to let go and forget about this incident, but it kept haunting me for hours. To my pleasant surprise, the next day, while I was walking towards the blind school where I used to voluntarily teach on the weekends, all of a sudden, the reason for my *choice*, finally struck me, just as a sliver of light seeping through an awkward nook or cranny. In the past two months since I started to teach these visually-impaired kids, I had become so engrossed with the entire process of teaching them (and in turn learning myself), of spending time with them, researching about them, and writing about them, that as a natural consequence, I had been deeply moved by their struggles and challenges in life. My heart wept for them, even though I refused to pity them at all, as that would be equivalent to or even worse than insulting them. That very night, when I had that vivid dream, I was in a deep introspection about my life, and how these small little kids, who themselves had an eternal blackness surrounding them, had brought brightness and gleams of exuberant light into my life, giving me the briefest yet the most cherished and memorable moments of my life, before I finally fell asleep with a smile on my face. Despite this inner peace, deep within my conscience, my soul was stirring, and I wanted to applaud and salute and even perhaps dedicate something to these brave, beautiful yet bold, visually-impaired children, without consciously realizing it myself. And that's when I had that vivid dream…

By the time, I reached the gate of the blind school, and rang the bell, amidst cheerful unrest and chattering, I had finally comprehended the true significance of my dream—the blank white column was a tribute to those children whose visions were nothing but an expanse of never-ending whiteness, all around them. For those who had accepted their fate of being visually impaired, the white column symbolized peace, serenity and purity in their lives, and for those who still wept and fought with God's wish, it was a consolation to embrace the path of contentment and innate happiness. On the other hand, with the aid of that white column dedicated to the blind, I simultaneously wanted to provoke and encourage the *"visually-enhanced"* majority of our society—that is we, the privileged non-blind people—to stand up for the rights and privileges of the visually-impaired, and promote their welfare and well-being in our big bad world.

And today eventually, the true interpretation of my dream is actually being published in Quarks itself, for everyone to see. I feel a little overwhelmed and even relieved to have at last deciphered the relevance of my dream, which successfully re-iterated the fact that the visually-impaired are not a burden to the society but a beautiful and *'shining white'* part and parcel of it. That one dream taught me to be kind, considerate, patient towards them and genuinely love them from within, because attributes like love, kindness, sincerity and honesty are the only images they can see through their inner eyes, the only "*colours in white*" they can perceive. This is the least we could attempt to do, not only to rise a little higher in their hearts, but also in our own eyes. A quote by Helen Keller herself, crisply sums up this sentiment,

"The only thing worse than being blind, is having sight without a vision…" ■

Picture source: Internet

The Proof

I am a mathematician.

As a mathematician, I am often asked what is it that I do. A rather profound question indeed. Would that there existed an equally profound answer. Or even a simple enough answer. You see, I don't really do anything. Most mathematical research is conducted in tandem with professorial duties. Hence the majority of my time is taken up by spewing the standard sophomore spiel to semi-interested second-years. A little Newton and Leibnitz, some Cauchy and Euler to firm things up, and, if I'm feeling particularly adventurous, a hint of Riemann. Fascinating, isn't it?

When free from the drudgery of recall and relate, I try to think. Oh, for a truly original idea, something that would shake up the foundations of the mathematical edifice! That is the realm of the truly great. And the truly young—mathematics, more than anything else, is called the young man's game. The most revered prize in the field of mathematics, the Fields Medal, is famously awarded only to a mathematician who has made a remarkable discovery and is less than forty years of age.

Me, I am thirty-eight now. Nearing that point that someone decided was all-important. What if I'd been born on the 29th of February? With a birthday only once every four years, I would probably have been eligible even after my death! Or if no one knew when was it that I was born? They'd have to give me the benefit of doubt.

Of course, I'd have to have a remarkable discovery too.

This is the story of such a discovery.

I believe it all started when the Upstart published a startlingly original proof of the Four Colour Theorem. Although the theorem had been proved before, rather recently, in fact, this proof outlined a bold new approach, that could be applied to a host of similar fields of enquiry. There were even murmurs of the Fields committee having come to a unanimous decision about the award.

I didn't leave my rooms for days.

When I finally met the world anew, my colleagues, my rivals, lesser men all, murmured jealousy and despair, just within earshot. I could not deny them, even to myself. It was jealousy, yes. But not for the paper, no. It was for the Temptress—a young, dark eyed beauty with raven tresses. I had courted her, with decorum, of course, sobriety and propriety ever the logician's watchword. But when has logic ever helped to decrypt the mysteries of love?

And so it was that she fell for the Upstart, a brash man on the better side of thirty, who took her dancing, of all things. I had long sought to woo her with tales of my forays into the realms of the mathematical arts—I showed her my papers. And then my magnum opus, my greatest work. The vixen, she begged me to borrow it. I should have known better—but the words of such a gorgeous creature were as wine to me, the loneliness in my heart was as disorienting as an attack of vertigo—it seemed logical to give her the script.

And she gave it to him.

When I finally got around to reading his proof, it was as I feared. The braggart had taken the fruits of my labour, called them his own, and used them to prove something as relatively trivial as the Four Colour Theorem. My work was a treatise on mathematical structure—it was a treatise on logic itself. The first example of work in the field I was dealing with was Gödel's set of theorems on incompleteness in 1931. Put loosely, they spoke of what it was and was not possible to do in a given mathematical structure—a framework of axioms. When I delved into his work, I realised there was a gold mine to be exploited—the consequences of his work were used to resolve the issue of whether it were possible to axiomatise the entire field of mathematics. The hope was that henceforth the mathematician's job would be as a technicians—an application of axioms and simple theorems to resolve the hardest of problems.

What Gödel did was to prove that this could never be. The implication was that there would always be statements in any given mathematical structure that could neither be proved nor disproved. And that a mathematician remained in every sense of the word, an artist—one who, more than anything else, had to let free his imagination.

It would take a creature as base as him, I suppose, to attempt to profiteer from true beauty.

But I still had some hope—the Old Man.

There was one person in the entire department—in the entire university, even, who seemed to understand me. He saw beauty in what I did, he believed in me when no one else had. His age was great—his hair was white and his skin wrinkled. But his eyes were as sharp as a man's ever were. To underestimate him was to imperil yourself—he had a biting wit and an irascible tongue. His favourite anecdote was that of a dinner party a long, long time ago, when Professor Wolfgang Pauli, the great physicist, remarked sadly at a very poorly written manuscript submitted by a junior—'Das ist nicht nur nicht richtig, es ist nicht einmal falsch!'(Not only is that not right, it is not even wrong!) He used to speak admiringly of him. His idolatry of the physicist extended even to his work—you could never catch out the Old Man on a mathematical error.

But a strict adherence to rigour cages the imagination, and so it was that he had never produced an original paper on anything. He'd solved a few problems, and at correcting other people's papers—there was no one better. In this too, thus he was as Pauli—the mind of a true genius, but a mind which had managed to manacle itself in its own constructs. ▶

I had given him a copy of my manuscript—he could testify that the Upstart had stolen my work. I felt as though there was hope yet.

But it was not to be.

I decided to go and pay him a visit, so as to seek his counsel. As I reached his rooms, I become aware of an unhealthy odour in the air—the sickly-sweet smell of something slightly off. Seeing the door ajar,
I decided to walk in.

His living quarters appeared to be deserted. His dishes lay unwashed—this accounted at least in part for the odour in the air. As I entered his study, I became aware of a musty gloom, the shades were drawn. In the dark, I made out a chair with its back to the door, where I stood, a stool drawn untidily close to it—the carpet had been upset on the floor. There was a huge desk at the far left—it was empty. I crossed the room and pulled back the shades. The light from the sun beyond blinded me temporarily. I turned around, and as my vision cleared, I leapt back in shock.

The Old Man sat on the sofa. His skin seemed even more lined, his eyes sunken. He had never seemed older. However, it was his eyes that caused me the greatest unease. For the first time since I'd known him, his eyes were bleary and unfocused. As I neared him, I saw that he had soiled himself. In all likelihood, he had been sitting here for a number of days.
"Professor? Sir? Are you alright?"

It was as though I'd never spoken—there was no reaction. I could see him breathing—but his utter expressionlessness and lack of response seemed inhuman. I could see tear tracks in his face—which, again, was as blank as a wet slate.

On the stool before him, there was my own manuscript, a register, and a piece of paper. I thought I recognised his handwriting, and the piece of paper seemed to be addressed to me, hence despite everything, I picked it up.

…the work … it implies a flaw in any logical structure … there is no point in trying to understand ANYTHING. Man's progress is bound to die—logic no longer has meaning … NOTHING DOES…

His untidy scrawl was extremely hard to decipher—apart from the handwriting itself, it was as though his hand kept veering off the page. There were stray marks everywhere.

The manuscript on the stool made sense. But what was in the register? I picked it up.

Within it—I recognised a listing of some of the theorems I'd proved. Then the Old Man had tried to prove something—I couldn't make out in a glance. He seemed to be interpreting the theorems in an even more general manner than I'd meant them to. His handwriting started to degenerate—it became more and more random, as though he could no longer see the lines on the page. It seemed as though now he was trying to disprove his earlier work—it made no sense.

I decided to postpone a more thorough appraisal of his work. I called an ambulance—people came running up. I explained how I'd come across him—I made no mention of the note or the proof.

Later, in my quarters, I tried to make sense of what I'd seen. According to the Old Man's note, and what I saw, an implication of the work that I did was to prove the pointlessness of the application of logic. Also, the generality of the proof meant that it was no longer possible for a rational person to complete a logical thought.

What was it that could shake a person's belief so strongly in existence? It was as though the hubris of man had come a complete circle. We had made great discoveries, yes. But a proof of a flaw in logic?

How could logic disprove logic? It implied an inconsistency in our system of thought, in our understanding of reason, cause and effect. It was as though there existed a huge blind spot, and as though understanding the proof meant losing belief in sentient existence.

It was all too much for me. I had to read the proof.

With a feeling of dread, and more than a little excitement, I started off. I had to admire the perfection of the professor's application of my work—he truly understood the philosophy behind it. Three hours later, at about the three-fourth mark, I cast my mind ahead and suddenly seemed to understand what the professor suffered from. The register fell from my hands—my vision seemed to flicker, then everything settled.

As long as I did not continue, I could hopefully delude myself. The professor could have made an error. I could think of possible ways in which the expected proof could fail. After an eternity of thought, I put down the register. I didn't dare to continue.

Logic, you see, is an assumption. That is well-known to be true. What the professor had found, was a different construct that subsumed logic as only one method of thought. It is hard to conceive—it requires an incredible amount of imagination—it was as though the Old Man had been saving up a life's worth of creative energy to do what he did. I know this seems to be incredulous—but think of those times in which something which was patently obvious lay undiscovered in front of your eyes, and it was as though it were revealed by a swish of a magic wand. Mathematicians will be reminded of the term an 'aha!' proof.

I thought of the implications of all I'd seen that day. After the Old Man's breakdown, I knew I could no longer pursue Mathematics. I could no longer work in Natural Philosophy—Physics, Chemistry, Biology—it was all now fatal to me—my belief in logic was shaken. Another reason why I couldn't do so was if that if I were to start thinking about the proof again, and inadvertently complete it, I would share the professor's fate.

However, in my state of heartbreak, there was one thing I did want—revenge on the Upstart. The possession of the deadly proof was turning my mind, I wanted to be rid of it. I could achieve both ends at one go.

I asked the Temptress to meet me once more.
She was surprised I wanted to meet her—the only reason she came was out of a sense of guilt, I suppose. I told her that the Old Man had left behind an incredible manuscript, that it was going to win me the prize. I opened a bottle of wine, and proceeded to become drunk. I had seen the glint of avarice in her eyes, I merely facilitated what in her mind she had already achieved.

I read the Upstart's obituary a month later. 'Brilliant mind…elegant and masterful mathematician…'

He had apparently hung himself. Suicide was a sure marker of mental illness, was it not? People drew parallels to other great mathematicians who had committed suicide, or had suffered devastating psychiatric disorders. Me? I hadn't laughed so hard in a very long time.

Unfortunately, the Old Man too passed away. The doctors said that it was as though he had utterly and completely lost 'the will to live'.

I am no longer a mathematician. I now work as a small-time artist and musician. It's much safer, you see.

-Anamay Chaturvedi ■

Drawing credits: Naveen Sendhilnathan

10, December
The Nobel Prize Award Ceremony

David Jeffrey Wineland

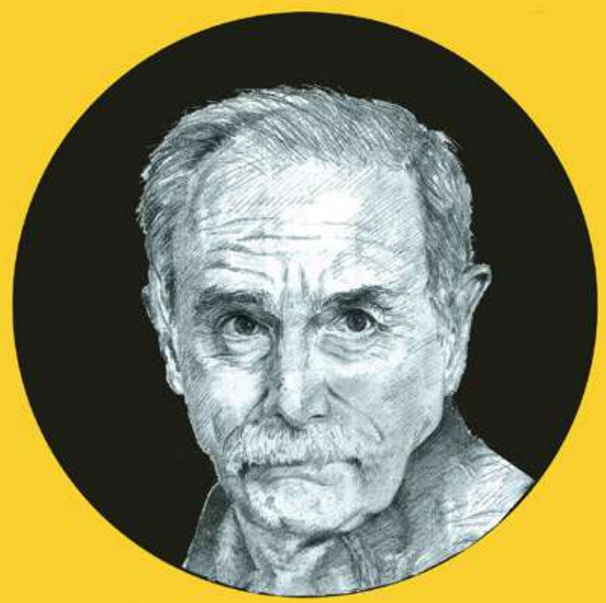
National Institute of Standards and Technology (NIST) physics laboratory

2012

In 1975, D. Wineland joined the National Bureau of Standards (now called NIST), where he started the ion storage group. Wineland is also on the physics faculty of the University of Colorado at Boulder. Wineland is a fellow of the American Physical Society, the American Optical Society, and was elected to the National Academy of Sciences in 1992. His work has included advances in optics, specifically laser cooling of ions in Paul traps and use of trapped ions to implement quantum computing operations.

Experimental methods for measurment and manipulation of individual quantum systems

Awards won by D. Wineland include the following: Davisson-Germer Prize in Atomic or Surface Physics in 1990. William F. Meggers Award of the Optical Society of America in 1990. Einstein Prize for Laser Science of the Society of Optical and Quantum Electronics (awarded at Lasers '96) in 1996. Rabi Award from the IEEE Ultrasonics, Ferroelectrics, and Frequency Control Society in 1998. Arthur L. Schawlow Prize in Laser Science in 2001. National Medal of Science in the engineering sciences in 2007. Herbert Walther Award from the OSA in 2009. Benjamin Franklin Medal in Physics shared with Juan Ignacio Cirac and Peter Zoller Frederic Ives Medal in 2010.



Interview with David Wineland

David Wineland shared one half of the Nobel Prize in Physics in 2012. A physicist at the National Institute of Standards and Technology, he is also a faculty member at the University of Colorado, Boulder. He has performed path breaking experiments by bringing ions to an almost standstill.

In this e-mail interview conducted by Amogh Kinikar, he shares his thoughts with our QUARKS readers, exclusively in this issue!

Which one of your many scientific discoveries you cherish the most?

Probably the first demonstrations of laser cooling. There were other important stepping stones in my career, but the cooling demonstration was special because it was the first time I was leading a research project.

What would you have been if not a physicist?

It's hard to say, but probably a mechanical engineer—which is not so much different than what I do in physics anyway.

Who has been the most influential teacher in your life?

My classical mechanics teacher at Berkeley, Fredrick Byron, had a great influence on me. His class was probably the most difficult one I took at Berkeley, but he had the knack of making us want to do the work.

Why is there a preference among students for pursuing research careers in theoretical physics rather than experimental physics?

I'm not able to quote relevant statistics, but in the U. S., I wouldn't have thought this would necessarily be true. From my experience, someone who has been trained as an experimental physicist can often qualify for a rather broad range of positions in high-tech commercial companies for example.

What has changed the most after you won the Nobel in 2012?

I've been extremely busy with activities related to having received the Prize. I feel obliged to try and represent my subfield of physics, which means I will make many trips for the next year or so to give presentations. This is very enjoyable but regrettably, I haven't had much time to think about new physics. ■

◀ *Drawing credits: Terrence George George*

Release

She craved to escape from the miasma of blood and the claustrophobic confines of the mephitic space in which she was enclosed—dark and desolate as the shadowy haunts of the human mind, the receptacle for unrepressed thoughts and yet a realm where thoughts unfathomable in their profundity were aborted each immaterial second of the waking day. The isolation added to the torment of her psyche, procreating the ephemeral serpents of abjection, dejection, and above all rejection; vipers dispelled solely by the gleam of hope, the hope of a renewed commencement on the dreary journey of life. She perceived that the days of solitude, interminable, as they seemed, would eventually recede from their nature of incessancy when she would finally face the world from which her physical inabilities alienated her. However, her present state presaged a protracted hiatus before her aspirations transcended the limits of imagination and traversed to the sphere of reality. Her frail deformed limbs were scarcely capable of independent movement. Her ineffectual heart, throbbing and quivering, impelled the crimson Lethe that streamed through her body, drenching and satiating her with oblivion. She could perceive the fluids pulsating in her veins and even amidst her tacit yet exigent hopes for deliverance from her state of incarceration, she comprehended that it was these external sinuous streams which perpetuated and sustained her existence. Her incapacitated lungs remained incompetent in the discharge of the duties bestowed upon them by the one whose presence echoed through the annals of her very being. She could not hope to acquire, in seclusion, the elements which prevented her from asphyxiating, the breath of the Almighty, which withheld her from fading away into the darkness of perpetuity, the domicile for the unwanted. Her vision disillusioned her; her auditory perceptions maintained a justifiably recalcitrant stance. Nevertheless, she dared to aspire, refusing to be intimated by the trepidation upheld in the dismality of circumstances. The forlornness of situations failed to subdue the glimmer, which illuminates the darkest haunts of souls shrouded by the night, a period when the demons of abhorrence and ignorance plague the conscience of society until thwarted by the orbed maiden, portending the gleam of hope—untarnished in purity, unparalleled in its ability to surmount the dolorous despondency induced by reality. Her desire to perceive the exuberance of daylight progressively transformed into her desire to live, her obdurate hope evolving from her belief that out in the world where men hated to love and loved to hate, there were still people who cared for her and diligently ensured her continued survival, people to whom she was bound by the cords of love.

The day, for which she had yearned with ineffable patience, bordering on a quintessential acceptance of the fact that the apparently lackadaisical eddies and whirls in the turbulent river of time, would eventually propel her to her destination, ultimately arrived, albeit in manner contrary to her expectance. She had desired emancipation, a wish to escape the bonds that restrained her, with an impetuous and precocious spirit without contemplating the necessity of inhibitions. She had erroneously visualized the world as an improved place, liberated from the false countenances, the fastened entrances and the barred casements that concealed the portals of the external world from ostracized sections of society, a world where people believed in the equality and sanctity of life rather than the quality thereof. Although it remained dubious whether the seeds of faith dwelt in the moist clay of her rejuvenated psyche, she had importuned her subconscious perceptions to instill a belief in her captive soul that her ordeal would culminate before long. They professed that love was the irresistible desire to be irresistibly desired, yet for those unaware of their desire amongst the hearts of their own, the light failed to find its way through the impregnable fortifications of darkness. She had longed for the warmth of light, which would infuse cognizance in and rekindle her dormant sightless eyes, with a passionate intensity, a ferocity of reinforced assurance akin to a ravishing conflagration. However, their final encounter heralded a new consummate phase of ardor and sensations previously unperceived by her naïve contemplations; exposed to the cynosure of her repressed hopes, she fervently devoured the light and in turn, light devoured her. She did attain the liberation that she desired—release from the cords of emotions which held her back. Release from the confines which she sought to relieve herself of. Release, eternal and evocative, because not until her release did she comprehend the acerbity and the verity of the uneuphemistic fact that in human life, there is but one mode of premature release, death, since the value of unrestraint cannot be realized by those who have never tasted confinement.

The rain, invoked by the portentous billows, which loomed ominously overhead in the lugubriously overcast ethereal sphere, was drizzling, with the minatory attitude of converting to a downpour. Ms. Johnston, coming out of her temporary abode for the past few weeks, staggered towards the dark Ford Mustang stationary under the porch, with wavering footsteps, and supported by her two assistants lurched into the rear seats, with an aura of pitiable helplessness emanating from a person beleaguered by her own actions. With the vehicle's progress down the road, swift and silent as the regal minions of Death's chariot, she heard the radio blare commentaries upon the election campaigns. As President Reagan's firm baritone voice cracked through the sepulchral stillness with his poignant message of abortion being advocated only by persons who have themselves been born, her sight instinctively surfeited itself with a final emotive look at the retreating diminutive image of the obstetrician's private clinic and subconsciously, her hand brushed against the fading scar across her abdomen. ■

Rhine Samajdar

Picture source: Internet

ACKnowledging IISc's Visionary Architect

संस्कृतसौरभयुता अमरचित्रकथा

Infusing an ancient language into a modern comic

Sanskrit is a glorious language. It succeeds supremely in coercing the reader to join the author in his flights of imagination. It enables poets to make the reader see more vividly, feel more acutely and filter the extraordinary from the noise of the ordinary. You can hear the clip-clop of horses on battle field, the pitter-patter of falling raindrops and the surge of ocean waves in the rise and ebb of its syllables. The rhymes and rhythms of its mellifluous meters are mesmerizing. Its structure allows eye-popping poetic acrobatics which are impossible in other languages. In short, Sanskrit is best at what it is—being a language. It is one of the finest triumphs of the perennial human quest for ways to express the myriad hues in which the world manifests itself. This is the glory of Sanskrit that we must partake of and revel in. And this is the reason why Sanskrit deserves to be protected and venerated by worshipers of words, language and aesthetics.

It is for all these reasons that I have been amongst the admirers and propagators of Sanskrit since my childhood. There are many organizations in India (and abroad) that knit together all enthusiasts like me for the growth and proliferation of the language. Of them, the premier organization is Samskrita Bharati, which is headquartered in Bangalore, with branches all over the world. The real success of the organization is the seamless way in which it integrates modernity into spreading the ancient language. It uses Facebook, publishes its magazine online and is even spearheading the Sanskrit Wikipedia movement!

One recent brainchild of Samskrita Bharati is comics in Sanskrit. Comics are an excellent way to learn a language due to the picture-word associations. They also enable children to learn Sanskrit in a natural, easy and interesting way. Also, what better language than Sanskrit to narrate our mythology and history? With this in mind, a comic translation project has been started. A few comics have already been fully translated. Many others are inching along towards completion. The entire process happens online over Google docs with multiple collaborators translating and reviewing each other. It is a wonderful example of how modern technology is helping this ancient language grow.

Quarks is delighted to exclusively present to you, a sneak peek at an Amar Chitra Katha comic in Samskritam. The comic being featured is aptly that of Jamsetji Tata, visionary and founder of IISc.

I wish to thank Ms. Anusha Rao, Mr. Shashikiran and Mr. Rajath V for reviewing the comic's translation and offering their suggestions. Read and enjoy!

Quarks wishes to thank ACK Media for its gracious consent in allowing us to use their comics. Special thanks to Smt. Reena Puri, Editor, ACK, Bangalore without whose cooperation this would have been impossible. We also thank Mr. Venkatraman U and Mr. Vikram Gakhar who took a keen interest and served as a bridge between Quarks and ACK Media. ▶

–Suhas Mahesh

आधुनिकविज्ञानशिक्षां विना औद्योगिकसमृद्धिः असम्भवः इति जम्सेठ्जी सम्यक् ज्ञातवान् |

जर्मनी-जपान्-अमेरिकानाम् प्रगतिः विज्ञानवशादेव

पूर्वं 1982 तमे वर्षे जम्सेठ्जी JN Tata Endowment Fund for Students स्थापितवान् | किन्तु शिक्षाक्षेत्रं प्रति अधिकतरं साहाय्यं दातुकामः आसीत् |

भारते उच्चशिक्षणस्य विश्वविद्यालयः भवितव्यः

१८९२ तमे वर्षे जम्सेठ्जीमहोदयस्य कनिष्ठपुत्रः रतन् टाटा नजा सेठ नाम्नीं वधूं परिणीतवान् |

विश्वविद्यालयस्य संस्थापनं जम्सेठ्जीमहोदयस्य चिकीर्षा आसीत् | १८९९ तमे वर्षे विज्ञान-संशोधन-विद्यालयानां संस्थापनार्थं सर्वकारस्य उपदानं प्राप्तुकामः एकः नियोगः वैस्राय्-कर्ज़न्-महोदयं अमिलत् |

सर्,जम्सेठ्जीमहोदयः विश्वविद्यालयं स्थापयितुं इच्छति

किन्तु कर्ज़न् निरातिथ्यम् प्रादर्शयत् |

विद्यार्थिनः कुतः आयान्ति ?

भारते प्राचीनविज्ञानप्रम्परा अस्त्येव

यदि विश्वविद्यालयः स्थापितः , विद्यार्थिनः स्वयमेव आगच्छन्ति

प्राप्तपदवीनां उद्योगाः कुतः ?

आङ्ग्लजनाः भारतीयैः सह दम्भेन प्रवर्तन्ते स्म | तेषु कर्ज़न् अत्युद्धतः आसीत् । पदविपूर्वशिक्षणसंदर्भेऽपि तस्य मित्राणां अभिप्रायः एवमेवासीत् ।

अहं श्रेष्ठतमः अस्मि

मम नाम GEORGE NATHANIEL CURZON

पूर्वं जम्सेठ्जीमहोदयेन बहवः विघ्नाः पारिताः| किन्तु कर्जन्-रूपेण इदानीं महिष्ठविघ्नः आपतितः | किन्तु तस्य मनोबलं असामान्यं आसीत् |

कर्जनः कारणात् विश्वविद्यालयस्य स्थापने विलम्बः न भवेत्

एतदर्थं सः एकं युवप्राध्यापकं बर्जोजी पाद्पां नियोजितवान् |

बर्जोजी, यूरोप्-अमेरिकायोः विख्यात-विश्वविद्यालयानां दर्शनयात्रां कुरु

ततः तेषु अस्मदर्थं कः अदर्शः भवितुं अर्हति इति सूचय

बर्जोजी अष्टादशमासाः यात्रां कृतवान् | John-Hopkins विश्वविद्यालयेन सः चित्ताकर्षितः |

स एव अस्माकं आदर्शः भवेत्

१८९८ तमे वर्षे सः भारतं पुनर्प्राप्तः | तस्मिन्नेव संवत्सरे दोरब् टाटा मेहर्बाय्-भाभा-नाम-कन्यां परिणीतवान् |

जम्सेठ्जी इदानीं प्रम्पादर्शः | किन्तु कर्जनः अङ्गीकारः न आसीत् | तथापि जम्सेत्जी कृतनिर्धारः | तयोः मध्ये वाग्युद्धम् आरब्धम् |

सर्वकारः राज्ञः आर्थिकसाहाय्यं दातुं नाज्ञापयति

वयमेव याचामहे

अयं स्वकीर्तिवर्धनाय स्वार्थयत्नः

स्वनामधेयं कार्यैः सह एकत्रापि न संबंधितवानहम्

अयं विश्वविद्यालयः राष्ट्रियप्रकल्पः | तस्य नाम अपि राष्ट्रियं एव भवेत्

जम्सेत्जी सदा पुङ्गवानां अभिप्रायं याचते स्म | विश्वविद्यालय-स्थापने सः नियान्-आविश्कर्तुः नोबेल्विजेतुः विलिय्यं रांसे महोदयस्य मतं अयाचत | तदर्थं १९०० तमे वर्षे तं भारतं प्रति आह्वयत् |

युक्तं स्थलं किम् ?

अहम् अन्वेषणं करोमि

स्थलत्रयम् उचितं लब्धम् | मैसूरु , मुम्बै , बेङ्गलूरु च |

बेङ्गलूरू युक्तं स्थलम्

५०००£ सार्वकारिकं वार्षिक-अनुदानं उचितं इति मम अभिप्रायः

किन्तु कर्ज़न् हठमग्नः |

२०००£ धनादधिकं न

मम स्थिर-सम्पदः त्रितीयभागं विश्वविद्यालयाय दास्यामि | सर्वकारः न्यूनातिन्यूनं तावद्वा दातव्यः

२०००£ धनात् लेशमात्रं अधिकम् अपि न

मम पुत्रद्वयं अस्ति | अयं विश्वविद्यालयः मम तृतीयपुत्रवत्

स्वमृत्युपत्रं परिवर्तयामि

तयोः मध्ये कदनकुतूहलं न उपशमितम् | कर्ज़ोन् दर्पवान् हठवान् च अवशिष्टः | अन्ते जम्सेत्जी उच्चाधिकारिणं भारतसचिवं प्रति गतवान् |

स्वमरनात् नातिपूर्वं , जम्सेत्जी स्वमृत्युपत्रं परिवर्तितवान् |

मम मरणात् परं यदि विश्वविद्यालयः स्थाप्यते तर्हि मम मृत्युपत्रस्य अनुष्ठारः मम सम्पदः पर्याप्तं धनं तदर्थं देयुः

जम्सेठ्जीमहोदयस्य महाप्रयत्नं साफल्यं अभजत् |

अस्तु | विश्वविद्यालयस्य स्थापने अङ्गीकारः दत्तः z

ततः University of Advanced Research बेन्गलूरुनगरे स्थापितम् |

संस्थायाः प्रभावात् अन्यानां श्रेष्ठसंस्थानां निर्माणं साधितम् |

Central Food Technological Research Institute, मैसूरुनगरम्

India Lac Research Institute, रान्चीनगरम्

Bhabha Atomic Research Center,मुम्बैनगरम्

Life in science is like a marathon, so one needs to have the stamina for a marathon.

DIVERSE STRING MARATHON

1987 JEE topper, renowned string theorist

Rajesh Gopakumar

- Masters from IIT-Kanpur
- Ph.D. from Princeton University
- Research Associate at Harvard
- Theoretical Physicist at HRI

A voluminous book can be definitely written on his phenomenal research life, here we mention a few:

2004 B.M. Birla Science Prize in Physics.
2006 ICTP Prize.
2009 Shanti Swarup Bhatnagar Award
Fellow of the Global Young Academy of Scientists for 2010.
Member of the Indian National Science Academy and the Indian Academy of Sciences.

Photo Credits: Naveen Sendhilnathan

Rajesh Gopakumar is a theoretical physicist at Harish-Chandra Research Institute (HRI) in Allahabad, India. His research is primarily focused on topological string theory. He is known for proposing with Cumrun Vafa the Gopakumar-Vafa duality and Gopakumar-Vafa invariants.

Apart from his awe-inspiring research profile in string theory, what inspired Pratibha Mahale from the Quarks team to write to him and get our readers his interview was the distinct and unique decisions that he made during his life.

Rajesh Gopakumar stood first in IIT-JEE 1987. Unlike the trend then and now, he did not opt for an engineering subject; instead, he chose to do an integrated MSc. in physics from the Indian Institute of Technology, Kanpur. This was a contradistinctive decision, especially during his time. Akin to his unique choice, the undergraduates at IISc have also preferred to follow their passion in Science. A quick discussion and glimpse of the reasons that motivated him to do so will hopefully inspire many of us.

Another remarkably inspiring decision he made was to return back to India and join HRI. He received his Ph.D. from Princeton University and also worked as a research associate at Harvard University for a few years. Nevertheless, he was immensely captivated by the evolving, dynamic Indian society and was thoroughly inclined to contribute to India's progress scientifically.

The term and reasons for the "brain drain" become infinitesimally small in front of his passion.

Although our first attempt to interact with him was via email, we were fortunate that he was visiting IISc when Pratibha contacted him. He invited the Quarks team to come, discuss and conduct the interview. So, our enthusiastic team comprising of Amogh Kinikar, Milind Hegde, Naveen Senthilnathan, Pavan Malagimani and Sunandha Srikanth joined him at the International Centre for Theoretical Sciences within IISc.

Here, in Diverse String Marathon, Milind Hegde and Pratibha Mahale have tried to put down his exquisite and inspiring words for our readers.

–Pratibha Mahale

Quarks Team (QT): You were an IIT-JEE topper in 1987. We generally expect the topper to take Computer Science in IIT Bombay or something of that sort, i.e. to take an engineering stream. In spite of this you chose to pursue science, probably a very challenging decision to take. So what inspired you to take this decision?

Prof. Rajesh Gopakumar(RG): Yeah … good. Long time ago, 25 years, or more … but it was the I think I was always interested in physics, mathematics, and chemistry, and so on … even in class 6th and 7th I liked to play around with chemicals. Science and mathematics in general fascinated me. My family didn't have much of a background of anyone going into science, but my father was an engineer … nevertheless by reading and getting acquainted with books I gradually realized that science and research and everything is a very satisfying life and as I grew up, sometime around class 10, I decided that I wanted to do science. I realized that there is a certain element in science which is absent in engineering or in other fields, which is that of a quest. I mean, you're embarking on a journey, a long journey, to find something that will be not just transitory but hopefully lasts forever. So, the appeal of that quest I think was there and so I was not actually going to write IIT or any exam because I was thinking of studying science in Kolkata where I was growing up. But then a person I knew, one year senior to me went to IIT Kanpur and he told me the physics programme there is very good and he sent me the list of courses and everything. Then I heard from others that the MSc five year programme that they had was a very good one … so I thought of it and besides that I had heard many things about colleges in Kolkata concerning various problems. Then I thought I should at least keep that option open and give the IIT. I think there is sort of a certain element of luck in getting a particular rank and so on. I had told my family when I was in class 10 and 11 that I was not planning to do any engineering. In fact I didn't give any of the regular engineering exams. I just gave for ISI … at that time very few undergraduate programmes were there in science, unlike now where you have more options; IISER, IISc and so on. But my parents were initially also surprised. However, on the whole, they were fine with the decision. They, I think, trusted my judgment and of course I have the least amount of regret about it (laughs). I'm happy I had the maturity to ▶

Rajesh Gopakumar has been primarily interested in understanding better the relation between string theories and quantum field theories.

His work on this relation, in the context of topological string theory has also had an impact in mathematics. He is known for proposing with Cumrun Vafa the Gopakumar-Vafa duality and Gopakumar-Vafa invariants

One of his many publications that have received recognition is "Baby universes and string theory", published in 2006.

to it. I felt culturally more in resonance with the situation in India. In a way I felt, apart from any scientific consideration, I felt life there … academically it was very good, I enjoyed it very much. Especially during my stay at Harvard, I had good friends and it was very nice, but I felt in the long run I couldn't see myself staying there forever. It was good while it lasted and then I think after a phase, one has to move on. And in a way what I felt was [that America] in a cultural sense or in some other sense has reached some kind of, what in physics terminology you say a fixed point. It is not evolving very much; it's much the same. I mean over the ten years that I've spent everything around is much the same, real life is sort of … translationally invariant. But whereas in India it is much more complex. The society, the dynamics of it … even the last ten years that I have been in India things have changed so much. And maybe you people in your lifetimes have already seen so many things that have changed. And in terms of the society as a whole and scientific institutions also … there are now completely new institutions, a change in the dynamics of science in India. So it's a very fertile, evolving system and I wanted to be a part of that. And in my own way scientifically also felt I would be able to contribute in India. I mean in the US there are plenty of very good people … so it's fine, you might do well. But I think you would have a disproportionately higher impact in India, being in India, interacting with Indian science students. So I think it's a much more challenging opportunity, it's a more interesting thing. Besides, scientifically in my area, myself being a theorist, and my specialisation being string theory, there were already a number of very good people in Indian

Good that now there are IISERs and IISc that have good undergraduate programmes so that people like you are attracted towards doing the sciences, different basic sciences

decide at that age to do this. I feel science; the life of science is definitely … if you have the temperament for it, if you have the aptitude for it, it is certainly a very fulfilling one.

QT: You had gone abroad to pursue further studies and yet you came back to India to do further research. Most people do not do that.

GP: (laughs) It seems like I prefer what most people don't do. Yeah, there were many elements. I think even before I went abroad, I felt I would come back. I spent quite a long time, nine years or so I spent abroad and I didn't see any reason to revisit that decision. And there are many elements institutes. So, scientifically it has been great to be back in India. There is a small but very cohesive community of string theorists. We meet very often, we interact very well; there's no friction, no tension, no politics. It's a very nurturing environment. So, I think that's also very important. And I think there's a common purpose and for the same reasons, that many of us who were abroad have come back, which drives people … and so scientifically I have not felt that it was any kind of a bad decision. In fact on the contrary I would say in some ways it can be a very good decision also, scientifically, in a counter-intuitive way. Because though you feel that much of the scientific progress is being spearheaded in the US or the West in general, there're also certain drawbacks. I mean, science to progress and to develop needs diversity also. And there is a danger in the US, especially in ▶

Prof. Rajesh Gopakumar shared his views and experiences while motivating the QUARKS interview team that evening.

Photo Credits: Naveen Sendhilnathan

Why string theory?

GP: Actually in a way, I didn't think of doing string theory. My Ph.D. work was more focused on Quantum field theory. But one of the motivating factors has been the ability of string theory to generalize the framework of Quantum field theory that describes the already existing interactions—which in a way also includes gravity. This generalization of Quantum field theory is not easy. For many years people could not achieve it.

So theoretically it is a very rich subject. This richness appeals to me with the scope of new ideas which sheds new light on the nature of gravity also. More than the unification which may or may not happen through string theory, I think its consequences on gravity and Quantum field theory are more compelling reasons to study string theory.

But one should always be skeptical of a theory until it is experimentally supported. There are some instances of being misled by theoretical structures. So, experiments should be kept in mind.

some of the theoretical disciplines and so on, of the diversity going. In the US it's not very easy to be diverse. There are fashions people follow, there are sociological elements in the way science progresses also. There are things which are somehow popular, and so a large number of people work on that and they don't explore other directions. Whereas being away from that, a little bit away, gives you a certain distance and freedom to explore your own things. And that I think has helped me and has scientifically, in some sense, been of benefit. And I think for many of the people who have come back to India it has worked that way. Broadly I believe that it's very healthy that science should be diversified over the whole planet and should be not concentrated in a few pockets because like in any ecosystem you need the diversity to generate more ideas, to be more of a creative subject. So there are many elements like this which went into being in India. And even within India … the same thing that I said at the global level also applies within India. In a way it would have been natural for me to come back to India and to stay in Mumbai, where there were people and so on. But again for various reasons I decided to go to Allahabad. It's again counter-intuitive. Allahabad is a small out of the way little town, in north India in UP, but in the end I have found it very fruitful. I mean, I had studied in Kanpur so the environment was very familiar to me. At some point, probably 15 years ago, TIFR was probably the only centre in India where there was string theory research. Now in the last 10 years or so, groups of string theorists are coming up across the country. So now there are about 45 faculty members in string theory here in Bangalore. Now Bangalore has also become a hub where there are a number of good people…similarly in Chennai there are a few people. So it's good. Within India you have many different centres, people who are exploring things.

QT: These days, among the youth, everybody wants to study and become an engineer. Do you think this is beneficial to the nation as a whole?

GP: I think this imbalance is never a very good thing. So, it should never be that everyone wants to do one thing. It's like I was saying a little while earlier about diversity. I mean not only in engineering vs. science. There are so many disciplines there that I think bright young people should go into, I don't know, archaeology, or anthropology, or something else … very exciting ideas, many things to do. India is such an ancient country with so many things. Archaeology and archaeological sites are in such bad shape. We don't have people in our country doing archaeology, trying to understand and reconstruct the past. Everyone is just going into very narrow channels, medicine or engineering. That I think in the long run it will just weaken the country. Good that now there are IISERs and IISc that have good undergraduate programmes so that people like you are attracted towards doing the sciences, different basic sciences. It's good that it's all integrated here with engineering because that's how it should be. Engineering, without the scientific base, after a while doesn't have ▶

> Its consequences on gravity and Quantum field theory are more compelling reasons to study string theory. ”

> In essence, String Theory describes space and time, matter and energy, gravity and light, indeed all of God's creation … as music. ”

STRING THEORY

It is a theoretical framework in which the point-like particles of particle physics are replaced by one-dimensional objects called strings.

anything new coming out of it … many areas of engineering die out after a while if they don't have new scientific input entering. So, if you see even in in the US all the very good institutes of technology like MIT, CalTech, have very good science departments in physics, mathematics, and various social science areas. I think it's only in India that we have purely technology institutes like the IITs. IIT Kanpur was an exception in having a good physics department. Nevertheless, I think we should have more of that. I think the fact that IISc has something where science and engineering are in the same institute, that's a good thing that undergraduates get a little bit of exposure to engineering disciplines. I mean it's not that engineering is bad or anything terrible about it, but there should be this linkage between science and engineering. People are going into engineering just for getting a degree and then to do a marketing job or something… in the long run I don't think that serves the country well. But as I said earlier, there should be much more diversity… even within science, people should also venture into other things depending on their particular passion or interest. I think we should have people going into all these things, only then will we have a broad scientific background in our country.

QT: String theory amongst physicists is very popular. But, it has failed to capture the public's imagination and attention unlike other fields like Quantum mechanics (QM). As Quantum mechanics was introduced and as it developed, people were all around it. They talked about Schrodinger's cat. But, we never see people talking that vividly about string theory.

GP: (laughs) To be fair, I think QM was very revolutionary. It was a big change. I don't think string theory has had a comparable impact or contribution.
QM is a very radical change. It has spread to various disciplines like chemistry. However, string theory is a rather conservative revolution. Another important point is that string theory still needs to be experimentally verified whereas QM was immediately supported by experiments. So, QM became more popular.
Nevertheless, string theory, in some way, is offering a radically new picture of the nature of fundamental particles. Once the theory is experimentally verified and it attains its final shape, more people will connect to it and will eventually become more aware about it. Currently, the theory is still developing. The consequences and the applications of this theory are barely unveiled. As and when we understand the theory and it is experimentally verified, gradually its level of acceptance in the scientific community shall increase.
I think many people have heard of string theory, but they have more profoundly heard it as ten dimensional, etc. Basically, the communication is incomplete. As the theory develops the scenario will change. I think the general public is interested in learning science, understanding the nature of fundamental particles, but there is a subtle gap in the communication. In India, there are not many good popular science magazines. And very few newspapers have a good, informative science column which communicate accurately. Earlier, there were some science magazines for children, but they have also disappeared now. There are numerous TV channels, but very few Indian channels are dedicated to science.

QT: What is stopping string theory from becoming completely realistic? We understand that for experimental verification of string theory we need very high energy. What are the future prospects of such experimental verification? Can we achieve it?

GP: String theory aims to describe the motion of particles at very tiny length scales and at high energy. So, if you want to directly probe them, you certainly require very high energy. But, very often in science you can experimentally verify not only by directly probing but through study of indirect consequences of the theory also. For example, there might be signatures of the existence of strings at an altogether different scale. This indirect study would be our best hope to verify string theory.
Direct probe requires a very high magnitude of energy. So, that I do not know, if it has a foreseeable future or if it is technologically feasible. It is very challenging. We will in fact need a radically new idea to accelerate particles.
See, it is actually a question of energy density. The enormous energy we are referring is as much energy as a tennis ball has when it moves along just after getting smashed by the player. But, you want all that energy in an electron/proton, a very small particle. That is what makes it difficult. It is not that the total energy is very high but that putting all that energy in a small particle is challenging.
Maybe a clever idea can come up to do this but it will certainly not be an extrapolation of the current existing ideas. It needs something different.
Therefore, the direct probe of string theory is not very likely; but yes, the indirect consequences can be studied and are being studied. It is in fact the field which is expected to develop in the next ten years.
The interesting thing about string theory is that it initially started with an attempt to describe Quantum gravity and behavior of particles with high energies. However, as people studied it, it has eventually evolved more like a framework which generalises the already existing powerful framework of quantum field theory which in turn forms the basis of all the other fundamental physics currently.
Because of the generalised framework people have tried to apply it to other situations like nuclear collisions, condensed matter physics about strongly interacting electrons in solids. In a sense, the formalism of string theory has the ability to shed some new light in these areas. So, there is a community of people who are applying string theory in such diverse fields.

As an example, in condensed matter physics there is an idea that maybe there exists a way of describing the dynamics of strongly interacting electrons in a dual sense. So, the effects of string theory can be verified in various areas of physics. This is also a potential place where technical formalism of the theory can be verified. These are some new developments and many people are excited about it. ■

Photo Credits: Naveen Sendhilnathan

QT: Undergrads here are majoring in a pure science field, and many of us are planning to pursue research. Is there any particular characteristic you think a good scientist should have?

GP. Well, life in science is like a marathon so one needs to have the stamina for a marathon. You need that perseverance. You should have a real passion for the subject that makes you really learn it, do it and really understand it. I think this is something that is very necessary, because school and to some extent our college education does not quite prepare us for this marathon as things are based on exams (laughs). See, in exams there are some things that cause problems like limited time. So it is altogether a different mode from being a real scientist where you have to formulate your own problems and then make an attempt to solve them. This passion for the subject along with perseverance is an integral component of the marathon.

Connection

We cannot live only for ourselves. A thousand fibers connect us with our family, friends, fellow mates and our beloved activities. And among those fibers, as sympathetic threads, our actions run as causes, and they come back to us as effects. Basically, our roots, our background and our current relations define us, our memories, our present and our future. Become nostalgic in this section. Sit back and recall some of such memorable moments.

Art by
JANHAVI ATIT KOLHE

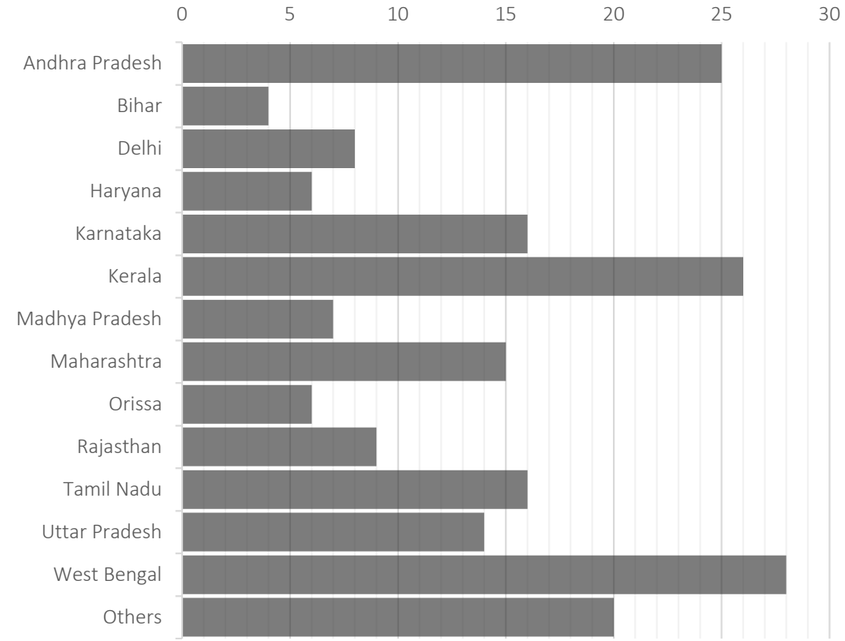
hometown

My people, My place

Midnapore Agartala Chennai Jammu Mumbai Nagpur Jaipur Mohali Shimla Vishakhapatnam Hyderabad Jabalpur Delhi Meerut Roorkee Kolkata Patna Lucknow Dehradun Anantapur Bengaluru Thiruvananthapuram

"Because I miss them, Because I need them, Because I love them." - Rebecca Wells

The student community at IISc UG represents virtually all regions of the country. One loves to say that we are a 'Mini Bharat' but not often do we feel so. Because, no matter who you are or where you are from, you are hard-wired into college culture once you are in: TV shows, gaming, movie marathons, hangouts in food corners, all-nighters, proxy, queuing up for class notes before exams, on and on. The list is long and all-inclusive, much like the dinner time conversations in the mess. Whether you like this or you fear being left out, you are into this. As days pass by, this becomes your new identity. It is not surprising, therefore, to see a guy from Kochi and another from Jammu being best pals.



We at QUARKS, however, got curious about the other identity of the UG fraternity—the part of the self that shows up when we feel a positive sense of belonging to our place while narrating our little adventures back home to friends (all Ooh!s and Aah!s), in revisiting memories of childhood, the part that feels the ecstasy while running home after another taxing semester. ("It's the only place I can run to when I need to," as one of our friends pithily put it.)

In the following pages, you will find the sweetness of life in a small town, accounts of sleepy cities which have retained their identity over the years and an insider's view of our bustling metropolises, all written by their respective residents who are now Bangaloreans(IISc UG). We are sure you will have your moments of nostalgia glancing over the stories. Happy reading!

On Being in Anantapur

Largest district in Andhra Pradesh

-Aravind Rao Karanam

Anantapur—it is my home, my idea of a small town. I grew up there, well assured that every town has, in fact must have, its own "Clock Towers", "Subhash Roads" and "National Parks". To a child that goes to school everyday, plays cricket and watches the Popeye Show in the evening, and goes out, on occasional Sundays, in its best outfit, to Mama's house, the place is not too small. When I went, along with Daddy on our scooter, and discovered that roads in a city had to be connected, I declared, in overwhelming delight, "My town is the best!"

When I took to reading R.K. Narayan's stories, I romanticised my perspective of my town. The connection with the story "Lawley Road" is amusing. The haste in which the Municipal Council in the story renames all the roads, parks and public places after national leaders seems to reflect the mood of the country post-independence. The ideas of a "modern", "nationalist" state shaped policy-making on a simple minded and predominantly poor population, who play the roles in R.K.'s stories. So we have, in Anantapur, the iconic Clock Tower, erected shortly after independence. A stone plaque that reads 'Independence Committee' is inscribed on its wall. The edifice was inaugurated by Dr. Sarvepalli Radhakrishnan, who had also worked at the Govt. Degree College, a stone's throw from the tower. I fondly thought about the people of Anantapur as the same ones in R.K.'s stories. They didn't seem to care for all this, I thought. I also wondered if anyone knew about the history of the tower. Each clock on its four faces showed a different time of the day!

I thought people, all of them kind and lovely, lived their lives craving for ordinariness, the highly-rated quality of R.K.'s stories. Years have passed, this little town has remained much the same. People are quite happy doing undisturbed jobs, children studying in schools that have about three decades of history, going to Engineering colleges, securing a handsome pay cheque from a company in Bangalore or Hyderabad, eventually moving out of town or even the country. For all one's accomplishments, life is bound to be ordinary. One age passes the baton to the next, the rules of the game may change but the play goes on, I thought.

But I was wrong. People have genuine intentions, sometimes a vision, for life. I have met a number of people who have brought a major change in their or others' lives through their deeds many of which were purely voluntary.

Not enjoyment, and not sorrow,
Is our destined end or way;
But to act, that each tomorrow
Find us farther than today.

Thus wrote H.W. Longfellow in his "A Psalm of Life".

There are a number of Government School teachers who write and compose heartening songs, sing them on radio programmes, teach those to their students and carry the literacy movement forward. These are people who can recite hundreds of *neeti* Sataka poems, classical and folk songs. They learn magic tricks, give shows in villages to warn people against fraudulent *babas* and swamis. In all, they are wonderful people to talk to and get inspired from. This is no ordinary feat. Enter a computer marketing shop, and you are sure to find the expert and a couple of boys learning the trade, in local language and with extraordinary clarity and intricacy. Probably, those boys did not get an admission into an Engineering college. Probably they dropped out of school very early or their education could not be supported by their family. Initially they fumble, they irritate the customers trying to be smart. But with determination they grow and earn handsomely, one day. This is not ordinary, either. No recession can control computer glitches nor can it stop any fuse from blowing up.

They said I succeeded in the competition, for obtaining world-class higher education. They said I can call it an achievement to be a part of an intellectual community of such a standard nurturing the youth to take over the leadership. For a moment, I think otherwise. I think I am kept in this secure place so that progress out there is unhindered.

This is the story of my people. As one famous pre-independence Telugu poet, Gurajada Apparao said, "A nation does not mean soil; a nation means people,"* it is also the story of my place, which is aspiring to 'find itself farther than where it is today.'

"దేశమంటే మట్టి కాదోయ్, దేశమంటే మనుషులోయ్."

Pictures source: Internet

Jovial Queen of Hills: Shimla

Ankush Sood

Shimla is a hill station in North India. The city's small population makes it much akin to a large family. The Mall Road is popular among all generations and one need not worry about finding company on spot. Cycles and auto rickshaws are never used. So many, like me, learn cycling only after joining college! Summer temperatures rarely go beyond 30°C. From time to time, snowfall in winter whitens the entire landscape. Winter also provides a long time for recreation as schools are closed for three months. Cricket and football are somewhat challenging. A misplaced strike may drive a football hundred feet downhill. Apple picking in splendid orchards starts by mid-June and houses are flushed with juicy red apples in no time. Notorious monkeys are always a concern among locals. Tudorbethan architecture is common and reflects the city's past, which was once the summer capital of British India. The night sky in Shimla has far more stars than in any city that I have visited.

Pictures source: Internet

Bountifully bestowed: Agartala

Biplabendu Das

My city Agartala, the capital city of Tripura, is a small but beautiful green city in the north-eastern part of India. It is a place where you will see what actually "unity in diversity" means. With around 10 different tribes, living in a city of mere 4 lakh people, in such harmony—I can boastfully say that we reflect a kind of understanding and brotherhood that is very essential for peaceful existence. The history of Agartala, and broadly Tripura, is culturally very rich. All the people, though from different tribes and culturally so different, have mingled well but at the same time have preserved their own culture and their ethnic heritage. Rabindranath Tagore visited the city several times and was a close friend of the royal family. Here, what one will predominantly find is greenery and an undeniable peace associated with it. If one wants to rejuvenate oneself, one should visit my place at least once. After all, the great S.D. Burman once lived and breathed the same soothing air of this land. There are many beautiful places of tourist interest—palaces (Ujjayanta Palace, Neermahal), temples (Matabari, Jagannath temple), rock-cut temples (Pilak, Unokoti), lakes (Kamalasagar), parks (Rose Valley Amusement Park, Heritage Park), the zoo (Sipahijala) and the museum on the outskirts of the city.

My home town: Midnapore

Indrashis Datta

On the banks of thee Kangsabatti river, Midnapore is famous for its pioneering role in the freedom movement. A martyr like Khudiram Bose was a student of Midnapore School (formerly Zilla school in which I studied too). But in recent years it is going through turmoil as it has witnessed a prolonged anti-Maoist campaign jointly driven by the State and Central governments. It is the main control point of all sorts of anti-Maoist activities spread over the districts of Paschim Midnapore, Bankura and Purulia. It is not something to be proud of but I want to share it with you all: many a times, I have seen long processions of CRPF jawans armed with rifles. While coming back from coaching classes around 10 PM, we used to have freezing experiences with the COBRA forces patrolling on the desolate road. So far, no undesirable incident has happened in the town. I love my home town, its heritage and the scenic beauty on its outskirts, but at the same time I want a peaceful life. The situation is stable enough which is a ray of hope. ▶

Pictures source: Internet

In My City:

HYderAbad

–E. Swetha

The "Hyder's abode" or "lion city" has been my home for the past ten years. In these 10 years, I have learnt a lot from the city and seen the city in all its forms. But the incident that has left a profound impact on me is the "Telangana issue". The capital city hangs in between the two so-called divisions of the state "Telangana" and "Andhra" and hence this issue has greatly affected Hyderabad and in particular, the student community. Some proportion of students are voluntarily involved in the protest marches and bandhs. But a considerable section of students is a part of this due to some or the other external pressure like lecturers asking them or their seniors pressurising them. Also, there have been certain instances where some outsiders like *autowalas*, who have been paid/bribed, carry out protest/bandhs in colleges and the administration blames the act on students. The situation gets worse when suicides committed by the people/students are also exploited by the politicians for their own benefit and the suicides are christened as a sacrifice for Telangana regardless of the circumstances that actually provoked the act.

Another most heartbreaking thing is the indulgence of media in this issue in a wrong manner. The coverage of media on this matter predominantly highlights that the people of Telangana and Andhra hate each other and cannot withstand each other. However, this is far away from reality. We all live together in the city peacefully. We enjoy a friendly relationship and share a unique bond with each other. We are not two divided halves. We are actually one. The inappropriate coverage and comments by the media create a violent or hateful image of the city in the minds of other who have not experienced the ambience of the city. I do not know whether the formation of Telangana is beneficial or not, if it is correct or not. My only concern regarding this issue is that the city has already lost a lot in the past 4 years: its educational life, its business, its transport services and more importantly, its image, so let it now save what it has and prosper ahead!

Pictures source: Internet

The delight of being a Delhite

P Shubham Parashar

It is not an easy task to sum up the experiences of living in a wonderful city like Delhi where I have been living for the past 17 years. Every day in this city is a new experience, a new encounter with all kinds of emotions that one can experience, be it happiness, sadness, frustration, anger (especially when you have to stand at long queues to get a driving licence). I may not be able to define objectively why I miss my Delhi, but at the same I do yearn for holidays to arrive so that I can go to the city which appeals to my senses in many ways. It is the funny connection of me with my city which can never break. Maybe it is because of the sounds, the sound of the bell ringing at the nearby Saibaba Temple or the incessant blaring of horns at the Khan Market crossing or the feeling of having made the day after finding the DND empty in the afternoon or the joy of crossing the metro gate without having to pay the toll tax. I think it is because it is the only city I can call my own. It is the only place I know (almost) like the back of my hand. It is the only kind of people that I can sometimes hate yet completely relate to. It is the only place I can run to when I need to escape and fall back on when I need a place to call home.

And that is not the end of it just because I put a full stop, my experiences with Delhi may well be written as a "thick description" as Clifford Geertz used to say. Therefore, the reader shall have to reconcile to the fact that it is my attraction to the city and not think of me as arrogant or snobbish when I say "DELHI IS NOT JUST A CITY. IT IS A BELIEF. IT IS A PHILOSOPHY OF LIFE. IT IS A WAY OF LIFE.

Overrated? Think again! ■

Of bows and strings

Tunes that touch the heart
With a graceful bow
Strings that create magic
Soulful and tragic.

Fingers fly gently
In synchrony with the spirit
To tell a tale to be told for eons
Guided by the angel of music.

Harbinger of joy that blooms in spring
It is an instrument of love and life
That creates a little stir in the darkness
For a ray of hope and light.

Aditi Mishra

दिल विल प्यार-व्यार दूर की बात,
Love होते ही समझ आ गयी औकात,
जागते भी होश खोने का time है,
Mono से diatomic होने का time है।

साथ में पढ़ती थी, facebook से face off हुआ,
उनके 143 tweet करते ही हमसे single का कलंक साफ़ हुआ।
घर के डर से status तो change नहीं किया,
पर उस रात Zuckerberg को दिल से बड़ा वाला thanks ज़रुर दिया।

Phone और internet के अलावा कुछ समझ आता नहीं,
माँ कसम उनकी याद में एक निवाला हलक से जाता नहीं,
दोस्त कहते है "she is a bitch and u r a dumb",
पर क्या करुँ यारों " she is my ring and I am her thumb".

आशिकों को देख कर हमने मज़े बहुत उडाए हैं,
इस रात खुद को आशिक बनते देख खुद क्यों घबराए हैं,
बिस्तर में पढ़ के नींद नहीं आती है अब,
चार रजाई औढ़ के भी ठंड जाती नहीं अब।

Dating को पहले कभी date न दी थी,
Girlfriend तो क्या girl को friend बनाने की कोशिश भी नहीं की थी।
आज एक sms मेरी नींद उड़ा गया,
लगता है की अपने देश में भी प्यार का मौसम आ गया।

Harshit Dubey

Drawing Credits: Naveen Sendhilnathan

প্রতীক্ষা

দিনান্তের পথ চেয়ে থাকা কবি আমি
বসে থাকি ভাবুকের মত।
আপাত শান্ত মস্তিস্কে নিরন্তর দুরন্ত চিন্তা করে আনাগোনা
নিশ্চিন্তে দিন কাটানোর বাসনায়...
ফেসবুক, টুইটার কিম্বা অনলাইন গেমিং...
আলোকসম বেগে ধাবমান এই সমাজে আকন্ঠ কর্মব্যস্ত সবাই
তারই মধ্যে সুখের অন্বেষণে ব্যাপৃত।
চারিদিকে যত দেখি তত মনে হয়
সত্যই আজ সময় বড় মূল্যবান
যখন সবাই নিজের ভবিষ্যতকে নিশ্চিত করতে
নেমেছে এক কদর্য প্রতিযোগিতায়
প্রতি মুহূর্তে বদলে যাচ্ছে পেয়ারের সূচক
ভাইয়ের সম্বন্ধ স্বার্থের রোষানলে ছারখার হচ্ছে
সর্বাধিক মুনাফা লাভের কাছে মানুষ মনুষ্যত্ব বিকিয়ে দিয়ে বীভৎস হত্যালীলায় মেতে উঠছে।
যখন মাকে তাঁর দশ বছরের মেয়েকেও
পুরুষের শানিত দৃষ্টির থেকে আড়াল করতে হয়
তখন সময়কে বড় অনিশ্চিত মনে হয়।
সময় তখন আমাকে বড় অস্থির করে তোলে।
জানিনা কবে সেই নিশ্চিত ভবিষ্যতের স্বপ্ন সফল হবে।
জানিনা এই ঘোর অমানিশার বুক চিরে কবে জ্ঞানালোক প্রকাশিত হবে
কিন্তু যখন স্বামী বিবেকানন্দের দৃপ্ত ভঙ্গির দিকে চোখ পড়ে
যখন তাঁর উদাত্ত আহ্বান শুনতে পাই
"Arise! Awake! and stop not till the goal is reached"
তখন যেন আশার আলো দেখতে পাই
দৃষ্টিপথে উদিত হয় এক নিশ্চিত ভবিষ্যত
যার আশায় আমি চিরকাল প্রতীক্ষারত।

দীপন ঘোষ
Dipan Ghosh

Picture source : Internet

For meaning in English, please turn to page 249

As she toddled by,
The flowers started to droop,
“Ashamed that she was prettier than the flowers”
Reasoned I.

The bright sun buried his face behind a cloud,
Casting grayness, along her path,
“Ashamed that she was brighter than the sun”
reasoned I.

Even time seemed hesitant to flow
“Ashamed that her motion was smoother
and unpredictable than the flow of time”
reasoned I.

Though conscious of my following her,
She pretends to be unaware of my presence, and
With a smile, quickens her pace.

As she flitted into a dark alley,
It felt as if the darkness itself foraged,
to seek sanctuary behind her.

soon, I lost track of her,
as I stood there lonely, in the dark alley,
Overcome by darkness around me and grief as well,
drowned in sorrows of my life, I stood.

“ You seem to be in great sorrow”
A melodious voice remarked.
I brightened up, sorrow and darkness long forgotten,
I turned around and faced her.

“After a kiss of mine,
None of an Evil, shall ever befall you”
she assured me with a pleasant smile.

I smiled and closed my eyes,
I felt her lips on my cheek.
“What might your name be?”
Asked I.

“DEATH” came back the whisper
And, I thereafter never opened my eyes.

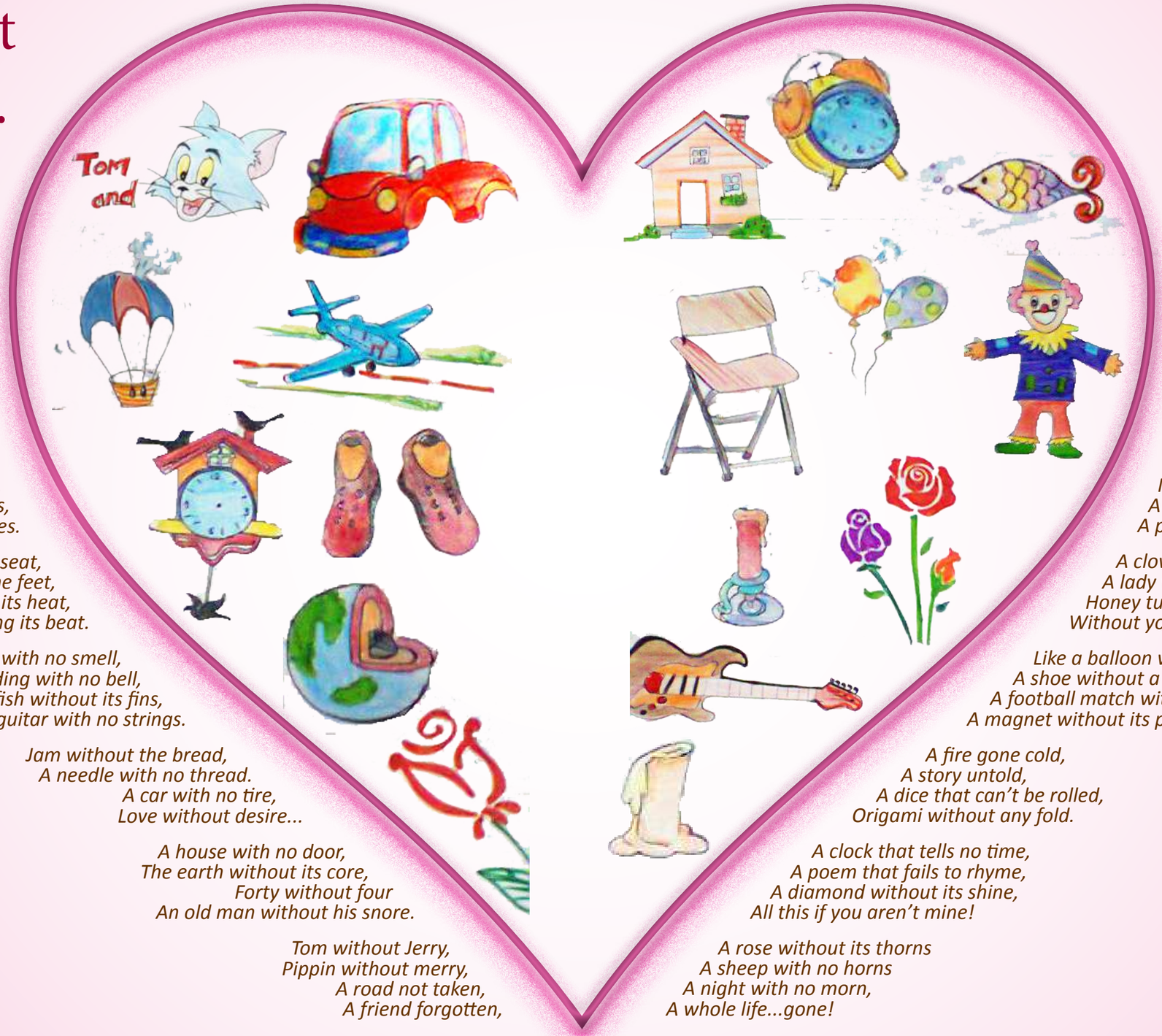
Indeed, It was true,
“After a kiss of hers,
None of an Evil shall ever befall me,
For there was no greater Evil,
Than, the Kiss of Death”.

Drawing Credits: Terrence George George

Picture source : Internet

For meaning in English, please turn to page 249

Me Without You is like...



Me without you…is like...
A pothead who's not high,
A plane that cannot fly,
A suicidal, that does not die.

A shoe with no laces,
A nerd with no braces,
A journey to no places,
Asentencewithoutspaces.

A desk without a seat,
Socks without the feet,
The sun without its heat,
A heart missing its beat.

A flower with no smell,
A wedding with no bell,
A fish without its fins,
A guitar with no strings.

Jam without the bread,
A needle with no thread.
A car with no tire,
Love without desire...

A house with no door,
The earth without its core,
Forty without four
An old man without his snore.

Tom without Jerry,
Pippin without merry,
A road not taken,
A friend forgotten,

A picture not clicked,
A magician with no tricks
Scotch tape that doesn't stick,
A candle without its wick.

A singer with no voice,
MCQs with no choice,
A rock show without its noise,
A playroom without toys.

A clown without his smile,
A lady with no style,
Honey turned vile,
Without you, I'm futile!

Like a balloon with holes..
A shoe without a sole,
A football match with no goals,
A magnet without its poles.

A fire gone cold,
A story untold,
A dice that can't be rolled,
Origami without any fold.

A clock that tells no time,
A poem that fails to rhyme,
A diamond without its shine,
All this if you aren't mine!

A rose without its thorns
A sheep with no horns
A night with no morn,
A whole life...gone!

Shinjini Biswas

Drawing Credits: Richa Naja Jain

Drawing Credits: Richa Naja Jain

BEST FRIENDS FOREVER

In the words of Mark Anthony, I acknowledge that "*I have neither wit, nor words, nor worth, nor action, nor utterance, nor the power of speech, to stir men's blood*" but I speak merely as a "*plain blunt man that loves his friend.*" A limit has been surpassed, a threshold of acquiescence has been breached and I write to convey the raging deluge of emotions that overflows through the broken remnants of the dam. I yearn for a conduit to express my pent-up anguish at conditions that reek of injustice and intolerance. For a period spanning across the greater part of a year, I have been a mute witness to silent suffering, but today I stand up for my friends recognizing that there will always be cynics who will honor me with the epithet of the devil's advocate and detractors who will despise me for the same. Indeed, the "*path of the righteous man*" has always been "*beset on all sides by the iniquities of the selfish and the tyranny of evil men.*" Today I am the voice of the voiceless.

The debate regarding the presence of the members of the canine community at the Indian Institute of Science presents a noteworthy example of blatant bias, with raucous clamors for elimination of man's best friend from the campus prevailing over judgment guided by sagacity. It is preposterous that reports of alleged 'attacks' on students are exaggerated to unpardonable degrees and circulated all across the campus with unabashed verve to portray these largely docile animals as vicious predators that bear a penchant for human flesh. It remains my unwavering conviction that no dog, the rare rabid exceptions notwithstanding, will ever confront a human being unless explicitly provoked, under which circumstances it is bound to retaliate to the perceived threat. On the majority, the dogs on the campus are relatively timorous and shy away from human company, being well aware of the wanton agony that man is capable of inflicting. The hapless rabid members are inconsequential in terms of their numbers and it is thus prudent to comprehend in this regard the analogy that the entire human society must not be prosecuted because of the omnipresence of a few delinquents in our midst. Furthermore, the degree of 'hostility' on the part of the poor animal required for the classification of the action as an 'attack' varies ludicrously with even a few barks and growls being regarded as an inexcusable act of aggression amongst a significant section of purportedly mature adults. There will always be people who, being inherently apprehensive about dogs, regard their mere presence as an intimidating menace and it is inappropriate to assuage and pacify this unjustifiable trepidation by initiating action against these innocuous animals. It is high time that we learnt to move on and look beyond the base populist policies evinced by the according of such overwhelming significance to personal dislikes.

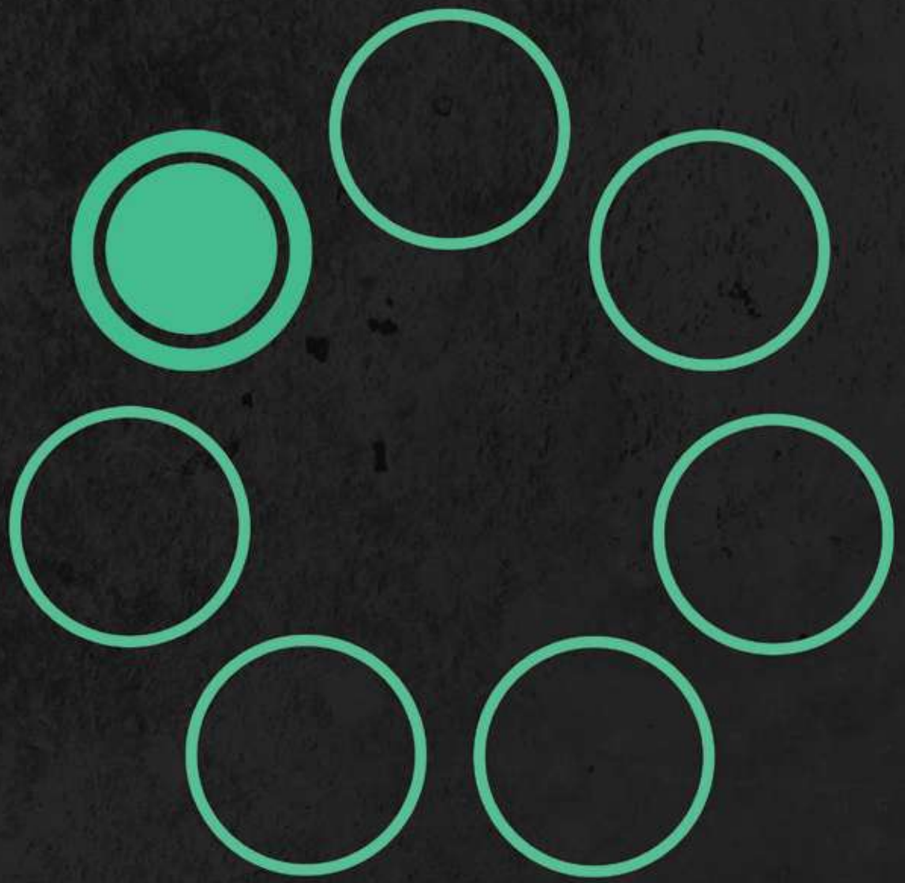
The population of the campus has been exceptionally vocal in underlining the supposed harassment of the students by the canines with iterant petitions to the Student Council but its deplorable silence on the reciprocal and gratuitous actions of human beings smacks of mala fide intent. The dogs have recurrently borne the brunt of the dark side of mankind through appalling and heinous actions which, when perpetrated on humans, have incensed the nation time and again. My personal experiences of being a remonstrating observer when dogs were being pelted with rocks and concrete for the appeasement of random whims and fancies of the human mind have extended over several occasions and my heart bleeds at their limps induced by such unprovoked assaults. I presume the last time such ingenious usage of stones with regard to humans gained public prominence, an entire contingent of army had to be deployed in Jammu and Kashmir for the restoration of peace. Barbaric treatment is meted out to dogs on campus as they are recurrently beaten and driven away by fiends wielding iron sticks, simply on the reprehensible grounds that a few potential customers are afraid of canines. If memory serves me correct, it was an iron rod that was responsible for a tragic demise which resulted in unprecedented public indignation spilling out onto the streets of Delhi in the cold misty mornings of December 2012. While the whole campus erupts with exuberant exultation on the occasion of Diwali, the vulnerable animals cower with dread in the shadows of the hostel, terrified of the flaming arrows persistently thrown at them by students who shun all sense under the intoxicating influence of celebration. Amogh, Nirmal and I have tended to puppies, barely a month old, when they were burnt with cigarettes by savages, and listened to their whines echoing with the wind as the conglutinated maggots gnawed at their wounds. Time has been a spectator to the dogs taken away from the Institute on the pretext of sterilization, never to return again and yet I am unaware if I am the sole person who is reminded of the outrage and ire with which India responded to Sanjay Gandhi's implementation of compulsory vasectomy. Not a single word pertaining to all these atrocities ever finds in the public domain by either the students or their honourable Council but today, the time of silence has reached its inevitable conclusion. Why should humanity be exclusively reserved for human beings only? I firmly believe that having been rendered devoid of compassion, man and correspondingly, the campus community at large, forfeits the moral authority and the ethical grounds to sententiously judge the actions of the dogs. A single haunting question resonates through the perturbed mind—who is the animal really?

Personally, I bear illimitable gratitude for my furry friends who have enriched my life at the Institute, being my companions in solitude and adherents in turbulent times. The sheer unadulterated joy associated with Epsilon's journey from a daughter to a mother, the elated wagging of her tail and the glimmer of exhilaration in her eyes, has often been perceived by the undergraduate students who have reared her since infancy. People have accused me of prejudiced silence when the dogs occasionally litter and soil the place but akin to the tender care of a mother who ignores all the lapses on the part of her ignorant child to derive unqualified delight from his or her presence per se, fondness will always extend beyond the imperfections of the animal highlighted by such insular psyches. Steadfast confidence accompanies my assertion that there is a fiercely loyal Hachiko and a Wolf in the soul of every dog's being and that it is solely our behavior that lends one ascendency over the other in the personality of the four-legged acquaintance who never fails to remember and reciprocate empathy. I implore my fellow students to realize, appreciate and respect the relevance of the dogs in our lives as we all inhabit and inherit the bounteous munificence of the Almighty on Earth together—in their absence, we irrevocably surrender a part of our own selves. For reasons unknown, the evanescent tunes of an ancient hymn gradually permeate through the ephemeral thoughts of a mind relieved.

"All things bright and beautiful,
All creatures great and small,
All things wise and wonderful,
The Lord God made them all."

–Rhine Samajdar ■

Photo Credits: Sri Vamsi Matta



Campus Talk

The 400 acres of lush green campus of IISc hosts a lot of scientific, academic and nonacademic thoughts, activities, initiatives and processes. In this section, read some exclusive stories and articles discussing a few of them. Consider the appeal of UGs for a 24 hour access to JRD Tata main library, admire the Namma cycle initiative, read about Rhythmica and glance through a healthy satire on research. The days here are long but the years are short.

Photo Credits: Amogh Kinikar

LIBRARY

24-hour access

The library is an integral part of any student, researcher, philosopher, writer, thinker or broadly, any individual's life. Beginning as a host for archives, libraries have evolved to be defined as a collection of periodicals, newspapers, databases and CDs along with books. Extending its horizon, libraries are now making their resources available online and are providing virtual space for their members. Moreover, to cater to the increasing demand and need of libraries, there are special courses offered and remarkable software designed for library management. A well-equipped, updated and functional library is an essential requirement of an educational institute.

In the Indian Institute of Science, a central library was established in 1911, which was amongst the first three departments. It is regarded as one of the best scientific and technical libraries in India. In this exclusive story, Library—24-Hour Access, Amogh Kinikar and Pratibha Mahale from the Quarks team unveil the glorious and interesting history of the JRD Tata library, share their personal experiences as lovers of the library and emphasize the need for 24-hour access to the library after considering a collective demand from the UG students. Further, they have attempted to assemble suggestions and views of other students in the campus about our main library. Take a moment to consider and analyze this special effort of the Quarks team.

–Pratibha Mahale

Immediately

Pratibha Mahale, a second year undergrad emphasizes the need for 24-hour access to the main library as she describes the indispensable position the library holds in her life as well as in the lives of many other undergrads.

A bright laptop screen, illuminating the yellow pages of the book lying nearby, in partnership with a new tube light in its old case, had all my attention. Along with bestowing attention to it, I was successfully making the tungsten carbide ball in my pen's socket happily roll against the surface of the paper by applying constant push and pull force. My brain was having its time: its favorite place, the amicable environment surrounded by its friends! Ah! I could feel the satisfaction in its functioning! The peaceful aura of my mind and my coherent communication with books, PDFs and Google was suddenly attacked by the ringing of the bell. Trrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrrr

These specific sound waves have an amazing capability to generate a shadowy pallor around me. Always punctual, they come screaming every night at 10:50pm carrying the message "Get out of the library." And my response begins verbally "Oh Damn", followed by a series of physical movements to pack up the entire stuff that I had laid down on the table since afternoon. With a grumpy and tired attitude, my legs proceed to the exit gate where begins my endless search for the tiny coupon. After successful dismissal of the coupon, I head towards my hostel staring at the moon and imagining myself strolling in a garden.

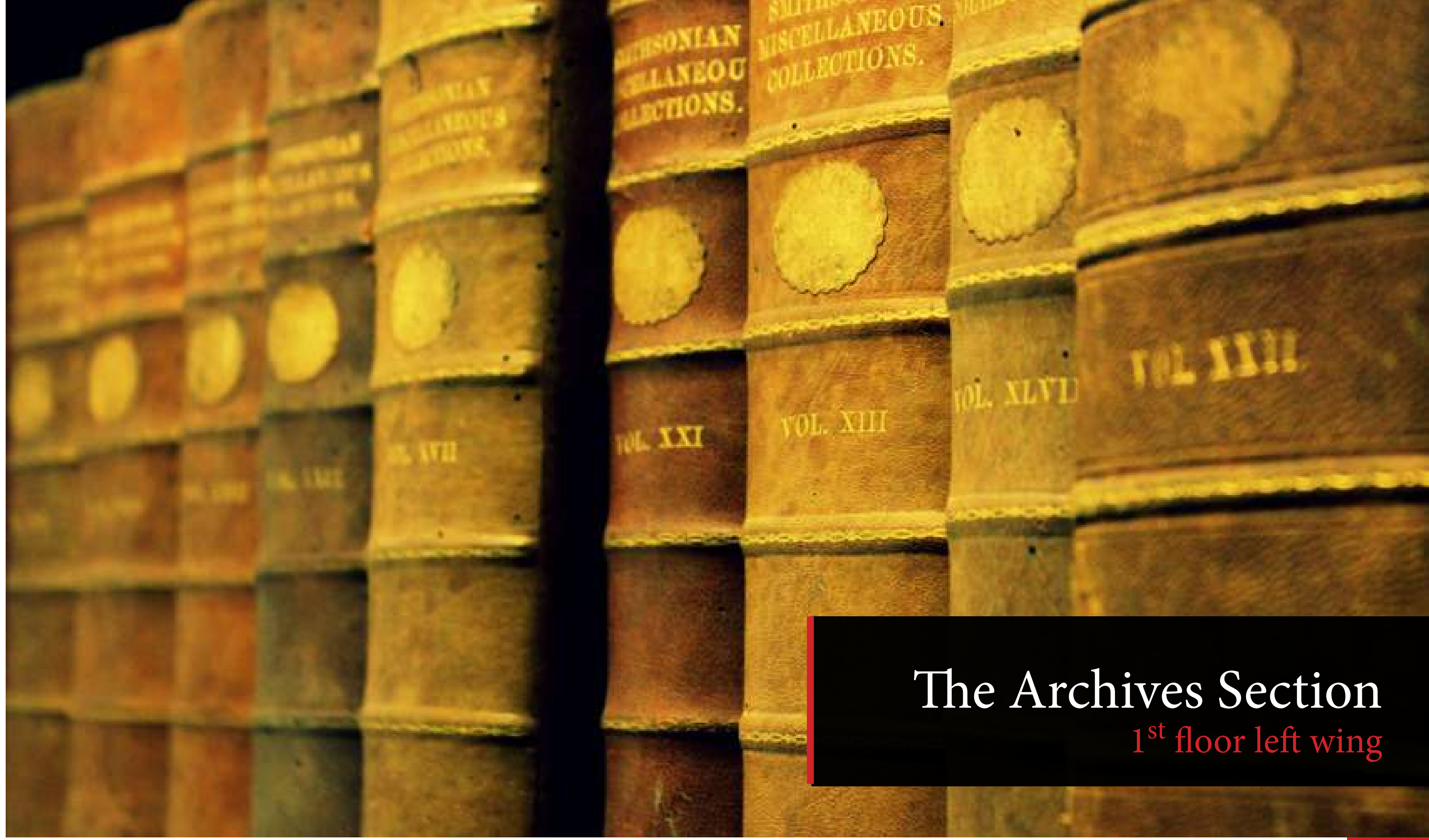
But, despite the hypothetical pleasure I try to create, a question rattles both in my conscious and subconscious mind. Why cannot they keep the library open for 24 hours? This question is always followed by a series of logical reasons supporting why they should keep it open for 24 hours. I believe all the readers will figure them out as the reasons are very obvious. Yet, I will explicitly state the one that holds rank one for its obviousness, to satisfy my brain's thirst to be clear.

IISc is a premier science institute, students want to work, study, and do their research at any hour of the day. They should be given basic facilities for it: the Internet and books. Not surprisingly, both of them are available in the Library. Usually, some of my friends who are very fond of administration or rather politely, I would say who know how to adjust, will state that 'all the research students get internet in their labs and you can issue books and read them in your room.' But here comes my Brahmastra for them. UG students do not have laboratories open, neither do they have the keys for them. Oh yes, we do have a small section of our department open for us where a couple of wooden benches having an incomparable capacity to punch holes in your clothes are present. However, the green doors and the brown, wooden furniture with one plug point and no tables is definitely not a conducive environment for us to study, read and more importantly finish our reports or assignments which sometimes requires a skilled jugglery with pens, pencils, calculators and ruler at times. So, effectively, we do not have a place to sit, read and work out our assignments with Google search engine at our service. I believe I do not need to mention an embarrassing fact that we are not endowed with net access in our rooms, which probably is an elementary facility like fans in other premier institutes. I guess kids can use this as a point while meticulously differentiating between IITs and IISc in their well drawn tables. This might get them bonus points. As usual I am digressing, so, a little more digression to yet another road will probably not be fatal. (I have always managed to come back.) I would like to take advantage of my Brahamastra (you might have also accepted it by now) to render support to my batchmates and myself who sometimes fail to submit assignments on time. You see, here is THE cause (actually, one of many reasons).

Since my argument was quite powerful, all of you must be vouching for the 24-hour library open campaign. But, I give my opponents (respected administrative staff, this word is just a combination of some alphabets put together randomly; it has no resemblance with its actual meaning. Its use is completely coincidental) a fair chance to express their position and views. So, as far as I can gather, the best counter argument to the 24-hour request will be STAFF. We need a set of people to manage and take care of the library for 24 hours.

Although my heart likes justice, my mind does not overthink the counter possibilities. So, this is the only one I can come up with right now.

Now, amongst those who are already standing for the motion (24-hour campaign) some might say, "Ya, that's true, it is difficult to have 24-hour services…" Oh definitely! I completely understand the meaning of the word 'difficult' here, but, that is why a very intelligent person devised the concept of shifts: morning shift, afternoon shift, evening shift and night shift. Hope we can use it here and let the intelligent person get credited one more time. ▶



The Archives Section
1st floor left wing

Photo Credits: Naveen Sendhilnathan

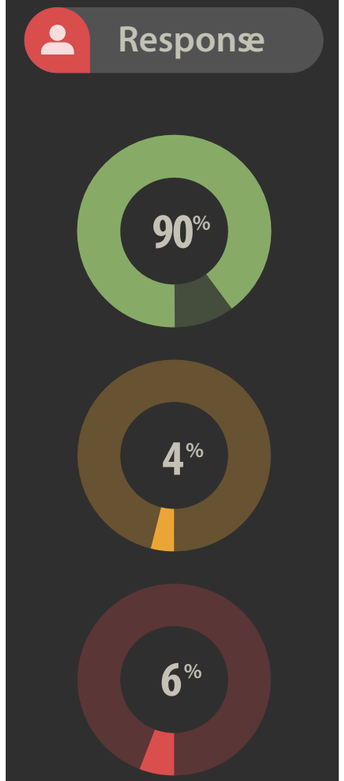
There are many students, especially the Undergrads who do not have any lab as such. Hence students need to look at other available places to study. Also, many students have not taken internet facility in the hostels. Hence, we are dependent on the IISc wlan for all internet needs. For this we need a nice place to sit and work. Students do work late into the night. Hence, we need the library to remain open 24 hours.

–Sabareesh, BS I year

There has always been a library in my habitat. One of the first things I did, after I got my ID card was to go check the main library. Having been brought up on what one might consider literature, the English kind, not the one our professors ask us to read up on; I was a tad bit apprehensive about how this library would suit me. As I entered the library I was greeted by the statistics. I was impressed but one does not simply realize the magnitude of 4 lakhs. I entered the reading hall and saw, and my jaw dropped. I realized there was another floor full of books, and I went almost mad. I climbed up the flight of stairs and then the other flight of stairs and saw two more floors, standing on what appeared, columns of books. That was when I went mad.

–Amogh Kinikar, BS II year

QUARKS hosted a survey to receive responses from the Undergrads for the requirement of keeping the library open for 24 hours. Here is the result.



Green: 24 hours access is necessary
Yellow: Doesn't make a difference
Red: 24 hours access is not needed.
Sample size was: 67. The sampled population consisted of both the first and second year Undergrads. Various means of communication like sms, online forms and Facebook were used for the data collection.

By the time I reach this point of the conversation, the security guards of the canine community and the human community at my hostel both seek my attention, one by their barking and the others by their noisy chappals.

So, the entire conversation shatters and my brain concentrates on coordinating with my limbs to stealthily escape the barking security guards and also with my lips to smile and bypass the security corridor characterized by noisy chappals and snoring noises at times.

On my way down to my room in the basement (ground floor in our hostel where all 4–5 doors are shut due to so-called security reasons which forces us to believe that our rooms are a part of the basement section of the building), I just wonder at the power of my arguments and decide with full enthusiasm (doubling my pace while running down the stairs) I will definitely do something about this: gather my friends' and classmates' opinion and write a mass email to the administration *immediately*. But, as the phonetics of 'ly' in *immediately* is released in the air I start to consider that *immediately* implies tomorrow and as it is rightly said, "tomorrow never comes."

My next day (not tomorrow!) begins again with a series of lectures followed by a lab sometimes and afterwards, a few peaceful hours in library ends in the same way with *immediately*.

So, technically I never did write to the administration for the 24-hour idea. But, you see, the fault is not mine, this tomorrow never comes. But, I have observed that a couple of my friends expertise in getting tomorrow at their beck and call. I believe so is the case for you. WE all can probably ask your tomorrow to get my tomorrow along with it and then we can extract the dictionary's meaning of *immediately*. So, are you guys ready? Maybe on the coming birthday of our dear library we can gift it with 24-hour company. ■

The Journal Section
1st floor left wing

Photo Credits: Naveen Sendhilnathan

Inside

Books and Monographs
1,88,275

CD-ROMS Floppy Disks
1,000

Thesis
7,500

Patents
75,000

Current International Periodicals
740

e-Books
2000

e-Journals
9000

History of IISc library

Did you know that the main building was our first library? QUARKS shows you a short glimpse of the chronicles of the Library, illustrated by Amogh Kinikar in this issue.

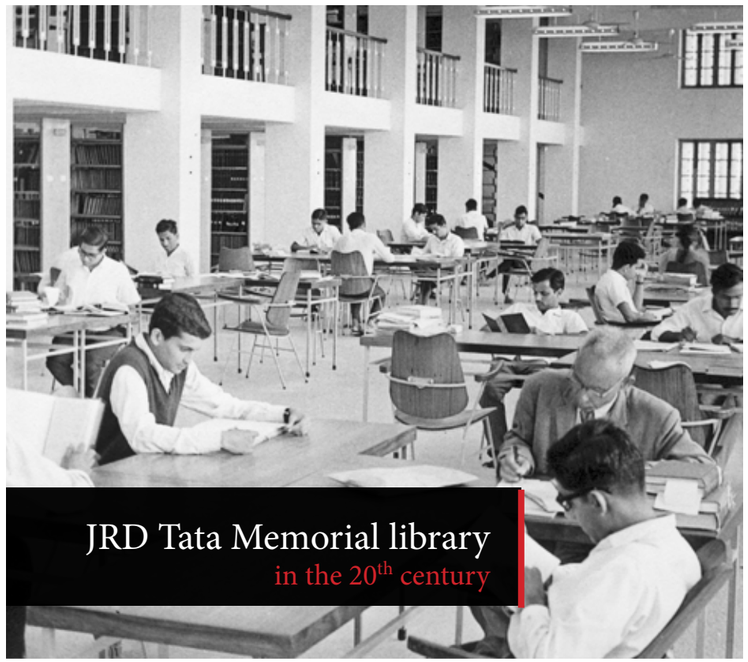
Morris Travers, the first director of our institute had decided that an institute of such stature should have at least one building of some architectural beauty, thus came to be our main building. The reason why this is mentioned in an article on the history of the library is because the main building was actually supposed to be the library.

At the cost of 7.5 lakhs, the contract for constructing the building was given to a certain T.C.W. Skipps and the designing was done by Messrs Stevens and Co. This firm had earlier designed the Victoria Terminus (now known as the Chhatrapati Shivaji Terminus, a world heritage building) in Mumbai. The building was meant to serve a dual purpose, it was meant to be the library and also a water tower. One can still see a huge tank at the base of the tower. In the initial stages, only one wing of the building was supposed to be built (so as to save money and buy more equipment). However, Travers vetoed the decision on aesthetic grounds. One cannot help but admire this guy.

The library was initially housed in the right chamber on the first floor of the building. It is said that on weekends, the bookshelves, which were fitted with casters, would be rolled against the wall and the wooden floored hall would serve as a grand ballroom. Inevitably, the library outgrew the chamber and the building.

C.F.H. Tacchale, M.A. Dublin, the first librarian, headed a library of 6000 odd books. One of his job requirements, however, was to teach the students German, as German was the favored language of communicating science. He also ended up translating various papers for the benefit of the scientific community in India. According to his reports, one would find three-quarters of the then student population in the library in the evening.

Today, it would seem that a library as a dispenser of knowledge is all but obsolete. This can be clearly seen in the number of people going to the library to read books. Once when the internet was down, I counted only 9 other people in the two reading rooms of the library. This is not sad, it is as expected. The library of yore, was an integral part of the students' academic life, and from the example of Tacchale, it actually tried to be indispensable. It is important, if the library has to remain relevant, for it to redefine itself and evolve to suit the needs of the student community. ■



JRD Tata Memorial library
in the 20th century

The Main Building
The first library

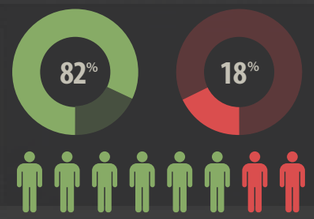
JRD Tata Memorial library
as seen today

Photo Credits: Amogh Kinikar, IISc Archives and Naveen Sendhilnathan

Suggestions

The undergrad community has a lot of suggestions in mind for the library's improvement. QUARKS finds them out through a survey.

- More working plug-points.
- Improve condition of fans.
- Include some books on history, the Humanities, arts and newspapers.



A Quantitative Survey was conducted for receiving the response to the introduction of books on literature in the main library.

Sample number: 50
Survey was conducted through forms.

- A barcode reader that can read the barcode on our ID cards and automatically sign us in and out.
- Upgrade the software for searching books.
- Photocopying facility open for students inside the Library.

Waiting for Dawn
HARSHA GURNANI

Research Watchdogs in IISc

"Shut up!" said the professor, hurling an intimidating glance at me. "How dare you plagiarise?" "But I copied just four lines from Wikipedia, Sir," I said, plainly noticing my assignment submission, which too was terribly frightened as it was getting strangulated by the professor's ruthless hand.

The professor further aggravated his enraged temper and bellowed, "Plagiarism is plagiarism. Your research will be constantly watched by the scientific community. If you resort to your kleptomaniacal propensities, you are sure to be thrown to the dogs!" Saying this, the professor gave me a stern look and went away. As I walked on my way back to the mess in a very dejected mood, my mind digressed and digressed. The only words that reverberated in my head were "research", "watch" and "dogs". Suddenly, as I was nearing my mess, I heard a distinct, insolent sound which broke my reverie. I turned around, only to notice a dog, whose hair closely resembled a researcher who had been thinking on his terribly complicated problem, at least for a month or so.

The immediate impulse was to think what possibly could constitute his "research". Probably the "science agonized" dog was trying to find a frequency distribution for the number of people entering the mess over dinner and lunch and was scratching his head (with a much lesser surface area, as compared to ours), thinking why the two should or should not match. Feeling pity for the poor creature, I surged forth; only to find another counterpart of the previous one who gazed mockingly at me, as if saying, "Look at my latest algorithm for calculating the number of mess boarders who will flunk lunch on a particular day!" I was thoroughly intimidated by these "research watch dogs" who seem to have built their vibrant and boisterous "canine research community," thriving on the campus, day and night! (citations needed).

Some Recent Updates from the Community:

It has been noticed that two puppies are undergoing an extensive "conviviality" program with the undergraduates (belonging to the *Homo sapiens* species) wherein they are being fed with a highly nutritious diet (including mess milk), causing enviable depositions of fat within their bodies.

As of now the puppies seem to be interested in ecology and life sciences, which is evident from their exploits in the barren land in front of C Mess, along with an upsetting hobby of performing experiments on shoes and similar footwear belonging to IIScians. Yet their involvement in research is of a light nature, considering the fact that their hair is near to normal. Reference: www.facebook.com/ZEpsilon

On an ending note, it is indeed aggrieving to see the amount of attention enjoyed by the puppies, oblivious of the important "contributions" from the older lot. The elders within the canine community seem to be offended by this, which explains the hyporesponsive/hyperresponsive behaviour displayed by the older research watch dogs near the messes in recent times. Turbulences within the community on the scientific front are thus imminent. Watch out for more!

–Pranav Gupta ■

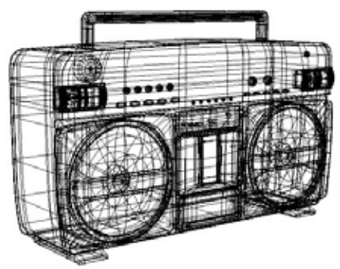
Aahang
SHINJINI BISWAS

Catch the Rhythm of Rhythmica with the Undergrads

Rhythmica is the official music team of IISc. It is one among the numerous self-managed groups of IIScians working under the banner of IISc Gymkhana (Music Club) to promote cultural activities in the campus. Rhythmica is funded by IISc Gymkhana and conducts four shows every year: three on the occasions of Diwali, Founder's Day, Independence Day and one during the month of June. They also perform on the occasions of Gandhi Jayanti, Republic Day and Independence Day (Flag hoists). Rhythmica holds auditions every year (in the month of September) and draws its membership from amongst students and faculty of IISc, and their dependants.

Rhythmica is managed by two elected conveners, who coordinate the activities of the group. The current* convenors are Madhawan Chandrawanhsi and A.K. Mayank, both final year students of the M.E. Programme. Rhythmica, as of now, has 80 members, including eight undergraduates. It basically provides a stage for people who enjoy playing music to come together and jam with other people, whilst entertaining others who have an ear for music. Its activities provide a welcome relief from academic affairs to many people in the campus.

* as of the academic year 2012–13



Rhythymica

one of the largest and richest platforms to perform music on campus, giving the phrase 'unity in diversity' a whole new meaning. It is the perfect den of a musician.

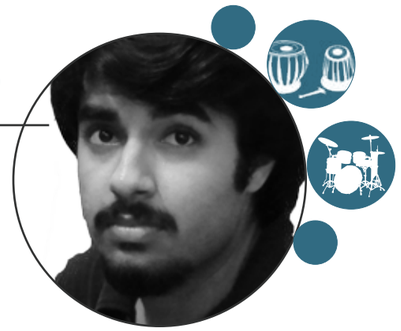
Anamay

Rhythmica has a number of extremely talented musicians—within the constraints of academics and funding, they do a great job putting on shows, leaving aside minor hiccoughs. In a phrase, I would describe Rhythmica as "a confluence of musical talent."

I am: BS I year

On music: Synesthetic equivalence of emotion and melodies, expression of emotion or the observance of beauty.

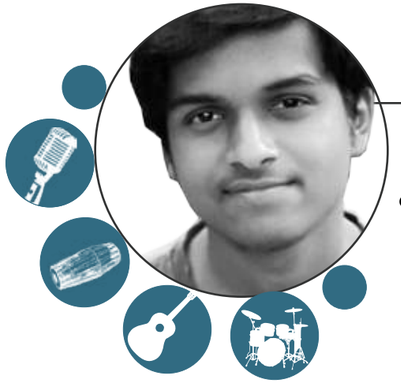
Varun



I am: BS I year

I like: Indian classical, jazz/fusion, progressive rock, blues, western classical and soundtracks.

My experience in Rhythmica has been a great learning experience for me. It has not only given me a stage to perform but also taught me how to perform on it. I've had the opportunity to meet extremely talented people and most importantly, it has helped me to learn how to play music with other people.



Rohit

Rhythmica is an important part of my life at IISc. Besides giving me opportunities to sing/play as a part of a group (which I enjoy a lot), it has gifted me with a big bunch of friends who share a common interest.

I am: BS II year

I like: Fond of both Carnatic concerts and songs of the (progressive) rock genre.

Abraham

I am: BS I year

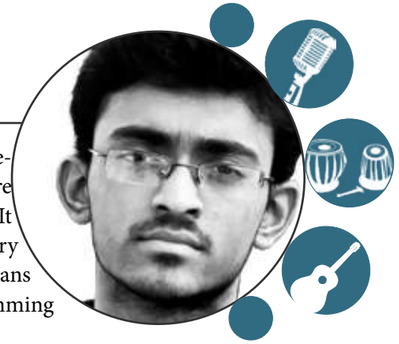
I like: Indian pop (film songs), western classical and metal

On music: Something that fills me with positive energy in all states of my mind

Being a part of Rhythmica has been fun. It nourishes my musical talents; it teaches how to work in a group. Performing on stage is real fun. You have to react fast if something goes wrong. Rhythmica has also given me some good friends. Enjoy music and believe me, it's the ultimate stress buster. I would describe Rhythmica as an endeavour for never letting the spirit of music go down in campus.

Photo Credits: Naveen Sendhilnathan

Arka



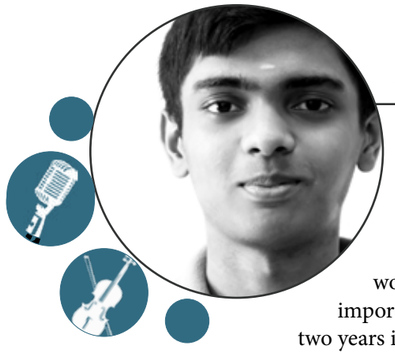
I am: BS I year

I like: classical music, believe in exploring the diversity.

On music: To me, it is a refuge. I can curl within the notes and seek solace.

Rhythmica is a very active music group. You really can't describe it as a particular form of band, but it's a group where you'll find people from all regions practicing different music. It has been a very different feeling to be a part of it as it is so very different from the normal commonplace. You'll find musicians doing classical at one end of the music room and others jamming western rock at the opposite end.

Sathyawageeswar



Rhythmica is a great forum for musicians in the campus. It gives one the chance to meet and mingle with others who share a passion for music and learn a whole lot of new things, apart from just honing one's musical skill. It gives one a platform to perform and showcase one's hard work and practice. One learns to synchronize, improvise, and importantly, to work as a team, both on and off the stage. The last two years in Rhythmica have been a great learning experience for me.

I am: BS II year

On music: It is a language, but one that transcends the common linguist's notion of the term … a powerful force that can nourish and change all of Nature, plants and animals, including us!

Madhawan Chandrawanshi

(Convenor 2012–13)

If I have to describe my experience with Rhythmica in one word, I would say phenomenal … It's been a pleasure to perform as an instrumentalist and assist as a convener to the group of over fifty exceptionally talented and skillful members from diverse musical and cultural backgrounds. I will always cherish Rhythmica for providing me one of the largest and richest platform to perform music on campus and also for giving the phrase 'unity in diversity' a whole new meaning.

Revathy Parameshwaran

(Member)

Life in IISc is most often highly strung. The academic pressure can be such that you can barely manage breathing deeply. This is where Rhythmica comes in for me. Our little musical escapades help us unwind and have fun. Besides swimming in all sorts of music, we end up making unlikely friends with whom we make an extraordinary niche that in itself becomes 'homely', in every sense of the word. ■

Photo Credits: Naveen Sendhilnathan and Siddharth Kankaria

"In general, I liked the service, it was really affordable and stations were located at convenient spots on campus. The only downside was that the service stopped at 5 PM, so even if you wanted to return it after that, you couldn't."

Nachiket Sherlekar, an intern from the University of Waterloo.

namma cycle @ namma campus

Namma Cycle is a bicycling initiative inside the IISc Campus with the aim of increasing connectivity and preserving the environment. The name "Namma Cycle" is inspired by the Kannada word *namma,* meaning "our", which alludes to collective ownership. Namma cycle was launched as a pilot in the campus in 2012 in collaboration with CiSTUP, IISc. Since then, the Namma Cycle has enjoyed considerable popularity inside IISc and it has been widely appreciated by the visiting faculty and the floating student population of the Institute.

Currently, there are 50 bicycles distributed amongst 5 nodes within the campus. The initiative has grown from strength to strength since inception and it plans to expand this year by setting up more nodes and doubling the number of cycles.

In this issue, the QUARKS team attempts to capture the spirit of the initiative via two interviews—one with Mr. Murali H.R., Director of The Namma Cycle initiative, and another with Lavanya Keshavamurthy, an active team member in the initiative. We also present the views of an IISc UG student, expressing her delight on the coming of bright yellow cycles in the campus. Our UG friends also share their comments about the initiative. Enjoy your reading ride! –Suhas

Idea on Wheels

Yellow color is spreading in the lush green campus of the Indian Institute of Science, slowly becoming the dominant shade. We at QUARKS, speculate why Yellow is now the prime color? Hear it from Pratibha Mahale, a second year Undergrad who analyses the change in terms of Namma cycle's success in its first campus.

The yellow color has always attracted me strongly, whether it was about picking up a teddy or night suit with yellow ducks as a kid or now when it is about grabbing a yellow rose in a flower shop or selecting a yellow bedsheet or even getting my room painted a mild yellow. My love for the yellow color was never intentional or rather, never designed; I was just fond of it. Some scientists will say, "Yellow attracts attention and is noticed quickly in peripheral vision, faster than any other color. Peripheral vision for detecting yellows is 1.24 times greater than for red. Hence, you like yellow." (Incidentally, that's the reason why school buses are yellow.)

Also, some philosophers may shrug their shoulders and say "Of course, yellow shines with optimism, enlightenment, and happiness. Shades of golden yellow carry the promise of a positive future. Yellow will advance from surrounding colors and instill optimism and energy, as well as spark creative thoughts."

But, one fine morning in August 2012, I came across another reason to love yellow even more. A set of beautiful, clean, shining, new yellow bicycles were neatly parked in a cycle stand near Ashwini girl's hostel, with a young man sitting on a chair, fiddling with a cell-phone, under a huge umbrella. Their appearance and plus their sudden existence made me curious enough to find out their birth story.

Within a couple of hours their birth story revealed one of the most creative initiatives
"Namma Cycle Initiative"

"NAMMA CYCLE is a public bicycling initiative in Bangalore with the aim of increasing connectivity and creating environmentally friendly modes of public transportation. The name is inspired from 'namma', which means 'ours' in Kannada, and signifies the concept of shared ownership." reads the official website. It has been successfully started in IISc with around 50 cycles stationed in 5 booths across the campus. The technical details of the initiative have been mentioned by Suhas in the introduction. So, I would specifically jump to my personal observations about the initiative.

In a huge campus like IISc, the initiative has been of great help. I will cite a few examples which I have come across.

Many of us gladly invite our cousins and friends to come and visit us or the other way round they invite themselves just to enjoy the ambience of Bangalore and IISc in our company. In any of the above two cases, it is our prime duty to take them around the campus, show some high-tech science labs, give them a glimpse of the residence of some gigantic instruments or miniature miracles, let them enjoy the peaceful aura around and above all, get some nice pictures in the beautiful and sprawling campus. However sweet and mesmerizing the above journey seemed to you, it is not the case if you have to walk around. Although, I am a huge fan of walking but I do admit it is not feasible everytime and so, I guess as you calculate before beginning the exciting tour, you either cut down on some spots and your visitors at first will say, "just this much are we going to see?" but later, after an hour or so, they will be panting and uttering "it must be same there that side too, right? It is a wonderful campus! Now, let's go and grab something to eat" or best case (maybe even the worst case) you just drink a lot of juice and put on your running shoes. However, in either of the situations, you end up swallowing your dinner and jumping straight into the bed. Recently, this entire story has changed (you see the magic of the yellow color). Some of the aware and intelligent students in the campus are now using cycles provided by Namma cycle and are enjoying a complete ride in the campus with their friends which ends with an extended photo session (a lot of cheese and click sounds) at the dinner table while your order is still on paper and in the kitchen. Foreign guests at IISc also seem to enjoy the service tremendously.

Another set of people who have derived the maximum benefit from the service are the summer interns. I clearly remember while doing my last summer project (2012) in the campus (when the service was probably an ▶

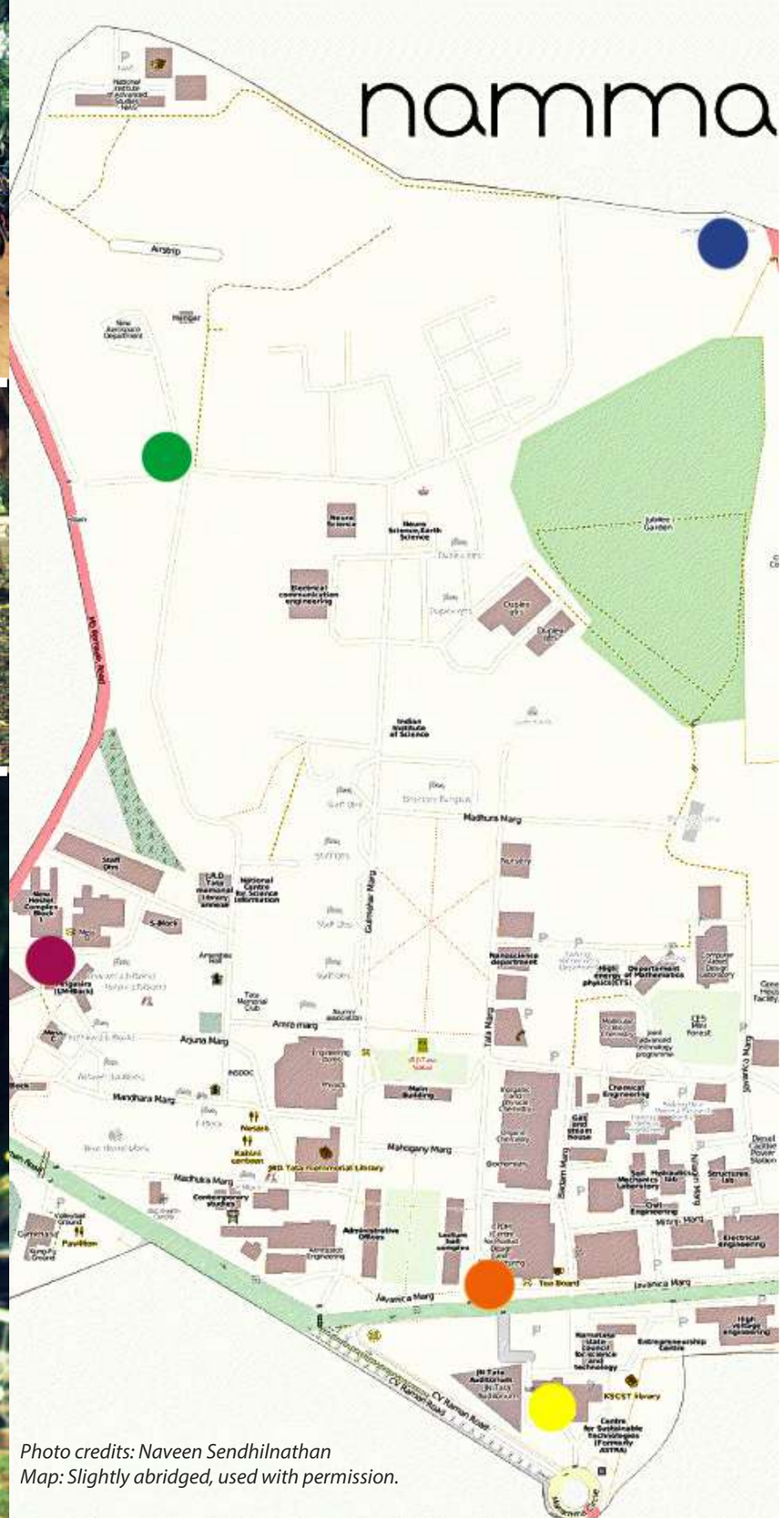


Photo credits: Naveen Sendhilnathan
Map: Slightly abridged, used with permission.

idea), summer interns would walk all the way from the Jawahar Guest house or their friend's room to their respective departments. A few lucky ones had managed to lay their hands on their friend's cycle while the remaining used to put their headphones and try to tune their monotonous, lonely walk with the music, occasionally exchanging smiles on the way with a couple of people they met either in department or canteens. However, now they enjoy a sound sleep till 9:00 am and then have a quick shower, grab breakfast and still make it to the lab before their guide enters. Of course, now they have cycles to speed and accelerate.

Even school kids, children of staff members and their enthusiastic friends who come to the campus for tuitions or sometimes to meet up and play a game or two in the evening are also increasingly supporting the initiative.

The above examples that I have shared with you are among the many advantages of Namma cycle initiative. A yellow Namma cycle is basically an idea on wheels. Just like the yellow color, it is a symbol of creativity, courage and positive energy. It has not only provided IIScians and the visitors a transportation system, but it has also gifted us a novel method of keeping our campus green and pollution-free as we move ahead hand in hand with our pacing lives. It also inspires and motivates many of us to pursue our ideas which can cater to big issues like environment conservation and yet provide joy to many. As time progresses, we will witness a large crowd using and appreciating Namma cycle and also the yellow color which many people like me and one of my friends (whom I sometimes refer to as "Banana boy", you can guess why?) love to see. Its execution at a larger scale will revolutionize our social and environmental structure.

So, even if you own a cycle or rather a bike or a car, it never hurts to go for a ride on a cool yellow bicycle in the green and beautiful campus. ■

Brakes are fine
Pedals good to go
Tires inflated
Now it's what I know
Time to get
Out on the trail
Fill my lungs
With good clean air
See different things
As I ride along
People out in nature
Will never be wrong
Make it to the end
Tired and spent
Wonder at the time
Where it went
A ride feels good
After a long hard day
Just what you need
To wipe your troubles away

–Lawerence Mize, Sr.

Murali H.R. with the QUARKS interview team at one of the Namma Cycle nodes.

Here is the simple four step protocol:

Sign-up via the website and get a registration ID
Select a cycle from any of the station racks
Ride the cycle to its destination and
Return it to the nearest station.

The Torch Bearer of the initiative Murali HR shares his views, plans and expectations with the QUARKS team.

What was your motivation to start Namma Cycle?

The motivation was to promote innovation in intra-campus movement. If you see campuses in US, Europe or even China, they have a complete sustainable plan for the University. Stanford, for example, has a huge campus where they grow their own food and have sustainable transport in the form of electric vehicles. We wanted to do something similar in IISc. We started the Ride a Cycle foundation with the aim of promoting cycling in Bangalore. In cities, traffic is caused due to automobiles. If you see the wheel of automobile culture, it is demotivating to travel in the city. So, as an alternative to this costly culture of pollution and accidents—the cycle is an alternative which makes travel much more pleasant.

Namma Cycle planned to start off in Bangalore University and not IISc. Why was IISc chosen in the end?

In IISc, it was very easy to interact with people because we found the atmosphere very professional, encouraging and supportive. We got great support from Prof. Seetharam, Chairman of CiSTUP. And within one month, we had the MOU signed. In BU, we found some bureaucratic hurdles and we had to travel very far to Gnanabharati. So, we decided to do the experiment in IISc first and then move on to Bangalore University. Later this year, we may actually launch one in BU—but we are not sure about that.

According to you, how has the response in IISc been? Has it been satisfactory?

Yes. In fact, it is more than satisfactory. Lot of visitors and students use the cycles; slowly registrations are increasing. We also plan to introduce a new batch of cycles. In another one month, we need to do something so that the students who come for the fresh academic year become the Namma Cycle members.

In terms of utilization, how much can this infrastructure support and to what extent is it being used right now?

I would say around 50%. Namma Cycle was launched last August. In the 9 months that Namma Cycle has been in operation, we have completed about 9000 trips. We complete around 800 trips per month in the campus. We can support a doubling in utilization with the same infrastructure.

What are the challenges that Namma Cycle has been facing?

The main issue is really funding. We don't get any funding from IISc. We generate funds on our own from BBMP and various such sources. The funding that we had got for 1 year, is now exhausted. Another challenge is cycles—we want to upgrade the cycles. We've hired cycle designers for that. BSA has assured us that they will deliver 200 new cycles. The existing cycles will be scrapped. We want to give good features to IISc students, as per their standards.

Where do you see Namma Cycle five years from now?

This year, we are going to launch Namma Cycle in the Mysore University Campus. In five years, we wish to have cycle sharing systems modeled on Namma Cycle, all over India. Inside IISc, we will be expanding soon. We will install nodes at five more places.

Mr. Murali also has a message for all undergraduates:

I would like to request all my friends in the UG stream for a few things since you are all young. Think about the stress you will face when there is no easy access to fuel in the future. Please do not think only in terms of physics, chemistry and mathematics—think in terms of universal reason. See how your science can fit into human living—in terms of habitats, food, etc.
And most importantly, cycle regularly! ■

Interview Team: Medha Shekhar, Suhas M
Drafter: Suhas M

◀ *Photo credit: Naveen Sendhilnathan*

800
Trips per month

300
Total membership

50
cycles currently in operation

50
cycles kept in buffer

10
people employed

5
stations in IISc

3
registered foreigners

I think the Namma cycle initiative is a commendable attempt at silently seeding a small change in the outlook of people belonging to a metropolis, which is characterized by its clogged streets leading from everywhere to everywhere, and by the long commuting periods everybody has to keep in mind while stepping out for work every morning. To this scenario, comes a little underpinning for a change—a local rented cycle service that lets you enjoy a refreshing cycle ride while you reach your destination—a concept not-so-new to the world, but nevertheless, one of the first few attempts in Indian cities. And what better place to embark upon such an journey, than the Indian Institute of Science—a place which has grown older over a century with the idea of cycling to work, and meanwhile also remaining environmentally conscious within this already green and alive campus! I fervently hope that they succeed in their greater endeavor of making it an intra-city mode of transport in Bengaluru!

–Siddharth Kankaria, UG I year

"I've never used the Namma Cycles so I can't comment on their utility. However, I am overjoyed that all the Namma Cycles are a lovely, bright, joyous yellow in their colour."

–Milind, UG I year

Most popular nodes are
Main Gate, Biological Sciences Building

Many participants and dignitaries at the 2nd Indian Bio Diversity Congress (IBC), IISc, 9th December to 11th December 2012, made good use of Namma Cycle to move around the campus.

Photo credits: Naveen Sendhilnathan

Freelancer's Free thoughts:

LAVANYA KESHAVMURTHY, an active team member of Namma cycle initiative expresses her views in an email interview with QUARKS in this issue.

What was the driving force to join Namma Cycle initiative? How and when did the idea originate? What motivated you to pursue it?

The Namma Cycle initiative was in the making for the past 4 years by Murali HR and others. It was Murali's idea and I have been supporting it on and off.

Why did you choose Bangalore? And why IISc?

Bangalore is my hometown so I naturally feel for it. We tried to implement this first in Electronic City and then in Bangalore University. But, we did not get the required support there. At IISc, there was already a supportive cycling community and we got support from CiSTUP too.

Starting a new experiment always takes effort. How was your start? How did you begin the creative experiment?

Murali, Pradeep and Sudhira had been working on it for quite some time. We did surveys after surveys, mapping after mapping, meetings after meetings and many project reports. Gathering resources and funds has been very challenging too.
At IISc, we finally started the experiment with 50 cycles and it has been exciting so far.

How is the response? Did it meet your expectations?

In spite of most people having their own cycles, Namma Cycle has been received very well. It has been especially popular with visitors. We would like more people, especially the new students joining this year, to use Namma Cycle instead of buying their own cycles for use within the campus.

As you had mentioned, "Namma Cycle will track and maintain the cycles using the software. Once the software stabilizes and easy to use we could hand it over to the student community at IISc. That would make us free to take this working, sustainable model and simply replicate it elsewhere … even for a city, if the forces: political will, public enthusiasm, good urban transport designs, come together." What is your current strategy to get their support in promoting the initiative?

We keep getting requests for replicating the system in university campuses. We are working on a workable financially viable model for Namma Cycle to be replicated.

What are your plans ahead?

While we are working on introducing more features to the system at IISc, we are on the look out for collaborators and partners to take the project outside into other communities.

Any message for the student community of IISc particularly UGs regarding the 'Namma cycle' initiative?

With all the scarcity of resources, there is a slow move towards sharing of resources and Namma Cycle is one such avenue. So, please make use of this facility and support us. Thank you. ■

Namma Team

Prof. Ashwin Mahesh
Ph.D. degree from University of Washington. a Co-founder and Director, Mapunity, Bangalore since 2006.

Murali H. R
Creative Consultant. He now trains the corporate sector in Business Process Management and Web Technologies. He has worked and travelled in Asian and European Nations and is aware about the models used in these nations. In fact, it was his cycle journey along the coast of France that gives the impetus for cycling initiatives in Bangalore. He is with Ride A Cycle Foundation.

Lavanya Keshavamurthy
Freelancer, who writes about her experiences in the sustainability space with a special focus on bicycling, waste management and urban farming. Her recent experience of using and studying the BIXI bicycle sharing system in Montreal, Canada has added valuable inputs to Namma Cycle. She is with Ride A Cycle Foundation.

Pradeep Banavara
Co-founder of Mapunity, a social enterprise that develops technology to tackle social problems and development challenges in India. He is a neo-geographer and contributes to the OpenStreetMap project.

Dr. H. S. Sudhira
Ph.D. from the Indian Institute of Science, Bangalore for his research on urban sprawl. Currently, he is involved in a research project that looks at comparative analysis of urban forms in India and China. Besides, he is a birdwatcher and volunteers for India Literacy Project. He is with Gubbi Labs.

Sanjay Sridhar
Strategy Head – Urban Development and Accessibility at EMBARQ India. He is also the anchor for EMBARQ India's work node in Bangalore.

e-Mail Interview by: Pratibha Mahale
Drafter: Pratibha Mahale

Traverse the realms of language

Emotions are best expressed in one's native language. In this volume, we have articles from different vernacular languages, which, the authors themselves have elucidated.
Let language not be a barrier anymore to express and to read!

Manidhanin Sirippu (TAMIL)
A man's chuckle
Author : Naveen Sendhilnathan
Page : 45
Interpretation by : Naveen Sendhilnathan

This poem states the rules of "being human" by drawing examples from nature. Below is the literal meaning:

On a twilight when the only visible source of light, the sun, retires from the sky, a deer which runs from a fierce tiger stumbles on pieces of stones creating sparks. Flame is a fickle mistress. This fire breaks out, engulfing the entire forest, first starting with the stones contrary to being thankful to them. This then emerges as the only source of light in the dark forest declaring it's superiority. Such is the heart of a few.

The breeze is known for it's mildness and innocence. The leaves of certain plants consider the simple act of getting touched by such breeze, as something to feel shy about and close themselves immediately. But why is it that a man who kills someone's trust doesn't feel shy?

The sky which exists far above the land and the sea considers the physical arrangement of these features as a hierarchical arrangement. Hence it feels shameful each time when the sea reflects the sky as it feels a part of it is at the same lower hierarchical level as the sea and land. To avoid this situation, the sky manages to pull the water away from the see during summer conspiring with sun and hides itself with dark clouds during winter. Such is the extent of the sky's superiority complex, as in the mind of a few.

Birth is one of all the rare events probabilistically, birth is one of them. It takes 44 hours for a flower to be born, it is guarded from it's bud stage through bracts and leaves. It is ensured that it gets protected and gets nourishment etc. But defeating the nature's endurance, the selfish land, lured by the flower's exquisiteness, pulls it to itself, analogous to the selfish act of a few.

Even as the huge forest is getting showered by light and is nourished by the land, it is very unfortunate that the small plants would die even before emerging out from the ground due to the heavily shaded canopy. The biggest of land mass, the mountains weep and cry on seeing this but why doesn't a human heart host kindness which even the waterfalls could show?

While the ones with the above described qualities cannot be classified under mankind, those who authenticate the former as human are even inferior and can't even be classified. ■

Pratikkha (BENGALI)
To wait
Author : Dipan Ghosh
Page : 214
Interpretation by : Dipan Ghosh

The word "Pratikkha" literally means "to wait". In this poem, the poet is waiting for the day liberated from the diurnal bloodshed and bad news in the morning newspaper. He waits eagerly to see the dawn breaking with a smile of peace. He is worried about the current situation of selfish humankind wherein man does not think twice to destroy the lives of others for profit. However, he gathers faith from the words of Swami Vivekananda, "Arise! Awake! and stop not till the goal is reached" and believes that his wait will not be in vain, he will find such a future someday. ■

Khwabon ke Parinde (URDU)
The wings of dreams
Author : Irfan Ansari
Page : 217
Interpretation by : Irfan Ansari

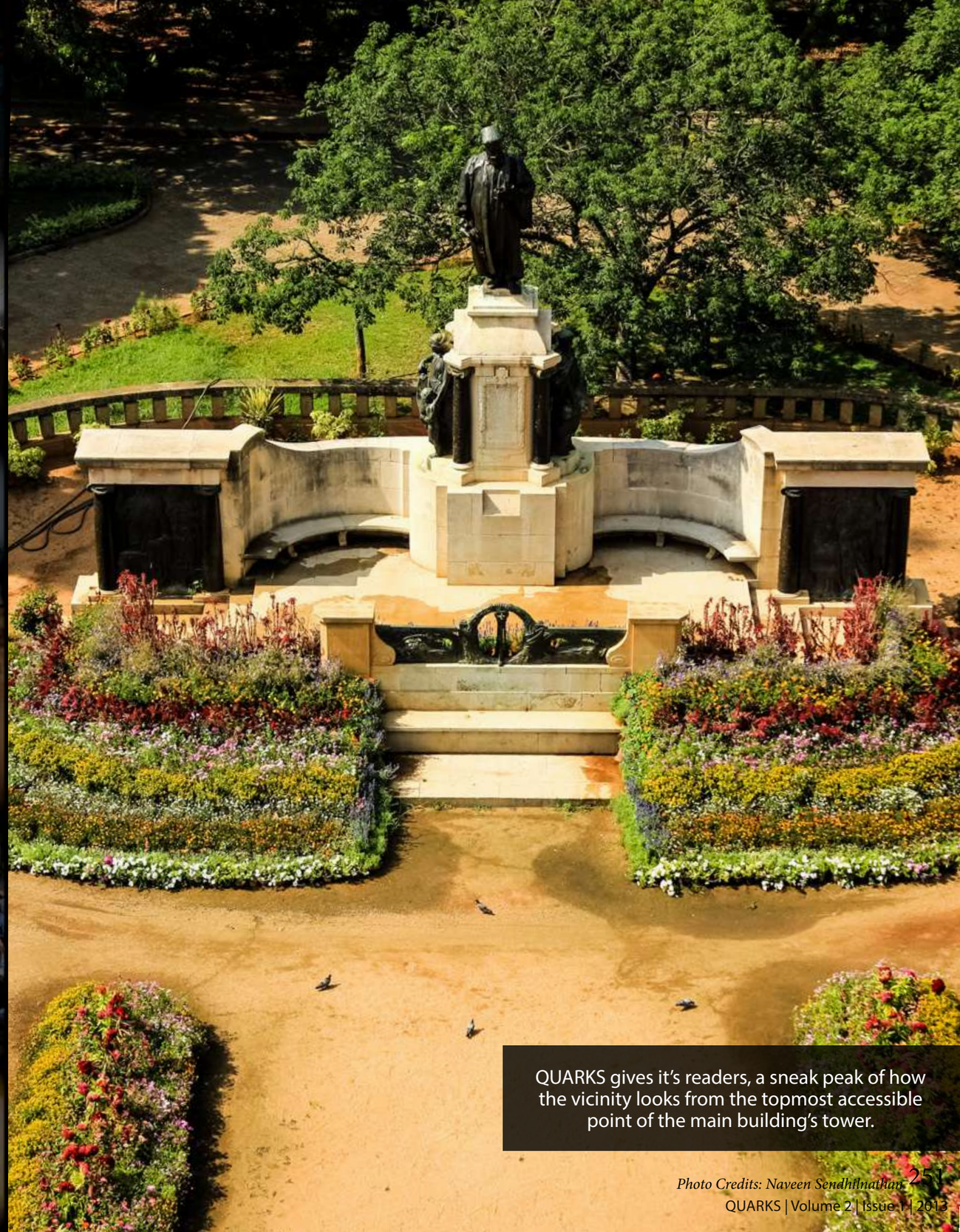
A dream irresistibly attracts each of us since our childhood. In this poem, dream is personified as a free bird chirping freely in the deserted garden of the poet's life. This pleasant presence of the bird makes the poet feel more lively and better. He wants to touch it, hold it and feel it in his real life, but, unfortunately due to his unconsciousness (sleep) he is unable to do so. He is aspiring for the bird. He is ready to go miles for it, strive for it. The only concern he has is to reach its destination. He is waiting for it to guide him. He has full confidence in it as he knows it has wandered enough and knows the best.

Addressing the unique quality of the dreams in the last few lines, the poet highlights that the bird of dreams says goodbye to him as the sun shines that is as he wakes up, just to acknowledge the existence and necessity of others, the process of real life. As a deeply thought example, the poet points out, the importance of long awaited sunrise by the flowers looking forward to quench their thirst with the dew drops resting on its petals.

This unique and distinct self-sacrificing attitude of the bird makes him respect and follow the bird of dreams even more. ■

Snapshots of UG life

The days are long but the years are short here at IISc



QUARKS gives it's readers, a sneak peak of how the vicinity looks from the topmost accessible point of the main building's tower.

Photo Credits: Naveen Sendhilnathan

Quarks

Fundamentally unique Fundamentally different

Volume 2 Issue 1 2013