

UM - DAE CENTRE FOR EXCELLENCE IN BASI C SCI ENCES

# NOVIIII 1 8

Annual Student Magazine

5th Issue

# ACKNOWLEDGEMENT

We convey our thanks to CBS for the constant support and encouragement. We are grateful to Mr. Kishore Menon, who was integral to the success of this event. We also wish to thank the faculty, students and administrative staff for their wonderful contributions, and for making CBS conducive for such expressions of creativity.

## **DIRECTOR'S MESSAGE**



I am delighted to learn that UM-DAE-CEBS students are bringing out the 5th issue of Novellus in the academic year 2017-2018. This annual magazine is a reflection of various events of students performed throughout the year. It connects all the students with the faculty and staff members of CEBS.

It is indeed a matter of a great pride that we have self-motivated and talented students selected through all India basis competition-NEST. The center has been fostering value-based learning and nurturing scientific talent through class-room teaching in a research-based environment. Our students have excelled not only academically but also in several extra-curricular activities. Recently held art (Oris

by CEBS Art club) andmusic (Dhwani by CEBS Music club) fests on 24-25 March and 27th March, respectively are the manifestation of students' enthusiasm and involvement in extra-curricular activities. Similar outstanding activities by other clubs of CEBS students are portrayed in this magazine. We feel elated of our students' academic accomplishments and personality development. Let us hope that such traditions continue with greater vigour and rigour.

I take this opportunity to compliment all the students for their efforts in bringing out the 5th issue of Novellus and wish them very best for their future.

V. K. Jain

## **CHAIRMAN'S MESSAGE**

My association with CEBS is about two years old, but it involved very little interaction with student activities. I have just perused the 2017 issue of Novellus and I am indeed very impressed with it. While the principal objective of CEBS is of course to impart quality science education to its students, I am glad the "centre of excellence" offers its students avenues for developing their cultural sensibilities, the publication of the "Novellus" being an excellent one among them. Let me offer my congratulations to you students for the superb job you have done in producing the 2017 issue. I expect the forthcoming issue - for which I am writing this message - will be even better.



Science is no doubt a demanding pursuit, yet it is important that the students acquire a taste for the arts and humanities as well. Evidently an activity like the publication of Novellus should help you students develop into well-rounded intellectuals, not unidimensional experts in some corner of science. My best wishes to you all for a fruitful new academic year at CEBS if you continue here or elsewhere if you are passing out.

M. S. Raghunathan

## **EDITORIAL**

As CEBS enters into the eleventh year of its existence, countless experiences have touched the institution and in turn the students' lives. We aim to present a slice of these experiences in the form of articles, poems and photographs from the students, faculty and staff of CEBS. The final publication encompasses our diversity- be it academic or poetic ideas. This makes us a small family, with different vibrant members.

This year we were faced with an untimely loss of one of the members of our family- Vimisha Yadav from the current second year batch. This calls for an urgent need for us to stand up and fight against everything that threatens to bog us down. We are a small family and we have to support each other. Always. There are people around who have been through similar phases and might help us with any problem that we are facing. There are counsellors as well who may be helpful. Please reach out.

We work throughout the year to collect students' views on the current affairs in the institute, events organised by students and stellar performances and talents that the students possess. These words are the voices of people in CEBS and their take on the state of affairs in the institute as well as the society. These words have the power to provide an effective commentary on the system. These words have the power to change the system for better.

We aspire to be a student representative magazine in a true sense. We welcome your feedback, as it helps us to get better every year.

Team Novellus (novellus@cbs.ac.in)

# VIMISHA











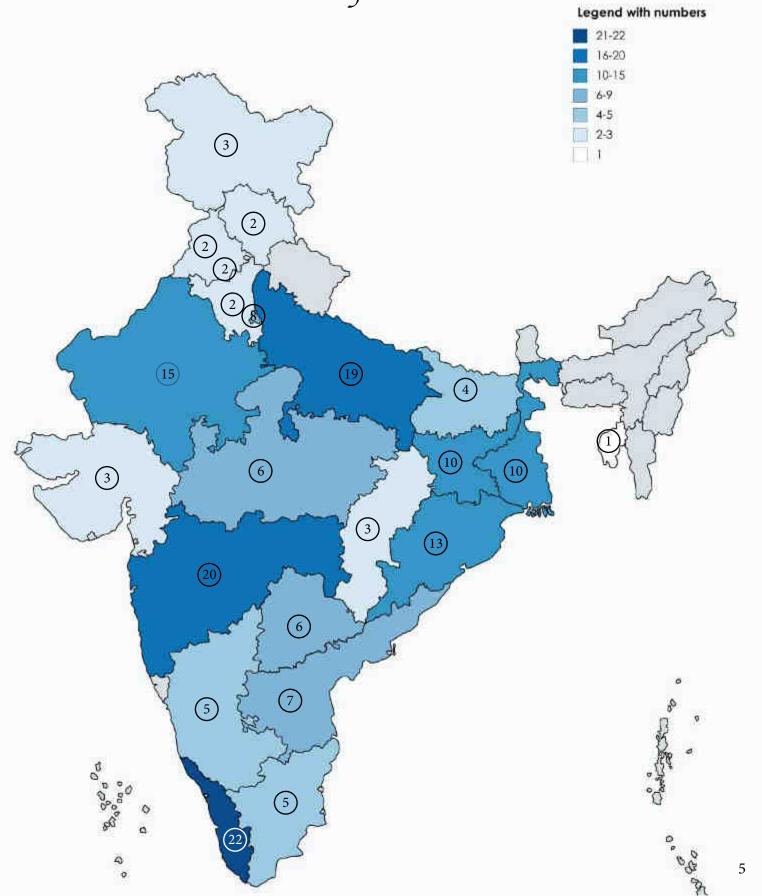
You will be missed.







The span of ind(ependent)-ividual vectors of CBS



Chairman and Director's Foundation Day Sisyphus in Us In Memoriam Let's dream This Page Message 3 6 0 1 2 5 8 Acknowledgement Editorial State Survey Freshers Destiny Interview 0 a Bhavatu Sabba Mangalam What is the laziest thing Destination Nicobar Spectating Society you have ever done? Uljhan Timing 39 40 41 42 45 48 56 44 46 53 54 50 Weird Food Combinations Barbed Wires and Where the mind is Mai Kya Kar Sakta Hoon Mumbai Sheher Ke CEBS Art Club without feat Boundaries Sadko Par CEL 6



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# PEEK @ LIE GROUPS WITH PROF. DANI

This year, our yearly exploration of research at CEBS takes us to Prof. Shrikrishna Gopalrao Dani.

### Positions:

Distinguished Professor (Ad hoc appointment) UM-DAE Centre for Excellence in Basic Sciences (since July 2017)

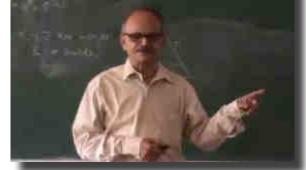
Retired as Distinguished Professor, Tata Institute of Fundamental Research, Mumbai (2012) Served as Distinguished Visiting Professor Indian Institute of Technology Bombay, Mumbai (2012-17)

### **Education:**

M.Sc.- University of Bombay, 1969 Ph.D.- University of Bombay, 1975

### Specialisations:

Ergodic theory, Dynamics, Lie groups, Diophantine approximation, Probability theory, History of mathematics. (Over 100 papers published in international journals).



### Guidance:

Eleven Ph.D. Theses and one M.Phil. Thesis guided.

### Awards and Distinctions:

#### **Prizes:**

TWAS Prize in Mathematics, awarded by the TWAS, the Academy of Sciences for the Developing World (2007).

Srinivasa Ramanujan Medal of the Indian National Science Academy (2010)

Shanti Swarup Bhatnagar Prize for Mathematical Sciences (1990).

Young Scientist Award of INSA (1976).

#### Fellowships of Academies:

Fellow of TWAS, the Academy of Sciences for the Developing World (2009).

Fellow of the Indian Academy of Sciences (IASc), since 1986; Member of the Council of the Academy, during 1998-2000.

Fellow of the Indian National Science Academy (INSA), since 1990; Member of the Council of INSA, during 2006-08.

Fellow of the National Academy of Sciences (India), since 1995.

#### Other distinctions:

Invited speaker, International Congress of Mathematicians, Zurich, 1994.

President of the Commission for Development and Exchange (CDE) of the International Mathematical Union (IMU), during 2007-2010, Member during 2003 - 10.

Member, Developing Countries Strategy Group, of IMU during 2004 - 10.

Member, National Committee of the IMU, during 1995-98.

President, Indian Society for History of Mathematics, since 2008; Member of the Executive Council of the Society since 2004.

President, Indian Mathematical Society, 2014-15.

Member, Executive Committee (nominee of IMU), International Commission for History of Mathematics (2015-2018).

Proceedings of a conference held on the occasion of his 65th birthday are published in the Contemporary Mathematics series published by the American Mathematical Society, and include two articles, one by Dave Witte Morris, and another by Francois Ledrappier and Riddhi Shah, describing his contributions in the two major areas of his research.

### Research Highlights:

Research contributions made to various areas of mathematics including Ergodic theory, Dynamics, Lie groups, Diophantine approximation, Probability measures on groups, and also History of mathematics, especially ancient Indian mathematics. Over 100 papers published in international journals. Eleven Ph.D. students were guided to write their theses in these areas.

Since the 1980s, Prof. Dani has also made significant contributions to certain questions on probability measures on Lie groups.

When asked about the main themes and questions behind his research, he was happy to explain it to us.

A major theme in Prof. Dani's work has been the study of dynamics of a class of systems on what are called homogeneous spaces and application of their properties to problems in number theory, especially Diophantine approximation. The homogeneous spaces involve a special class of groups called Lie groups, which are structures involving both group theory and geometry. On these spaces there is a class of dynamical systems arising from the group structure called flows on homogeneous spaces. The group of matrices with determinant 1, with two matrices identified with each other if one is a product of the other with an integral matrix following it, is a crucial example of such a space, and on account of the role of integer matrices the dynamics associated with it it relates to problems in Diophantine approximation. Prof. Dani's work describes many characteristics of the dynamics of these flows. A particular way of relating certain class of properties of the flows to problems in Diophantine approximation that he initiated is now referred in literature "Dani correspondence". One of the major applications in his study, in collaboration with G.A. Margulis, concerns estimating the number of solutions in integers for a class of quadratic inequalities in terms of the control size; the inequalities had acquired importance on account of a long standing conjecture about them known as Oppenheim conjecture.

There is also good deal of work by Prof. Dani on another theme which concerns extension of classical probability theory to the setting of Lie groups. One of the major problems in the area is about characterising discrete random motions on a group that can be realised as being part of a continuously evolving random process in the same setting, known as the "embedding problem". While the general problem remains unsolved yet, Prof. Dani together with Dr. M. McCrudden has provided satisfactory answers for a large class of groups including all matrix Lie groups.

He continues to be working on problems along both the streams. Along the former theme one of the questions being addressed is the following. Given two vectors v and w conditions are known when one can find transfor-

mations defined by an integral matrices moving v arbitrarily close to w. The question is how large the entries of the matrix may have to be in order to achieve a desired degree of approximation. He is working on this with Prof. Arnaldo Nogueira. Along the latter theme he is working with Dr. Arunava Mandal, who recently completed his Ph.D. under his guidance, where the analogous issue is considered on homogeneous spaces in place of Lie groups, for deterministic processes.

Among his papers there are several which would be accessible to undergraduates via some minimal preparation, that could lead to gradually developing expertise in the area.

"In mathematics, the success of a solution is marked not necessarily by the original statement but what goes into the actual solution."

At this point, one of the questions on our minds was what according to him, was the major difference between research in mathematics and research in any other discipline of science. He cleared the air by saying that in mathematics, there may be problems which carry uncertainty towards being settled. This is possible in all fields, but perhaps less so in some areas. There are problems in mathematics, which remain unsolved for centuries.

One is expected to work on problems which demand a lot of effort and may still lead to failure, though indeed there are areas where research problems with predictable scope for success are possible - they naturally do not command much respectability.

In mathematics, the success of a solution is marked not necessarily by the original statement but what goes into the actual solution.

This made us curious about what sort of struggles he has come across in his long career as a mathematician. Regarding this, he said that a theorem's proof is not arrived at sequentially along the steps seen in the end. One starts off with an intuition about how it should work. It is only after this, that the steps are worked out one by one in some order, to give an ultimate version of the proof. This approach might not always work since some steps may turn out to be incorrect in the process. Celebrated mathematicians too, have had to work hard to get an alternative. For instance, Andrew Wiles' original proof of Fermat's last theorem had a gap, a serious gap. It was only in a later joint paper with Taylor that it was sorted out.

Considering his vast experience, we asked Prof. Dani about his opinions on CEBS, and he observes that perhaps the numbers should have been more for CEBS to be more effective. Bigger classes and also a stricter selection mechanism for students who join CEBS is necessary. This promotes healthy peer group discussions and debates. A strict screening policy also ensures motivated students who come to CEBS because they are interested, and not because they are getting a scholarship.

Also he feels that students need to be alert that mathematics at higher levels is different from the mathematics they are exposed to at school. Despite the fact that CEBS has been a good idea, many of the details have probably not worked out right, perhaps due to unseen constraints. He opines that certain reforms must be put in place for this system to be effective.

Playing amidst the grey clouds Were the stars of the night sky The strong aroma of the wet soil Urged him for the one last try

Lying on his back with eyes wide open All he wanted was one last dream Just to finish the planned thoughts And to stop his heart's scream.

He knew neither can he control Nor can he change the reality But this truth for a dreamer Is the fuel for his insanity.

- Prabhu Prasad Swain

Let's Dream







# Treshers

Once again, a new batch and with new faces, Quanta 11 was warmly embraced and welcomed into the CEBS family in September 2017. The event started with freshers walking down the ramp dressed up in flamboyant colours and enacting their favorite characters. They displayed varied talents through their performances. They were also able to convey strong social messages through their performances; most notable being the 'Stop Female feticide - Save Girl Child'. The audiences were also mesmerized by their melodious songs.

Not to forget the students from other Quantas who also performed back to back along with Quanta 11 and gave a spell binding and fabulous performance. Once again, the band rocked and thrilled and captivated the audiences with their intriguing performance. The "Forte of Quanta 11" heightened and uplifted the moods and spirits of the entire CEBS fraternity. The event finally came to an end with the much-awaited DJ night and a delectable and exquisite feast.



















# Sisyphus in us

Every day I was moving a stone, maybe one meter in diameter; inch by inch, continuously wherever I went, whatever I did. I didn't know why I was moving it but I have been moving it as long as I can remember. I never got consciously involved; it was as if I was moving the stone in a parallel universe of which I know nothing-and was not much interested to know either. But today was different; a sudden jerk while pushing the stone made me realize my actions. I saw that I was pushing the stone towards a mountain.

I tried very hard to find a reason for my actions but of no use. I was not able to come up with any reasonable answer. Coupled with frustration and fear of ignorance I convinced myself that I would get the answers once I pushed the stone to the mountain top.

Soon this became my sole aim. I pushed the stone harder and harder. Sometimes I thought that I should give up, but the quest for truth, coupled with fear of ignorance of my own actions pushed me towards my goal. While pushing the stone, I realized how little I knew about the world in which I live; a world with which I thought was quite familiar until recently. The things which made sense till now did not make sense any more.

Finally the day came when I was able to push the stone to the mountain top. The view was so beautiful; I was able to see the whole unfamiliar terrain. But soon my happiness and excitement died when I realized that I still had no answers. Out of frustration I tried to abandon the stone, but then I realized that my very survival depended on that stone.

Without pushing that stone I would die. Maybe I push the stone to live. But why do I live? The world I live in does not make sense any more- do I live to push the stone? Can the meaning of my life be this silly? Pushing a stone!

I then had only two options left- to push the stone here-and-there endlessly, without meaning or purpose; or to commit suicide. I started to wonder about my old days, when I never consciously thought of why I was pushing the stone. Ignorance really is bliss! I wish I could go back to old ignorant days again!

After some thought I came to the conclusion that may be life really doesn't have any meaning. Still, I may myself give meaning to it. Maybe it is self-delusional, but in the end happiness is what that matters. Even if I die, I may not get my answer, so why not live happily in my delusional world? Also, I would now have the freedom to give different meanings to life at different points of time. In fact, I started to think of myself as a rebel-always trying to give meaning to my meaningless world. I am Sisyphus, and this is my story.

- Niranjan Shankaran, Quanta 2

# DESTINY

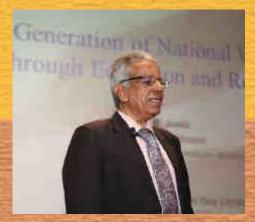
One day someone commented to me,
"I wonder what your future would be!"
My mind quickly took this fact
As it left upon it a great impact.
I wondered why the future makes us worry
And the past makes us feel sorry.
Destiny is what we should seek for
Service to mankind is what we should live for.
For living a life without an aim
Is just like without knowing rules playing a game.
And it was long before my mind could breach
And this is the conclusion I finally reached,
Whatever in my future awaits for me
It's my destiny that calls me.

- Indranil

# FOUNDATION DAY

CEBS celebrated its tenth foundation day on September 18, 2017 in Green Technology Building auditorium. The programme opened with a warm welcome message by the director, Prof. R.V. Hosur. The occasion was graced by J.B. Joshi, Emeritus Professor, Homi Bhabha National Institute, Mumbai. He spoke about generation of wealth through education and research.

This was followed by a cultural extravaganza, wherein the students as well as the faculty showcased their talents. The programme concluded with delicious lunch served at the New Hostel Building. It was an occasion thoroughly enjoyed by the entire CEBS family.

















# CELEBRATIONS CELEBRATIONS





Janmashtami









Diwali



Onam











# Holi





## ONE

Like an ocean so vast, made of drops of water
Like a desert so huge, made of tiny grains of sand
Like a sky so infinite, made of millions of stars
Like music, made of beautifully played notes
Like poetry, made of feelings put into words
Does one not understand the hidden beauty in all of it
That so many come together to become one with it
Just like the many beautiful forms of Him we know
In our hearts, as One He is sowed

# WORDS

A pen in hand and the ink all wet
Only allow words to dry and set
But why let them set when they can flow
Like a river that knows where to go
Let it come to you when its time
Like that breath that reaches you when right is the time

~ Marilyn

## PhD Placements





Shraddha Agrawal - University of Illinois, Urbana Champaign

Bhavya Venkatesh - Tata Institute of Fundamental Research, Mumbai

Kartikeya Sharma - University of Massachusetts, Lowell University of Tennessee, Knoxville

Dhanpal Siddharth - Washington State University

Kaarunya Dhevi - Bhabha Atomic Research Centre, Mumbai

Aswathi K Sivan - CNR Institute for Microelectronics and Microsystems

Sangeeth Saseendran - Instytut Podstawowych Problemów Techniki PAN

Akshay K Silver - Yale University

Salman Alam- Brandeis University

Aishwarya Mishra - King's College, London

Anjitha S G - IFE Institue of Energy Technology, Norway

# JIGYAGA

This year's Jigyasa, the annual science quiz, was the most successful one so far, with 125 teams participating from various colleges in Mumbai and Pune. The organizers, Quanta 9, boast of more than 180 registrations this year.

The first round of the quiz was organized on 10th September 2017 at five centers: ICT, IIT Bombay, St Xavier's College, IISER Pune, and UM-DAE CEBS. Teams of two or three were expected to answer multiple choice questions from various fields of science and general knowledge. Fifteen teams made it to the second round, where they gave each other a run for their money.

8th October witnessed the second and the third rounds of the quiz, organized inside the University campus. In the second round, descriptive questions tested the skills of each of the team members. The third round kept the participants on their toes and enthralled the audience.

This event was a great success due to the support of the CEBS family- the faculty, the administration and the student community; as well as our major sponsors, Bank of Baroda and LIC.

Cash prizes worth Rs.40,000 in total were awarded to the top 5 winning teams:

- 1. IIT Bombay
- 2. IISER Pune
- 3. IIT Bombay
  - 4. CEBS
  - 5. CEBS









# 1 never wanted any of this

-Anonymous

I never wanted any of this. Believe me, I never planned for any of this to happen. Looking back on my life, I often feel like it has been a series of accidents that led me to the place I now stand. I have yet to figure out if this is where I ought to be.

I realize that I must have forgotten to close the window, as the cold settles into the room. The heater makes it too hot and the open window makes it too cold. I force myself to roll over and try to shut the window. It's just out of my reach and I don't want to get up. Ugh, is this even worth it? I decide it is.

So, where was I? Ah yes! I remember now.

I never wanted to hurt her, you know. It's important that you understand that. Even if you don't, it's important that you read my story from that point of view. Without this, it will read like a tale of revenge. Of anger, and to some extent, a tale of stupidity. I am not saying those things aren't true, I just want you to have the right context.

Our meeting was an accident. We didn't exactly bump into each other in a bookstore. It was through an acquaintance. When I went home that night, I thought nothing of it. Just another day, another coworker to politely nod at in passing. You know the one, where you say "Hi" without saying anything and smile without showing your teeth? This would have continued had fate not intervened.

Some people call it fate. I call it a curse. In hindsight, it seems to just be bad luck.

It was one of those office "Mentor - Mentee" programmes. They would pay you 10000 a month for bonding activities (No alcohol though). I thought, what the heck, I'm up for a good time. So I signed up as a mentor. I had been around for a year and a half, I could certainly show a newbie the ropes - where the budget food was, which movie halls were cheaper, and the likes. The programme matched us. I emailed her

and asked what she was interested in. She said something fun that doesn't involve eating. I almost backed out when I heard that, but I took the challenge and suggested rock climbing. It had always sounded fun. Not to mention it costed enough that I wouldn't do it on my own dime!

It was amazing!

Don't get me wrong, it wasn't the company, just the sheer physical activity of the place. That adrenaline rush of getting a grip on the rock that seemed just out of reach, someone holding your rope down below cheering you. And when you have company, you subconsciously start associating that rush with the person you're with. We bonded alright! And so it began. Like a glacier melting, our relationship proceeded down the path of least resistance. Aided by office sponsored meetings (Dates?), we grew closer. It was only natural. And then, like any other river in the age of man, mankind built a dam and stopped us right in our tracks.

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There's a knock on my door. I look at the clock hanging above it. It's 9 pm already? I go to the door and knock back. A small sliding panel opens to reveal the sister's face. I take my meds, wash them down with the small glass of water and the panel slams shut. No greetings, no smiles. This just wasn't that kind of place. I walk back to my bed.

I figure I don't have much time to write now. I'll be asleep pretty soon. I just lay down and close my eyes. I

"Like a glacier melting, our relationship proceeded down the path of least resistance."

see her face staring back at me.

"I'm sorry"

I shiver and check the window to see if it is shut. It is.

It's still dark. I have been awake for some time now. It will be a long time before the sun comes up, and it wouldn't stay for too long.

I like waking up. It's the best part of the day. The sleep is usually dreamless, and when I wake up, often I don't have a sense of what time it is or where I am. For about a minute. And then, I am awake. I know where I am. I know what I did.

It is hard to tell stories without using names. Or without mentioning the places you have been to. Without mentioning what someone looks like or describing the mundane aspects of the story - like your room, for instance. Or where you worked, or what you did. It's hard yes. Then why am I doing it, you ask? It's not that complicated really. However hard it is to tell a story without those things, it's easier than the alternative.

It was a cold night when it finally happened. Parts of my memories are crystal clear, as if they were happening here and now, whereas others are foggy. It was a night like a hundred others, we met for dinner and decided to hang out for a while. We both had a couple of beers in us, and neither of us wanted to call it a night. It was peaceful, sitting in the cool sea breeze in the dead of the night. I'm sure everyone has heard that you can be surrounded by thousands of people and yet be alone. Well, we were too, but it wasn't the usual kind. It was more like we were just in our own bubble. That's when I decided to break the news.

Our eyes met. I took the leap. "I love you. Not like a friend. I am in love with you." Went back to being silent. Waiting. Hoping. Praying. She didn't change her expression at first. Her face held that serene calm that it had held all night. Then she did. And I knew this was it. This is where it gets hazy. I remember we both cried that night. I don't remember how

# "And then, I am awake. I know where I am. I know what I did."

I got home into my bed. I don't remember exactly what she said. All I knew was that it was over.

It became quite clear that she didn't want me around her anymore. All the calls stopped. The hanging out stopped. Even the nods passing in the hallway, leave alone saying hello. She stopped making eye contact. And I was ashamed, guilty and heartbroken. Not only because she didn't love me, that could happen to anyone. No, I was morose because I lost a friend. I had really thought she was the one you know? For years, no one really understood me. My bonds with my family and college friends were, at best, strained. And then this one person walks into my life and I finally feel like I am alive and before I even know it, they take it all away! How am I supposed to be OK with that?

I had had enough. Of just about everyone. I decided to leave the country. Start a new life in this weird little corner of the world. I just had to talk to her one last time. I needed that closure. It wasn't a long talk. I walked into her office on my last day just as she was getting ready to leave.

"You have a minute?"

"Is it important? I am late."

"It won't take long."

She looked at me with a mixture of sadness and pity. She took a seat. I sat down next to her.

"Since that night, I have not stopped thinking about how I want you to be happy and that I was a piece of shit for making you feel uncomfortable. But I have realised that it's not true. I loved you and you decided to throw it all away. You made your choice. I wouldn't have said that had I not been a hundred percent sure you felt it too. But it's all in the past

now. It's time for me to try and love myself now. I have tried and failed enough times now that I don't know if I have it in me to love another person ever again. Maybe someday you'll find a guy you'll want to marry, and maybe that will be a life you can spend with him here trying to please everyone you know. But he'll never be me. And he will never be willing to do for you what I was. And you know it!"

I walked out. I heard a sob behind my back but I never bothered to stop or turn. I had had enough of this.

The sun was still far from rising but the horizon had started to look warmer. I look at the clock. It's inching closer and closer to 8 am. Nurse Phillips will be here soon.

Well, to cut it short, I did try to love myself. I just never felt worth it. She never really left my head. Some days, a good cry would be enough. Some days, I would be walking on the street one moment and trying to breath the next, having collapsed on the pavement. It became harder to go to work. I had tried my best to love myself for who I was and I had failed. I wanted to end it all. I wanted it to be over.

But, I didn't do anything. Not because I was scared. No. I realised I need to get through this, if not for me, then for some person who I might meet way down the line, who's going through the same thing I am. Someone who has been rejected all their life and gone through it feeling like crap. Someone who just needs to be told that it's OK. It's OK to breathe. It's OK to be yourself. I checked myself in. And bit by bit, I got better. It wasn't straightforward. It wasn't easy. I am pretty sure even after I get out I will still have the occasional bad day.

There is a knock on the door. I look up and it's 8 am. I glance around my room one last time and walk up to the door and knock. But this time, instead of the sliding panel, the door opens. Sister Kosniken is right there. Standing next to her is Dr. Elias, my therapist. I smile at them both and they smile back at me as they start escorting me down the hall.

I change into some clothes and get back my origi-

nal possessions. As I am leaving, Dr. Elias decides to walk me to the gate.

"The institute policy is to get a cab for people who get discharged, but I decided that your wonderful turnaround deserves a bit more than that!", he said as we walked down the gravel path to the wrought iron gates. It seemed like a charming rustic place, very unlike what one would imagine for a facility for housing mentally ill patients. A part of me was going to miss it, but the other part of me wanted to go see a world where I was no longer controlled by my past. I look beyond the gates and standing there is a man in a suit, standing beside what appeared to be a car like any other.

"I don't understand", I said, stating my confusion. "That appears to be a cab, albeit maybe a fancy one?"

"That's my car and this is my driver Oliver who will drop you off. But, in the meantime, if you wish to have the car for a day or two and roam around Tampere, it's yours."

I smiled and held back a tear as I hugged him. I stand up straight. "Thank you for taking such good care of me Dr. Elias. I'll take your leave now."

"It's been a pleasure Lisa! Do take care of yourself! And don't hesitate to call if you ever need anything!"

I turn to the car and slide inside. It's warm and the seats are comfortable.

"Where to Miss?" asks Oliver.

"I think I am going to take up Dr. Elias on the offer to roam around Tampere." I said.

"Right away Miss!"



Yet another year has passed and the science club of CEBS, as always, has provided a weekly platform for the students to attend the invited lectures by eminent scientists which expose them to the current regimes of research and also to engage them in discussions through their interaction sessions and open mic nights.

### Rendezvous

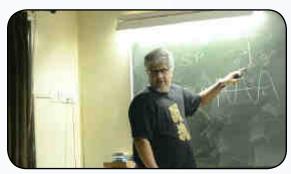
The CBS Science Club organises Rendezvous sessions where active researchers in the Basic Sciences are invited to share their ideas and thoughts with students of CBS. These lecture-cum-discussion sessions are aimed for the undergraduate students who are motivated to pursue research in future.



The Evolution of Science

5th August 2017

Prof. Mayank Vahia, Tata Institute of Fundamental Research, Mumbai



**Experimental Nonlinear Dynamics** 

14th August 2017

Prof. Punit Parmananda, Department of Physics, IIT Bombay



**Computing with Quantum Mechanics** 

21st August 2017

Dr. Rajamani Vijayaraghavan, DCMPMS Tata Institute of Fundamental Research, Mumbai



## **Imaging the Chemistry of Life**

9th September 2017

Dr. Ankona Datta, Chemical Biology and Molecular Imaging Lab, Department of Chemical Sciences, Tata Institute of Fundamental Research, Mumbai



## Seeking N-lightenment, one cup at a time!

3rd October 2017

Prof. Arnab Bhattacharya, Department of Condensed Matter Physics and Material Sciences, Tata Institute of Fundamental Research, Mumbai



### **Building the Brain**

5th October 2017

Prof. Shubha Tole, Department of Biological Sciences, Tata Institute of Fundamental Research, Mumbai



## Playing with a Tiny Top

23rd October 2017

Prof. Ramakrishna V Hosur, Department of Chemical Sciences, Tata Institute of Fundamental Research, Mumbai, and former Director of UM DAE CBS, Mumbai



How to See an Atom?

31st October 2017

Dr. Srikumar Banerjee, DAE Homi Bhabha Chair Professor and former Secretary of Department of Atomic Energy(DAE), and Chairman of Atomic Energy Commission of India (AECI)



### **Randomness in Mathematics**

9th November 2017

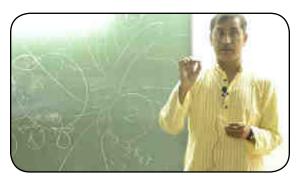
Prof. Anish Ghosh, School of Mathematics, Tata Institute of Fundamental Research, Mumbai



Monte Carlo Methods in Finance

16th January 2018

Prof. Sandeep Juneja, School of Technology and Computer Science, Tata Institute of Fundamental Research, Mumbai



Tiny Machines. Big Tasks.

2nd February 2018

Prof. Roop Mallik, Department of Biological Sciences, Tata Institute of Fundamental Research, Mumbai



**Black Holes** 

13th March 2018

Prof. Shiraz Minwalla, Department of Theoretical Physics at Tata Institute of Fundamental Research, Mumbai

The Science Club started a new format of SciClub interaction sessions, i.e. Open Mics, akin to Symphonia that is held by the Music Club, the session has 10 speakers with only 3 minutes, which is followed by a discussion.















## THE LAMP

IT WAS A DAY IN JULY, MY MOTHER PLACED THE KEROSENE LAMP ON THE DESK WHICH IN SECONDS, BLEW OUT THE DARKNESS. IT WAS RAINING OUTSIDE. WE CHILDREN, MY SISTER AND I, WERE SITTING TOGETHER CUDDLED IN A DARK ROOM PARTIALLY LIT BY AN OILLAMP. I HAVE READ BOOKS, ON HOW OUR ANCESTORS SPENT THEIR DAYS WHEN THEY WERE CHILDREN LIKE ME. INDIA WAS NOT SO ADVANCED IN THOSE DAYS AND SO, THE MORNINGS WERE FULL OF ENERGY AND THE NIGHTS WERE OPPOSITE IN THE SENSE THAT THEY WERE VERY DARK. I HAVE READ THE BOOKS OF FOLKTALES AND PHANTOM NIGHTS, ALL HAVING AN EQUAL CASTING OF LAMP-LIT NIGHTS AND VILLAGE LIFE. IN MY CHILDHOOD DAYS, I HAVE HEARD OF LONG-NAILED AND FEROCIOUS GRIPPED TOOTH GHOSTS AND MONSTERS. I HAVE HEARD OF LITHY SOULS STAMPING THE FEET OF IGNORANCE AND CRIES OF BAD WITCHES. BUT I NEVER KNEW A LAMP COULD BE SO MUCH INTERESTING.

DESCRIBING THE LAMP, IT IS NOT SEL SH, IT EQUALLY SHARES ITS LIGHT IN ALL DIRECTION. IT IS NOT A CONTAINER OF JEALOUSY, IT IS A SEEKER OF BROTH-ERHOOD. IT LEADS THE WAY OF INNOCENCE AND BREAKS THE CLAWS OF EVIL ARMS. ABOVE ALL, IT IS OPTIMISTIC IN LIFE.

THE BOOK OF LITERACY IS VIVID WHILE THE BOOK OF ILLITERACY IS LIKE SHAD-OWY NIGHTS. THE LONESOME CRIES OF THE HOOTING OWLS OR THE PEOPLE WHO ARE UNEDUCATED, CAN THEY BE HEARD BY THE WIND? TO BE HEARD BY THE WIND, THEY NEED TO SHOUT AT THEIR TOPMOST VOICE, "GOD HAVE MERCY ON US!"

EVERYONE HAS THE RIGHT TO EXPRESS THEIR THOUGHTS, THE RIGHT TO ED-UCATION. WHEN ALLARE EQUALLY CREATED BY GOD, THEN WHY THERE IS ONE CHILD IN THAT HOUSE WITH A BOOK IN HIS HANDS AND SMILE IN HIS WORDS AND A CHILD THERE IN THE CROOKED HUT, WITH MUD IN HIS HAND AND GRIEF IN HIS WORDS.

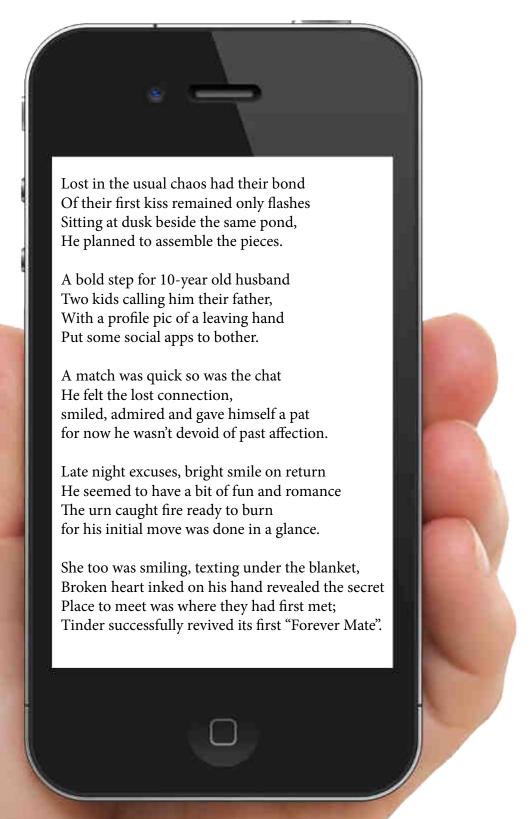
BOOKS' CREATE A NEW AND A BETTER WORLD THAN YESTERDAY. THEY CREATE A POSITIVE IMPRESSION IN ONE'S MIND. IT IS A PLATFORM WHERE ALL KNOWLEDGE GATHERS TOGETHER TO FEED THE BRAIN. A NATION LIKE INDIA, WHERE ALL PEOPLE STAND HAND IN HAND FOR THE SERVICE OF THE COUNTRY, CANNOT STAND WHEN HALF OF THE PEOPLE ARE LITERATE AND THE OTHER HALF ILLITERATE. IT IS A SHAME ON THE COUNTRY WHERE A CHILD IS NOT SENT TO SCHOOL GODDESS SARASWATI, THE GODDESS OF KNOWLEDGE, RESTS IN EVERYONE'S HAND. ONLY THE ONE WHO SUCCEEDS IN FOLDING THE STS TIGHTLY TO LET NOT ESCAPE THE GODDESS GAINS SUCCESS IN LIFE. EACH ONE TEACH ONE! THE OWER CRIES TO THE CLOUDS, "PLEASE SHED YOUR WATER ON US". BLAME THE CLOUD WHO IGNORES THE CRIES OF THE OWER. IT IS THE DUTY OF EACH PERSON TO EDUCATE HIMSELF AND TO ENSURE THAT EVERYONE IN THEIR SURROUNDING IS EDUCATED WELL. THEN ONLY, ALL PEOPLE CAN HOLD EACH OTHER'S HAND AND STRIVE TOWARDS THE DEVELOPMENT OF THE NATION.

SO IT IS BETTER TO BE AN OILLAMP BLOWING ALL THE DARKNESS THAN BEING AN OWL IGNORING THE DARK SHADY NIGHT.





- Prabhu Prasad Swain



# Live to Eat

## -Shraddha Agrawal & Bhavya Venkatesh

RAASTA:- Mainly for non-vegetarians, this Khar restaurant has some Jamaican inspired mains which are fingerlicking good. The starters are fairly standard, and vegetarians have limited options. The rum chica rum chicken was to die for. A delicious chicken gravy over rice that had us digging in. A little expensive, but worth going for.

MAMAGOTO:- Classic Asian, a little heavy on the pocket but totally worth it. We had the spicy Bangkok bowl, which was fried rice topped with a delicious gravy. Also as a bonus, they have chopsticks, so you get to play with your food! This is next to the Jamjar, Diner which was our next stop...



JAMJAR DINER:- The food was good, and contrary to its name, the dirty fries were totally yum. Stock up on classic candy here, they have jars that you can take some from, or if you are like us, fill up your pockets from. They also have books inside the cafe. Overall a great place to hangout with friends, although it leans towards the expensive side. Jamjar Diner and Mamagoto are neighbours on Linking Road

Between Breads:- Classic burgers and sandwiches, with hatke combinations and mouthwatering ingredients. This joint in Pali Hill has some amazing burgers and we definitely recommend the onion rings, which are served with two yummy dips. For all mushroom lovers, do not forget to try their shrumi burger, it will blow your mind away.

PANCHAM PURIWALA:- This is officially the oldest establishment in Mumbai. It stands true to its name and serves excellent puris and kachoris alongside some great curries. Unlike other restaurants in CST area, this one is quite light on the pocket.







CLOCKWISE FROM TOP: MAMAGOTO, Pancham Puriwala, Between Breads AND JAMJAR DINER



CAFE KUTTUNAD:- also the second mess to CB-Scients, this place is an offshoot of Theeram. They serve Malayali food and at very cheap prices. The lunches consist of traditional dishes served on banana leaf while dinner dishes range from set dosa, ghee roast to porotta, appam with delicious dishes of chicken which include: chicken 65, chicken varutharachathu, pepper chicken and kothu porotta. The wide variety of fish dishes makes it the perfect place for all the fish lovers!

Bombay to Barcelona Library Cafe: This cafe in Marol has some delicious food and some amazing principles. The owner has special prices for underprivileged children, and the menu is a mix of Indian and European cuisine. We love the balle balle pasta, and the patatas bravas. And the king of them all, the hot chocolate. Will make you weep with delight. Guaranteed. Not to forget the lasagne, which are to die for. The button mushrooms can convert mushroom haters into





mushroom lovers. Special note: Wooden straws! So eco-friendly <3

AASWAD:- This Dadar West legend serves classic Maharashtrian fare that is good enough to leave you licking your fingers. We highly recommend the Thalipith, served with a dip and best eaten with the spicy thecha! Also, the puranpoli=nirvana. That's all we have to say on the matter.





LEFT: BOMBAY TO BARCELONA

LIBRARY CAFE
RIGHT: AASWAD

# SPORTS

Despite all the changes that happened in CEBS, it was a good year for our heroes in sports. Having spent double the proposed budget, the CEBS sports committee did a wonderful job by making it amicable. With students making their way through to the university team and some even to nationals (T.V. Rakesh-Quanta 10), have proven the worth of CBScients in the field of sports once again. IISM 2017 was yet another feather in the cap for Manush. He presented CEBS with two gold medals in 1500m and 800m each. Basketball was the second highlight for IISM. Defeating the defending champions, they proved that teamwork can be achieved without coaching. The players stole the hearts of many, despite not winning any medals. The football team of CEBS brought a lot of changes this year, starting from a new coach, a women's team and the men's team striking their way through the game with 3 self-goals! One thing that can be said for sure is that, everyone who participated gave their best performances despite the limited resources. From a tiresome train journey to the marvellous beauty of Mohali, IISM 2017 has brought the CEBS family closer. Ragnarok started with a change in power from first years to the sports committee. With the innumerable mails sent with the never ending rules and regulations, Ragnarok 2k18 was rather a smooth journey. The sports committee and the first years worked side by side to make it successful. What started of as a tug of war, ended up with enemies turned friends hugging it out and declaring everyone a winner! With the help of few enthusiastic members of sports committee, CEBS emerged as the winners of Sportico 2018 for the third time in a row. With equal participation in team and individual events, it was an unforgettable experience etched in the minds of CBScients.













the box, expecting a ring.

A bug came crawling out instead.

Maithreyi

He waited outside the morgue for our first date

in 10 years.

Anjali

He didn't trust her, but couldn't go back on his promise. Eight year olds have the worst taste in clothes...

Bhavya

His hands worked like a magician, adding and mixing in graceful rhythm. "Ye lo madam, chana jor garam."

Bhavya

He woke up on a lazy funday morning and his head was so light that he could not feel it. But then he remembered that he he didn't have one.

Srishti

The service centre guy told the lady who came with the earphones that didn't work on one side after checking it, "Ma'am... you've got a bad news!"

Aron

The blood ran down her thighs. Where was it coming from? Whom could the turn to? There were some parts of her body that she wasn't to talk about.

Maithreyi

"You know how to make the most realistic human statue?"

"The trick is to use blood instead of water."

Swarnim

With eyes filled with tears and taking his last breath he looked at the woman in the photograph and he thanked cancer. What took them apart in one realm is going to unite them again in a different realm

Indranil

Finally the puppy bit his tail. To his horror, however, the tail hirred at him

maithreyi

Jack, Jim or Johnny, it all ended in the same hangover

Bhavya

She was told she couldn't have kids. She wiped her tears, brought out the crayons and began doodling on the wall of her own home.

Maithreyi

#### Not so Tiny Tales

He stared at the tablecloth, with its coffee stains of different ages as he pondered on how to tell her what he really thought. The noisy A/C dripped water into the bucket, as she looked at him expectantly. He cleared his throat and leaned forward, resting his elbows on the table. Each of the stains would speak their own story, from clumsy children to startled grandfathers to flustered waiters. For some reason he thought of the meme from 9gag with the big fluffy "doge". And how it would look with "Much expectation" and "So much tension" written all over the image of her sitting in front of him. "Listen", he began. "First tell me where you heard this."

"Everyone was saying it. Aravind even screamed it loudly."

"Who the hell is Aravind, and what does he have against me?", he lamented in his mind. He had to say something. Otherwise this whole situation would get out of hand.

"Beta, a condom is..."

- Bhavya

" We are the number one institute for competitive exams here. Rank one and blah blah person was from our institute." He said with smile and proud. Students clapped like robots because somewhere in between mugging up and unhealthy competition & huge stress they lost their happiness, creativity and

- Rakesh Saini

Centuries of oppression, decades of civil unrest, living through the change, the ideas occurred to him as a question of existential significance. That day he believed the fight was finally over, but never did it hit him that this was only the beginning. Fighting for freedom was one thing, but shouldering the responsibility of protecting and nurturing it would be a completely different task.

Walking across the hallway of Rashtrapati Bhavan, this thought raced across his mind. For him, that bell was just the beginning as he spoke into the microphone. "At the stroke of the midnight hour, when - Anonymous the world sleeps..."

Cheese panipuri

Roti with Dahi vada

A100 # paratha Jummy bears

Rice with chocolate syrup

Pineapple

& honey on

pizza

Obma & shish taouk

Halwa with fish curry

Ice cream with ketchup

weird

Food

combinations

Boiled egg and chips

with sugar

#CBSpeaks

Paal payasam with Papad

Methi with prawns curry

Barti with chilly sauce

Rice with ketchup



## मुम्बई शहर की सड़कों पे निकला था

मुम्बई शहर की सड़कों पे निकला था, सड़क ने पूछा, बेटा कहाँ जाते हो? रुको ज़रा ठहरो, हमें भी बताओ तो, खली बैठे रहते हो या तुम भी कुछ कमाते हो? मैंने बोला, वैसे तो मैं ऑफिस ही जा रहा था, रोक लिया आपने तो सोच में जो डूब गया, गुंडा नहीं, नेता नहीं, सीधा सादा एम्प्लॉयी हूँ, इसलिए पूछते हो कि कितना कमाते हो।

जाओ तुम उन आदर्श नेताओं से पूछ आओ, आदर्श घोटाले में उन्होंने कितना खाया है? जाओ उन 2g और जीजाजी से पूछ आओ, ज़मीन और ज़मीर बेच कितना कमाया है? जाओ उन आतंक के आकाओं से पूछ आओ, मुम्बई से अमरनाथ, किसे नहीं रुलाया है? जाओ तुम उस रिकशावाले से पूछ आओ, दो वक्त की रोटी कैसे कैसे जुटा पाया है?

कभी मौका मिले किसी primary में जाने का तो, सरकारी स्कूलों का भी हाल देख आइये। पढ़ने का मतलब mid-day meal समझते जो, Abcd उनसे एक साथ बुलवाइए। शिक्षक हैं पर शिक्षित नहीं, ज्ञान और शिक्षा नहीं, Chair और bed को स्कूल में दिलवाइए। 11 बजे आइये, MDM खाइये, नौटंकी होने के बाद घर लौट जाइये। एक दिन मुझे एक पाकिस्तानी मिला बोला, हम ढीठ हैं और कश्मीर चाहते हैं। मैंने बोला जितनी economy है पाकिस्तानियों की, उतने के हमारे यहाँ घोटाले हो जाते हैं। बात याद रखना, कश्मीर को छोड़ो तुम, उत्तर हम अपना तुम्हें अचूक देते हैं। जितने की दाल-रोटी खाते हो तुम पाकिस्तानी, उतना बिहारी सुतीं खा के थूक देते हैं।

राहुल, वाड्रा और सोनिया चले गए तो पूरा पाकिस्तान एक झमेला बन जाएगा। सचिन और गाँगुली अगर वहाँ चले गए तो, शोएब अख़्तर का तो खेला बन जाएगा। जितना तुम साल भर बम दागते हो, उतने की तो हम एक दीवाली मानते हैं। लालू राबड़ी संग भैंसिया चली गयी तो, इस्लामाबाद भैंस का तबेला बन जायेगा।

पूछो कभी तुम किसी वतन के सिपाही से, फ़ौज में जाकर वो कितना कमाता है? किसके लिए जीता है, किसके लिए मरता है, किसके लिए जान वो दाँव पे लगा आता है। तुमसे मैं पूछता हूँ कि समस्याएँ तो बहुत हैं पर, खाली बैठे रहकर क्या सिर्फ कोसने आए हो? करो कुछ ऐसा जो ऋण उतार सको धरा का, या फिर तुम भी जीवन व्यर्थ करने आए हो।

# Bhavatu Sab

The wheel of the Dhamma was set in motion by Buddha when he gave his first sermon in the deer park. The seed of his teachings, first sown in the heart of those five ascetics striving for liberation, marks the first movement towards freedom from the stiffness of suffering. Today the symbol of the wheel, is more important than ever, as people forget it in the name of caste. It is being used in these naked streets of Bombay like the swastika was used by the Nazis. A symbol of freedom, love and nonviolence, finds itself in the hands of 19 year old kids, zooming across police barricades in their scooters, spreading hate and torching public transports.

How many wars will it take for mankind to realize, that hate breeds hate, and that too like rats? It will breed unseen, in the dark corners of sewers full of filth and vile. You must remember that a human heart, full of hate is nothing but a sewer full of filth, stinking unceasingly till the odour is unbearable enough to plague a healthy society. The youth of this great land, where once the Buddha walked, plunder the peace of someone like me, who simply wants to go to his job unharassed.

"All tremble at violence; all fear death. Putting oneself in the place of another, one should not kill nor cause another to kill."

-The Buddha

With every bus they stone and torch, they must remember that they consciously walk away from the warmth of the fire of compassion. With every road they block, they must realize they make life, which is already full of suffering, unbearable in this great city. I write this as I tremble with fear, thinking about the safety of my sister, working in Thane. I write this as I tremble like all living beings with the fear instilled in me, by life itself.

"All tremble at violence; all fear death. Putting oneself in the place of another, one should not kill nor cause another to kill." - The Buddha

We must question the morals of our society, which leads the Dalits, straight into the hands of extremism. We must strongly question the sorrows of our own brothers, and condemn the causes for their suffering. We must remember that we cannot survive for long as a society, if we keep on differentiating men by the accident of birth. The constructs of Indian society have tortured the Dalits for far too long; and they must be liberated at once, not only by words, but by actions too.

Come my brothers and sisters, let us ask the hustling roads of Bombay that why are they silent like a widowed wife. Let us ask that why in a city full of life, its fancy restaurants serve no food. Let us also ask the Dalits, the meaning of the wheel of dhamma. Let us ask the Peshvas, what does the law of kshatriya mean. Let us ask BJP that why do they make the Dalits scavenge like crows and vultures the filth of man. Let us ask the Congress party that what good have they done for them.

But more importantly, the ideal battle to fight is the battle in our hearts. The battle that the Buddha

# ba Maharajan Thevar

"Let us wage a war within, the war against our ego, the great war against the darkness of our human hearts."

fought, the battle that Christ fought, the battle that Sri Ramakrishna Paramahansa fought. Let us wage a great war to put an end to all wars. Let us wage a war within, the war against our ego, the great war against the darkness of our human hearts. We will take no swords, and severe no heads. We will walk the path on which these great souls walked, we will set in motion the wheel of the dhamma, and strive till all difference vanishes from the human heart.

I beckon the Peshvas to come wander with me through the settlements of the Dalits. I am sure you will be stunned by the dazzling glimmer of poverty. I beckon them to come with me inside their homes, even though their walls smell with the stench of country liquor. I call you to look how the men beat their wives, and how their children simmer in that sorrow. I invite the Peshvas to dine for a day with the children of the Dalits and witness how they eat rice without the colour of dal. I invite you to look at how gloriously we have failed as a nation to give them a better life.

I also ask the Dalits to come and see the middleclass Maratha, living in the dingy "chawls" of Lalbaug. I want them to ask the Marathas that how they felt, knowing that their daughters would never make it to medical schools because of the reservation. I want to take the Dalits inside a Maratha home, to witness the false promises of the Shiv-Sena. I want the Dalits to ask the Marathas that how they feel when they fail to get a simple clerical job.

I want both the Dalits and the Marathas to let their children play together frivolously in the dirt and see if they care about caste. May the Buddha bless the Peshva, the Dalits and all living beings with the blessing of Bhavatu Sabba Mangalam.

# मैं क्या कर सकता हूँ?

मरने वाले मरें, मैं क्या कर सकता हूँ? सड़ने वाले सड़ें , मैं क्या कर सकता हूँ!

बाढ़ है, सूखा है, गरीबी, बीमारी है, तो हम क्या करें ? मैं क्या कर सकता हूँ!

सबका ठेका मैंने ही ले रखा है क्या? सबका करम,सब भरें; मैं क्या कर सकता हूँ!

ट्रेन पलटी, जहाज गिरे, पुल टूटे, गटर खुले किस-किस का ज़िम्मा हाँथ घरे, मैं क्या कर सकता हूँ!

मेरा काम है- मन की बातें कह देना, लोग भिड़ें या लड़ें , मैं क्या कर सकता हूँ!

आप सभी ने सुना हमको, चुना हमको; ठीक है हम कितनों के फेरे में पड़ें, मैं क्या कर सकता हूँ!

सरकार चलाता हूँ, कोई भगवान नहीं हूँ, अब आप तो चुप ही करें, मैं क्या कर सकता हूँ!

-ऋषभ कौरव



## उलझन

सोचता हूँ पर कारण नहीं ढूंढ पाता, सब कुछ देख रहा हूँ नयनों से, समाज में व्याप्त क्षणिक आडंबर का यथार्थ, सर पीटने पर भी नहीं ढूंढ पाता।

सोचता हूँ पर कारण नहीं ढूंढ पाता, जीवन में आँखें मूँद भागने का उद्घेश्य भीड़ में खोए रहने की जद्दोहद का रहस्य, सर पीटने पर भी नहीं ढूंढ पाता।

सोचता हूँ पर कारण नहीं ढूंढ पाता, समाज की गहरी निद्रा का आलिंगन करना, कभी कभार जाग कर, क्षणिक शोरगुल का गूढ़ रहस्य, सर पीटने पर भी नहीं ढूंढ पाता।

सोचता हूँ पर कारण नहीं ढूंढ पाता, आस पास फैली असंवेदनशीलता की बयार, कभी कभी पुतले की भांति पेश आने का का मकसद, सर पीटने पर भी नहीं ढूंढ पाता।

सोचता हूँ पर कारण नहीं ढूंढ पाता, समाज में अच्छे बदलाव के प्रति नीरस होना, अपनी निष्क्रियता रूपी पहनावे को और कसकर बाँधने का कारन, सर पीटने पर भी नहीं ढूंढ पाता।

- अमर देव चंद्रा



# Whara tha mind

"Where the mind is without fear and the head is held high
Where knowledge is free
Where the world has not been broken up into fragments
By narrow domestic walls
Where words come out from the depths of truth
Where tireless striving stretches its arms towards perfection
Where the clear stream of reason has not lost its way
Into the dreary desert sand of dead habits
Where the mind is led forward by thee
Into ever-widening thought and action
Into that heaven of freedom,
My Father, let my country awake!"

This visionary poem tells us what Gurudev Rabindranath Thakur aspired for free India; a brave, united, sovereign and tolerant country. I hate doing this, but I have to break it down line by line.

"Where the mind is without fear and the head is held high"

In the 8th year of the 2nd decade of the 21st century, we still can't say if we are truly free in our country. The fearlessness that Gurudev aspired for us seems just a mirage. Each and every person of the country, from a homeless beggar to the President, is haunted by a fear: fear for his/her life and safety of their family and children. Every woman fears harassment, assault, molestation and rape.

We live in a country where money and muscle power are stronger than the collective conscience of the people. If anybody raises a voice against the system, he is likely to be silenced (sometimes permanently). A middle class parent will teach her children to always keep their heads low and avoid going against the flow.

People are made to feel inferior for belonging to the

so-called lower castes, economically backward, or simply not being a man. While on the other hand, the likes of murderers walk with their heads held high and even become the lawmakers, which gives us the proof of how powerless the common man is, and how ineffective is the essence of democracy. Can we really keep our heads held high?

"Where knowledge is free"

This simply doesn't means the free education, but freedom to gain education and the freedom to teach. Illiteracy and marginalization go hand in hand. Individuals belonging to the marginalized communities, religious minorities, women, the so called 'lower castes', and socio-economically backward classes are the ones deprived of proper education. A huge fraction of Indian population still lives in the dark ages of superstitions and ignorance. We live in a country where you just need to know how to sign your name to be 'literate'; where people don't understand the difference between 'literacy' and 'education'.

For its true development, a country should be able to provide quality education and skill development

# is without fear

-Srishti Priya

for masses instead of a handful of people: a system that India has lacked for centuries.

We are very lucky. I am lucky that I was able to write this sentence. You are lucky that you can read it. Why don't we try to make many more unfortunate people as lucky as we are? Progress only begins with baby steps, taken one at a time.

"Where the world has not been broken up into fragments By narrow domestic walls"

Pandit Nehru said that "Empires fall, not so much because of the strength of the enemy outside, as through the weakness and decay within".

These 'domestic walls' somehow were never demolished. Still crippled by the clutches of caste, regionalism, linguistic chauvinism, India is torn into pieces. Don't we identify ourselves as Indians only when we cross our International borders? In today's globalized world, where other countries are developing 'global citizens', we still struggle to call ourselves united Indians.

It's a shame that we still haven't risen above the caste system and it's highly unfortunate that we are still debating upon reservation policy for the 'upliftment' of lower castes. When corrective measures could be taken to abolish practices like untouchability, Sati, child marriage, and dowry, why can't we try to moderate the prevalent casteism in our country? Why does the caste-based vote bank politics outweigh every humanitarian and egalitarian arguments against caste?

for the sake of the freedom fighters and visionaries, but for our own sake after 68 years of independence? Our country's forefathers wanted India to be an ideal society, but the social construct of our country, like any other society, always had faults within it. But that doesn't mean we should stop trying, does it? It is upon us, the upcoming generation, and the choices we make collectively that decide how our future will be shaped. It is upon us to take action at the right time, and rise above the walls that divide us, to take responsibility of educating the masses, and to create a society where every mind is without fear.

Could we really achieve these aspirations, not only

#### **Destination Nicobar**

- Kishore Menon

A trip to the Nicobar Islands has to be planned in advance. Since civilians are not allowed to visit Nicobar, Tribal Passes have to be obtained from the Administration and the process can take nearly a year. I was extremely fortunate to be a part of the Nicobar team aiming to understand the tribal astronomy of the Nicobarese. In the past, we have had some experience of visiting difficult places but Nicobar was different—very different.

With the approval in hand, we began planning the detailed itinerary. Then the problems started: The Principal Investigator of the study group suddenly fell ill and could not join the trip. Subsequently, another member withdrew due to some prior commitments. Since so much of effort had already gone into planning and preparing for the trip, the PI advised the remaining three of us to proceed with the trip. The last blow was the last-minute cancellation of our flight to Port Blair, forcing us to re-plan our itinerary and take another flight.

We finally landed in Port Blair and checked into the guest house. Port Blair is just like any other Indian city but we had no idea what we were in for from the following day. The Nicobar Island is inhabited mostly by Nicobarese tribe, who are Mongoloid. Another very interesting tribe – the Shompens – live in the Great Nicobar Islands, whom we couldn't meet due to restrictions in permissions.

The first leg of the trip was to Kamorta Islands, in a chopper – my first ever trip in a chopper. After landing, we paid a visit to the Nicobar Administration officials. They rarely get to meet non-islanders and were very courteous and helpful. Further trips were planned in detail in this office. The first part of the trip was to meet the Chief of Tribal Council (CTC) of Munak Village whom I imagined to be a senior official sitting in her office with her retinue of assistants and peons, and lots of files but to our surprise, on landing at the jetty, a stranger guided us to the house of the CTC – a tribal sitting in a thatched roof hut, chewing betel nut.

Contrary to what I had read in some books, the Nicobarese are friendly people. After introductions and some general talk, the topic turned to Tsunami. One has to visit these islands to realize the scale and extent of damage caused by this colossal disaster. On 26th Dec 2004, an earthquake with a magnitude of 9.3 had caused extensive damage to these islands. Some islands were completely submerged. There were three severe shock waves in Nicobar, with the third being the deadliest. The Katchal island had an estimated population of 5300 people of which only 700 survived. Damaged jetties and memory pillars are the only reminders of this tragedy. We got to see several such memory pillars, many with names inscribed on them.

Chowra, an historically important island in Nicobar, is considered to be one of the fascinating but mysterious islands of the Nicobar archipelago. Old records show that the people of Chowra were known to be hostile to strangers. Because of their social isolation, they have problems with naming their offspring, and would sometimes give them strange names like 'biscuit', 'telephone' etc – words they pick up from the neighbouring Car Nicobar Island. They also have a habit of renaming their villages whenever they feel like, which causes major problems for the cen-

sus department, as they often have to struggle to locate the village that was covered in the previous census. The government has helped rebuild some houses here and the residents have assigned strange names like "Dangerous House" and "Mexico City" to these houses!

Chowra (meaning square, like the shape of the island) is one of the remotest villages. Leave alone hotels and guest houses, the only establishment there is a shop which opens only when the owner pleases! We reached Chowra in the morning and were received by the CTC. After the customary welcome with tender coconut drinks, we met the Secretary of Tribal Council who said that the village elders were being called for the meeting.



We waited but nobody seemed to be in a hurry or doing anything. The meeting finally took place at around 4 p.m. Our plan was to leave for the Teressa Island in the evening after talking to the Chowrites. The tribals had informed us that we could take the next available boat, after the meeting. What they meant was that the next available boat or chopper was on the following day or the day after. We were trapped in one of the most backward villages of Nicobar for the night, which we spent sleeping on a hard, wooden plank in a hut with the howling of dogs and other stray animals for company.

Water is the most precious commodity on these islands. The government has installed filtration units in a few places and everyone is free to take drinking water from there. Bathing and washing clothes is, however, a luxury. Even in the main islands like Nancowrey, we could not get Bisleri bottles. Vegetables are available only for a few days when the cargo ship arrives. A policeman posted in Chowra told us that their staple food is coconut, bananas, rice, fish, and anything that moves! Pigs are a great delicacy here.

Every village has a Chief of the Tribal Council. Next in hierarchy is the Secretary of the Tribal Council and finally one or more First Captains, five captains and a Vice Captain. They are chosen by the locals and the Administration has almost no role to play. Disputes are settled by the Tribal Council and hardly any complaints are registered with the police. The last complaint registered in one of the islands was more than 6 decades ago. Brutal punishments are done away with and the modern punishment is usually the levy of penalties. A penalty of 3 pigs is the most severe punishment.

The people believe in community living rather than individual ownership. A piece of land may belong to one person but anybody from that village is allowed to plant trees on it. These people are also very superstitious and believe in ghosts and evil spirits. A young man described to us in graphic detail how he was possessed by evil spirits and the rituals of exorcism that helped him overcome this. The rituals associated with death are also peculiar-like exhuming the remains after 3 months and then hanging them on a tree. In other communities, the exhumed bones and collected in a wooden box and kept in their huts with the belief that the departed souls protect them from malevolent forces and natural disasters.

Since they are seafaring people, during olden times they must have used stars for navigation. Although the younger generation did not know much about stars, the few elderly people remaining gave us a detailed account of their knowledge of stars and mythologies. We showed them the sky using Stellarium software on an iPad but they were not comfortable with it. When it turned dark, they showed us several stars that were used for navigation. Their stories associated with celestial objects and events are also very interesting. An interesting story is about the eclipse. According to them, a large snake, (and in some instances an alligator), is trying to gobble up the moon. This would be catastrophic because no moon means complete darkness. The villagers come out of their huts and make noises with whatever tools they have to scare the animal to drop the moon and scamper to safety. Yet another myth is that one should never point a finger at the rainbow or their finger will bend inwards permanently!

After the deadly Tsunami, the government arranged for free food for all the Islanders for a period of two years, which was extended by one more year due to demand by the tribals. Some administrators believe that this was a bad move because it made the tribals lazy. This appears to be true because we saw many young men sitting idle in their huts. The government has several welfare measures like free education upto post-graduation level, totally free medical treatment without an upper cap but the locals are not any taking advantage of these policies. The government has also established primary schools in every village. Over the next few decades, these islands will undergo a major transformation and their lifestyles will change in many ways. It is necessary to preserve the cultural heritage of these tribes for archival and historical purposes. We hope that the report that will be submitted to the Indian Council of Historical Research will address that issue to an extent.

We visited a total of 13 villages, spread over 4 islands. Unfortunately, we had to skip some because of lack of transportation or non-availability of elderly people in the villages. What I learned from this visit is that only the first leg of the trip can be planned in advance. Rest has to be planned in a dynamic manner depending on the vagaries of weather, availability of transportation, and of course, accommodation in government guest-houses, as anything could happen unexpectedly.

#### Barbed Mires and Boundaries

- Sridhar Rajeswaran

I

For over two millenniums the world has seen
Wars, revolutions, pestilence, plunder
Death - mayhem - rape
Satanic battle lines
Heard pitiful cries and silent shrieks
Thirty Pieces of Silver and a cross
Two Women from Ciociaria and an altar bloodied
Hey Ram! And a billion hopes dead

All I hear are guns and grenades
All I see are barbed wires and boundaries

You say we are homo-sapiens,
Beings who have devised hand tools and discovered fire
Built pyramids and temples
Hewed culture from the rocks
Built great walls visible from the moon
Walls that wail and walls invisible
Walls to 'wall in and walls to wall out'
Walls to divide, walls to devastate

All I hear are guns and grenades
All I see are barbed wires and boundaries

"The world is too much with us", he sang
"Narrow domestic walls", another cautioned
The third, "sat by Thebes below the wall"
A corpse planted and watched it grow
A fourth sang of, "vain citadels that are not walled
Of "granites which titanic wars had groined"
A fifth wanted a mad "old man's frenzy"
A sixth sang of, "human unsuccess"
A seventh a "cuckoo bird" warbled
But the nth is tongue tied

All I hear are guns and grenades
All I see are barbed wires and boundaries

We have seen a million deaths in a Siberian cold winter
Played mute when women were stoned to death
Testified to aggrandising genocides
Aborted life in Siachen Glacier and the passes of the Saltora ridge
Instigated clashes for oil, wrecked labour solidarity
Made peoples The Wretched of the Earth
Created Children of a Lesser God
Neutralised Marx, Mandela, Luther and Parks

All I hear are guns and grenades
All I see are barbed wires and boundaries

We have borne witness –
To Squares Tiananmen and Tahrir
Peshawar massacres, ISIS beheadings
Bombay blasts, Godhra riots
Nine Elevens, Twenty Six Elevens
Syrian fratricide, drowning refugees –
Mute bricks in the wall
'We have wept our burthen to the ground'

All I hear are guns and grenades
All I see are barbed wires and boundaries

"Man comes and tills the field and lies beneath",

'The Cracking Earth',
And its worlds of fragmented histories
"Double Speaks" as "Big brother" watches
Cuts time between the two eternities of life and death
And policed by a "Janus faced grim prose of power"
Has kept quite when new Neros
Played their fiddles to a flaming world

All I hear are guns and grenades
All I see are barbed wires and boundaries

"Time can bring you down,
Time can bend your knees"
Crooned Clapton in 'Tears of Heaven'
"I am tired of this Devil
I am tired of this Stuff
Black or white", sang Michael Jackson
It is "silent night, holy night", to Paul
And to Simon, it is "the sounds of silence"

All I hear are guns and grenades
All I see are barbed wires and boundaries

It is fire raging raging
It is water drowning drowning
It is the wind howling howling
It is the sky darkening darkening
It is the earth cracking cracking
It is nature mourning mourning
It is the dawn scorching scorching
It is the night falling falling

And all I hear are guns and grenades
All I see are barbed wires and boundaries

II

One year later The scenario still persists Is in fact heightened By stealth killings, mass murders Pro-active surgical interventions Political rhetoric on the merits of anaesthesia

And abetting tabloid hyperboles 'That etherises not merely the patients'

And all I hear 'still' are guns and grenades All I see 'still' are barbed wires and boundaries

The 'still' consequential, dual
One to highlight the continual
The other to mark a frozen moment
"The horror! The horror!" still

After seventy years still
After three wars still
After a 19.5 million dislocations still
After a million deaths still

After the still remains of the dead After the still silences After the chilling screams After the stilling

And all I hear 'still' are guns and grenades
All I see 'still' are barbed wires and boundaries

#### III

Barbed wires, boundaries Guns and Grenades Screams, silences Past memories, present events

Gunny sacks and women bodies Vacant eyes and shrivelled souls Hollow chests and empty trunks Travelling zombies and their living dead

Memories of another day Are the new events of today Still frames are now moving pictures Moving frames the stilled moments

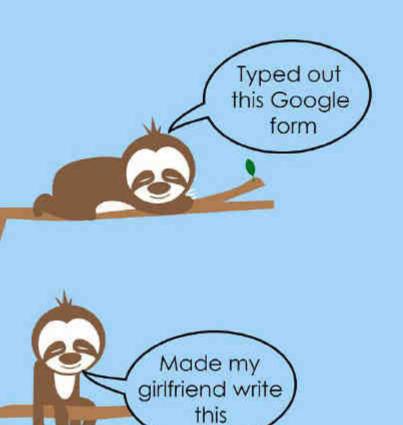
Entropy with no variable 's'  $S_1 = S_1 \text{ is reversible, } S_1 > S_1 \text{ is irreversible}$ Heat transfer  $\Delta Q : T_1 - T_2 \text{ hot to cold}$   $\Delta S = \text{entropy} = \Delta Q / T$ 

And all I hear still are guns and grenades All I see still are barbed wires and boundaries





What is the laziest thing you have ever done? #CBSpeaks

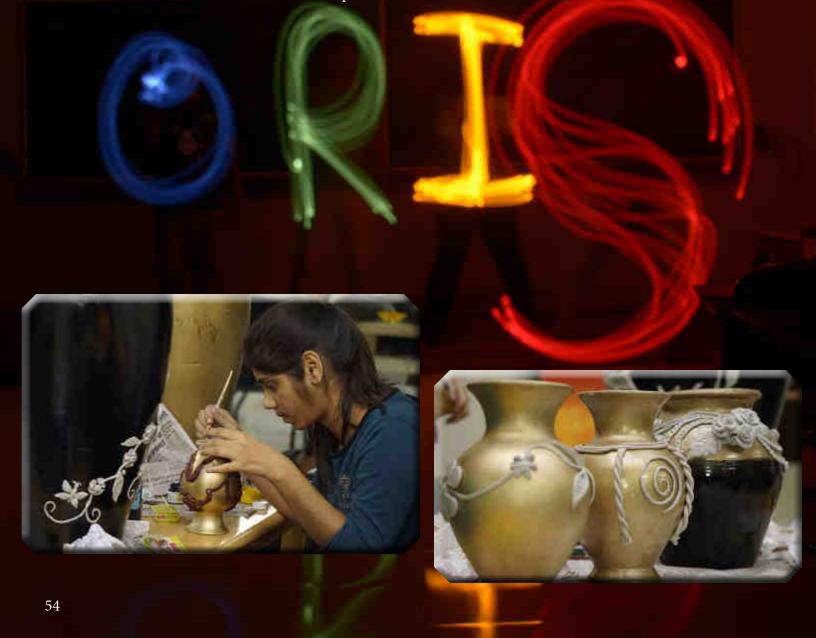




#### CEBS ART CLUB

The Art Club organized two events this year to enable CBScients express their oozing creativity. The first event was a poster making competition organized on 7th November 2017. There were many fun topics like Reading Room for Relax and Research, Gardening, Save electricity, Need for speed, and Procrastination. The competition was judged by Dr Subhojit Sen, Dr Basir Ahmad and Dr Sudhir Jain. The winners were awarded with goodies and hampers.

The second event, Oris, the annual CEBS art fest was held on 23rd to 25th of March 2018. The event started with decorations of AG09. To follow it up was M-seal pot art and the origami workshop conducted by Prof. Nagarajan and Sagar Shrivastava from TIFR. A chandelier made of waste plastic bottles, which now adorns the Anna Bhau Sathe Bhavan, was made by a team led by Manush Manju of Quanta 8. With new brimming ideas like mural painting, Graffiti and M-seal pot art, the event was a huge success. The event was enjoyed by all and led to creation of many masterpieces on canvas, beautiful pots, a whacky graffiti and a tasteful mural painting. An open air exhibition was held in the BG block on 2nd April to exhibit these brilliant works.







One of these days, I lock the door of my room in Pre-fab. A cool wind in this humid month of April isn't a surprise for me this year. Five years in Mumbai keeps one ready for such stuff. The phone in my right pocket rings.

This was the third message this minute. It said "Where are you?"

A cursory look around, and I find the rooms in this row unlit. It had been that way more than a few times this semester. If I weren't so groggy from the afternoon nap, I'd go and knock a few of those doors. The muffled screams can often be termed hilarious. If I had more time, I'd enjoy the rare sounds of people falling off their beds. It's objectively funny.

The buzzing noise of the phone returns. "??"

I move forward, through the freshly cut grass and out towards ABS. I come to a halt, though. After nearly eight months of breaking in the first years, and the multiple fests in the middle, the season of frantic affection has dawned, with lovebirds lining up on the entrance to the building. You see, love always finds a way.

Another buzz: "I hope you're not at the hostel still."

As I walk to the stairs, my eyes are drawn irresistibly to it. The pale, white one stands out.

Even in this sleepy state of mine, I want to throw up.

You can't blame me, though. The fiendish thoughts that have led to this are beyond my comprehension. I mean, Chawli and Brinjals, both prepared badly, mentioned as specials on a day when everyone had an exam. Pathetic.

I turn around, and I sprint. The door swivelled just as I reached it, and I made my way through the people waving and greeting around me.

There is a long stretch of University road ahead, and I am willing to walk. My legs know the way better than I think they know it, and the promise of a long walk in this lovely weather makes me happy. Of course, I'm walking alone.

As it so often happens, the walk makes me oblivious to the things around me. Once I start thinking, I keep thinking. The familiarity of this entire University campus was a catalyst to this process. The voices take over.

'What is love?' the first one asks.

'Baby don't hurt me..' the other voice hums. The first one slaps the second.

'Illusion,' the third one says, 'Illusion of some semblance of care and concern in a universe that shares neither of those instincts with us.'

'It's a fleeting feeling, yes,' the fourth one chips in, 'but if momentary existence and a semblance of concern is worth nothing, then neither is this life.'

'Here, jump in front of this auto,' the fifth one shouts.



I move away from the auto coming my way, wondering when the last two crazy voices came up from. Maybe I should visit that doctor after all.

The caw of crows awake at this hour brings my attention back to reality. I walk straight ahead, taking my chances with the poop bombs that might drop any moment. The crows were sly creatures; they somehow find the right time to ruin your time.

'I've always wondered,' the first voice spoke, 'if there's something that attracts tragedy to us.'

'Your face,' the second voice gets punched for saying that.

Before the third voice could chip in, a hand grips my shoulder.

'Dude, you can't hear the phone ringing or what?' an exasperated, perspiring voice demands, 'I've been texting you nonstop.'

I turn around to find the tall, lanky Shaili behind me.

'I've observed that lately.' I watch as she catches her breath, 'When I think, I end up not hearing the people around me.'

She looks like she'd kick me any moment now.

'Where are you going?' I start walking again.

'Oh, dinner plans.' She giggles, and jogs next to me. It's not as much jogging as it is tiny bunny hops. Her ponytail hops with her.

I nod. It's important to have dinner, I realise. My stomach is growling now.

'I'm not getting you dinner this time.' I mention. My stipend has been running thin for a while now.

20 steps pass. She turns to me, 'What were you thinking about, though?'

'Love,' my mouth blurts out before I could think.

'Ooooh,' she stops hopping, 'what about it?'

'Well, if it is unnecessary then so is life.' I replied.

'C'est la vie,' she replied. I keep forgetting how intelligent she is. She keeps hopping.

10 steps pass. She turns to me again.

I'm more interested in the definition of it.' She chirps.

'Oh,' I knew the answer to this, 'advanced friendship, buddies for life, that's love.'

She stops hopping, finally. We walk silently for a while.

'You've been a friend of mine all these years, you know.' I feel her eyes singeing my cheeks. They turn red.

I laugh. I laugh louder.

'Not that, Shaili,' I answer, 'there was no "us" for any of these years. You're a different kind of buddy.'

'The female kind, yes,' she isn't laughing anymore.

The rest of the walk to the university gate is quiet. She stopped hopping, and the voices find this most opportune to star a new debate:

'Why not Shaili, though?' the first one asks.

'GG EZ', the second voice shouts through the duct tape on its mouth.

'Well, she's certainly athletic, good genes, I'd say', the third chirps, 'the intelligent type, a great friend, by your side all through these years.'

'True, true,' the fourth one chips in, 'but doesn't this argument suggest that we have three other girls that'd be perfect for us?'

'Chemistry and timing. That was all about it, really,' the fifth voice is strangely supportive.

The chemistry was here already, and there was no better timing than a sweet farewell. I realise the decision already forming in. As we cross the University gates, she smiles at me, and hops ahead.

Walking behind this constant friend of mine, the recluse poet inside me sings:

There she goes,

Away from my life,

Once Again,

Once Again.

As I reach this part of the story, I looked down. The inspector noticed my tears. He didn't care though. This was a case like any other to him.

'Shaili!' I cry.

'That's when the bus hit her, Sir.' I sobbed loudly. The inspector looks at me, then at the Constable writing the report.

The bus never made a hint of a sound to me.

'You may go', he says. As I head out, I hear him mumble something in Marathi.

'What, Sharma?' the fifth voice translates, 'why did you have to write this?'
This entire account is useless. Throw it away.'

### CEBS MUSIC CLUB

Dhwani, the CEBS music fest really did take all who witnessed it by storm, inviting applause from faculty and students alike. From Indian Classical music to Malayalam Alternative Rock, and from Adele to AC/DC – the programme promised variety and showcased many talented musicians. A special mention goes to Dr Ramakrishna Hosur and Dr Subhojit Sen who stole the stage with their performances, all in all, making the 27th of March 2018 a milestone for CEBS.

















CEBS Music club organizes 'Symphonia' every once in a while to keep the zeal for music alive. The months of October, February and April saw three great open mic nights which gave the CBScients a platform to put down their test tubes and experiment with their voices and musical instruments.











RITIKA

#### Stylus

The CEBS literary events, or 'Stylus' have been great hits with the student community. Apart from the usual prose and poetry, a tinge of colour was added to the August event with activities such as caption this and drawing misnomers. This event also gave rise to papyrus which is the literary club newsletter. The October event was quite the hit as well, as CEBS came together for a night of horror-based writing on All Hallow's Eve. The February event themed myths and legends also brought forth creative minds as we embarked upon a journey on Noah's Ark and speculated on what would happen if the Gods could tweet. The 'wheels, heels and reels' trivia quiz tested the CBScients on quirky facts. Stay tuned for more Stylus!







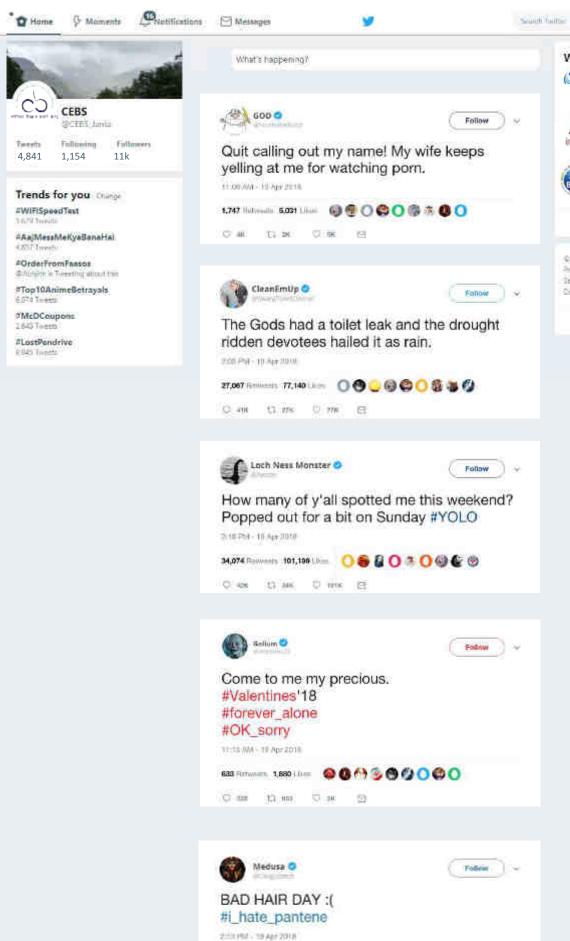












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CO TAME TO THESE CO NOTE OF



O Co Tweet



when you complain the authority regarding poor WiFi connectivity and speed College Authority:



you wont feel sleepy in post lunch classes if you always skip lunch





#### meme



sir, let girl's have access to backsteirs





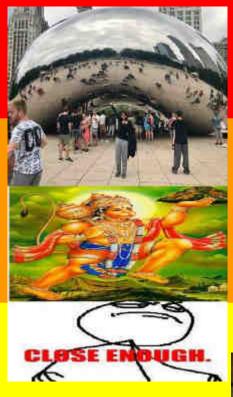




Music is the best anti-depressant me :























#### THE WAY HE LOOKS AT HER



THE WAY SHE LOOKS AT HIM



## Caption This













# The Miniature Mars Mission

-Prithwitosh Dey

"Though everyone'll probably understand what I'm writing, since there might be readers who haven't travelled in time yet, I might have to provide multiple beginnings, just to bring everyone up to speed.

So, to humans born and raised on the Earth, you really have no clue how soon your end is coming.

To fellow Martians, enjoy the Sun. Hehe."

Dejected, Bob turned the huge piece of paper over and started writing again on the other side. His finger made for a terrible pen and in any case, the red mud was drying up. It really isn't easy to keep your head busy when you're faced with the imminent fear of dying alone in this godforsaken place.

Bob wasn't a scientist exactly. He was not an engineer or an astronaut either. In fact, he couldn't even be called human, by most standards. Until a day ago, he was just an ordinary homeless guy, sitting by the roadside, trying to make a living off others' sympathy, on the dusty streets of Digeridoo. Long straggly hair, sunburnt and dirty skin, clothes which were technically rags - he was the kind of person, mothers would scare their children with.

Today, he is probably a test subject for some lab on Mars, who knows? It wasn't the first time someone was kidnapped for such things. He'll probably die here as well, like one of those lab rats. Hell, he was vermin anyway. They might pass on someone for him to mate with probably. They might even make him famous, who knows?



#### INTERNSHIP STORIES

I worked at the Nuclear lab, CEBS under the guidance of Prof. Sujit Tandel from December, 2016 to December, 2017. My project was planned to cover an entire year including my master's thesis. Therefore, I had an advantage of spending time on every detail and concept of my project slowly and with great precision. If the technical details of what I did interest you, I am willing to share my thesis report. Here, I will share some of the interpersonal factors that motivated me to keep going, through my

project. Without these factors, it would have been nearly impossible for me to complete it (well, it still has some loose ends left). The beginning of the project taught me an organised way to carry out a project and that it needs a wide spectrum of aspects to be covered.

Chronologically, I started with learning the basic concepts, understanding the concepts behind all the existing detectors and their working principles. I then moved to learning new software and programs needed to analyse the data.



Implementing the skills acquired during the learning phase, I took data, which was very rich in information and started using different software to obtain some preliminary but very important results. I used the initial results to evaluate some new physical quantities and learnt an advanced theoretical model that reflected my concerned system. Finally, it is important to stitch experiments and theo-

"It doesn't matter if you end your day with success or failure, convince yourself that the next day would be great and eventually it'll turn out to be so"

ry together. I related and reasoned the physical quantities that I found, with the results expected from the theoretical model. It may appear that later parts were more interesting but there was a lot to learn from each part of this project individually as well.

The participation of my guide kept me motivated at times when I felt that some task was too hard to accomplish. Fortunately, I had a brilliant guide and a lot of support from the nuclear lab group working by my side. All those continuous, long hours of one-on-one interaction with my supervisor and a comfortable environment where I could ask endless doubts helped me keep my hopes up. This powered my project's learning experience the most. It is very easy to accomplish something big if you have a

welcoming and approachable group working together with you. To be honest, a huge fraction of all the experience I gained in this project was the result of a really active and helpful group.

Last but not the least, my poster presentation and all the lectures at DAE-BRNS symposium at the end of the year really kept me standing after such a bumpy road and I look forward to learning more and gaining more experiences in the field. I would like to end this with a note: "It doesn't matter if you end your day with success or failure, convince yourself that the next day would be great and eventually it'll turn out to be so".

- Kartikeya Sharma

I did my masters thesis project in Dr Jamie Hackett's lab at the European Molecular Biology Laboratory (EMBL), Rome, Italy. The lab was located in the beautiful Italian country-

side, a place called Monterotondo that simply translates into "round mountain", which indeed was the case. The best thing about being in Italy is that one gets to eat the best food and see the most beautiful art and architecture. Picture yourself sitting in the balcony of an eighteenth century Italian Villa decorated with medieval art, sipping a cup of fresh espresso. It feels awesome. Added to this I also visited places like Florence, which hosts the Uffizzi Gallery, one of the world largest art collections and also the fashion and art capital. I also visited Spoleto, a town



which is famous for its old villas, good countryside food, hiking trails and wines. Unsurprisingly enough, I got mugged in Rome. I had my phone snatched from my hand in the



metro. The very next day I had my own wallet thrown back at me. Looks like an extremely funny event (Well, not so much after all). My stay was filled with the fun of working in perhaps the most multinational and multicultural atmosphere that EMBL provides, and the excitement of discovering something new everyday within and around me.

- Upnishad Sharma

I carried out my semester project at the Centre for High Energy Physics (CHEP), Indian Institute of Science, Bangalore. My Project was carried out under the supervision of Prof. Aninda Sinha at IISc in the Conformal Bootstrap program. I was tasked with extending the bootstrap computations for the Ising model to fractional spatial dimensions, and thereby recovering a famous perturbative series. Being a native of Bangalore, I had the distinction of staying at home for the entirety of my semester project, enjoying the food, hospitality and comfort that is often extended at home, while reveling in the rich cultural experience of Bangalore.

In Bangalore, I attended board game meetups (happening on a weekly basis in Koramangala) regularly, learning all sorts of new board games while enjoying some old familiar ones. I also had the pleasure of revisiting some old and famous eateries that are hosted in Bangalore: Veena Stores, MTR tiffanies, Brahmins coffee bar and Halli Mane to name a few. I also discovered a few up and coming bars, which are transforming the old, rustic landscape of Bangalore to a new and youth friendly city with a vibrant evening life.

Living at a modest distance of 6 km from IISc, I also indulged in cycling back and forth from the Institute everyday and embraced the on campus cycle culture. I was able to soak up a lot of sun, while getting some healthy and fun exercise. My cycling trips across Bangalore, took me to new and unfamiliar territories, parts of an old Bangalore that have morphed into an urban powerhouse, bearing testimony to the fast paced growth of the city. I got into the newly established Metro lines in Bangalore and was amazed at how much has changed in the past five years. Over the eight months I spent back home, I met with many old friends, had many fun evenings and a few memorable meals.

Academically, joining Aninda's group has probably been my best decision so far. He inducted me into a large support system, with PhD students, three professors with vastly different areas of expertise and a bright and motivated set of Undergrads. Discussions in the group were always fruitful and were full of enthusiasm to do new and path breaking research. I got perspective on what truly innovative and new research looks like and the kind of problems one should work on to remain enthusiastic about research. The group was entirely research centric, and I therefore, initially, faced a steep learning curve. However with the progression of time, I got acclimatized to the group and began enjoying the research and the problem at hand. I gave regular talks in the group, and was given an opportunity to interact with the sister group at ICTS, Bangalore. I was encouraged to attend conference events at ICTS and learn about exciting problems that top notch researchers are currently tackling the world over. I ended my stint at IISc with an open review talk on much of what I had achieved. It would be remiss of me to not mention the personal care and attention extended to me by Aninda, especially during my PhD application process, indicating where I should apply and which groups would be to my liking.

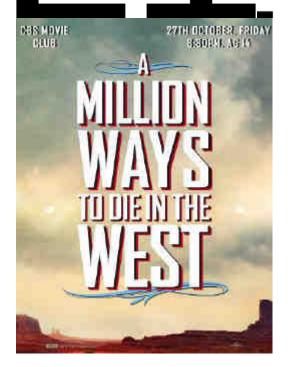
Reflecting on the experience, I think that the new Bangalore had many surprises in store for me and rediscovering Bangalore has been a pleasure. I also feel that the academic setup in IISc truly made my stay enjoyable and I have only Aninda to thank for this!

- Aniruddha TV

# CBS MOVIE CLUB

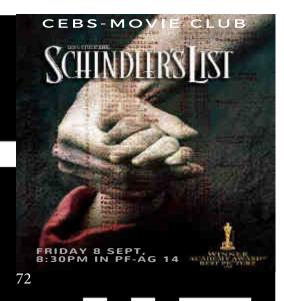






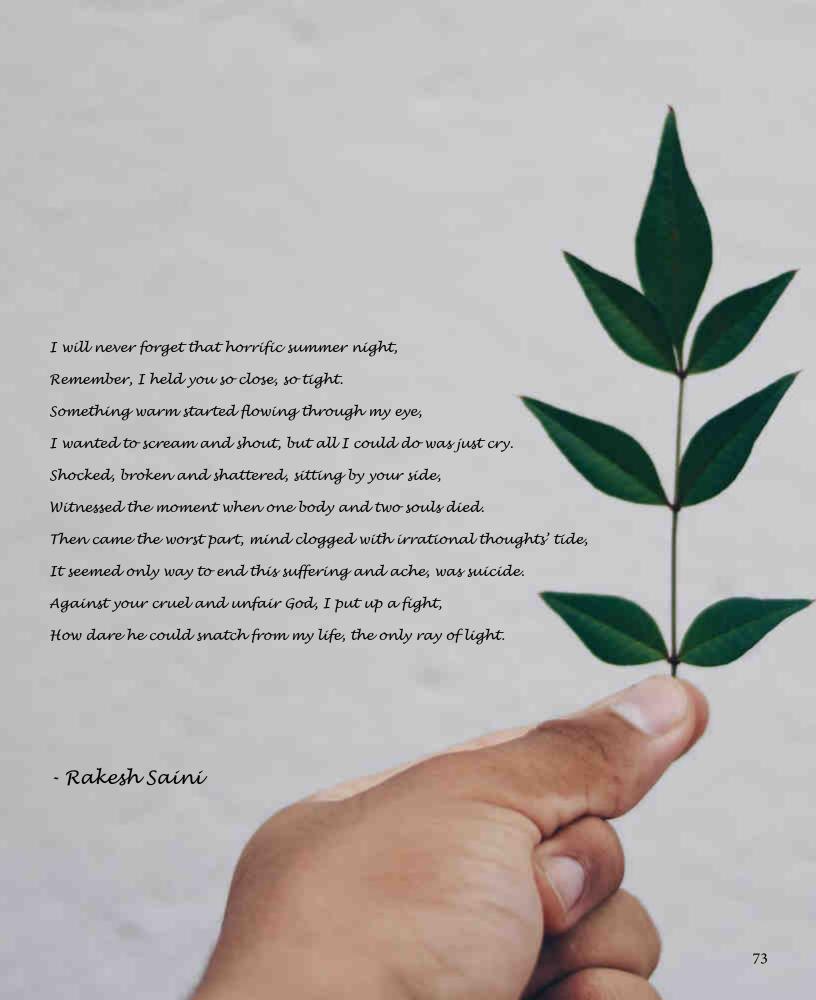














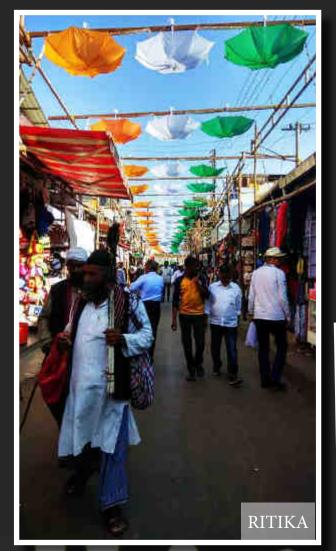






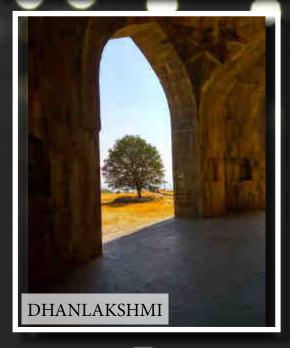
















AT SIGHT

# The year That Was

Transcripts miss Divya, Postman misses Nitesh, posts miss us.

STUDENT COMMITTEE And we are back!

Awesome monsoon fire, floods and powercut

#### Gym/WiFi

Students getting stronger and WiFi getting weaker- proves the law of conservation of energy

The university guards lent a shoulder to BREAK THE

Dr VK Jain

#### Mess Troubles

Mess runs out of gas, students run out of food

The call of "MITRON" echoes through the empty halls of NH. Beef fry and cloth fry banned. CEBS gets recognized by the university as "CENTRE OF EXCELLENCE FOR BASIC SCIENCES"

PERMANENT faculty recruited (monocul)

T.V. RAKESH spiked his way into the nationals.

SWACHH CEBS ABHIYAAN-CEBS "looks" cleaner now

CEBS GETS ITS OWN SECURITY - CEBS arms itself with more CCTV cameras and security. Big Boss is watching, still all thefts unsolved.

FIRE SAFETY DRILL - Remember PASS and RACE

# TEAM

BHAVYA
BECK
AMRITA





SRISHTI SWARNIM INDRANIL ANJALI NOVELLUS CBS

LITERARY Stylus CLUB



RENDEZVOUS

OPEN MIC

University of Mumbai







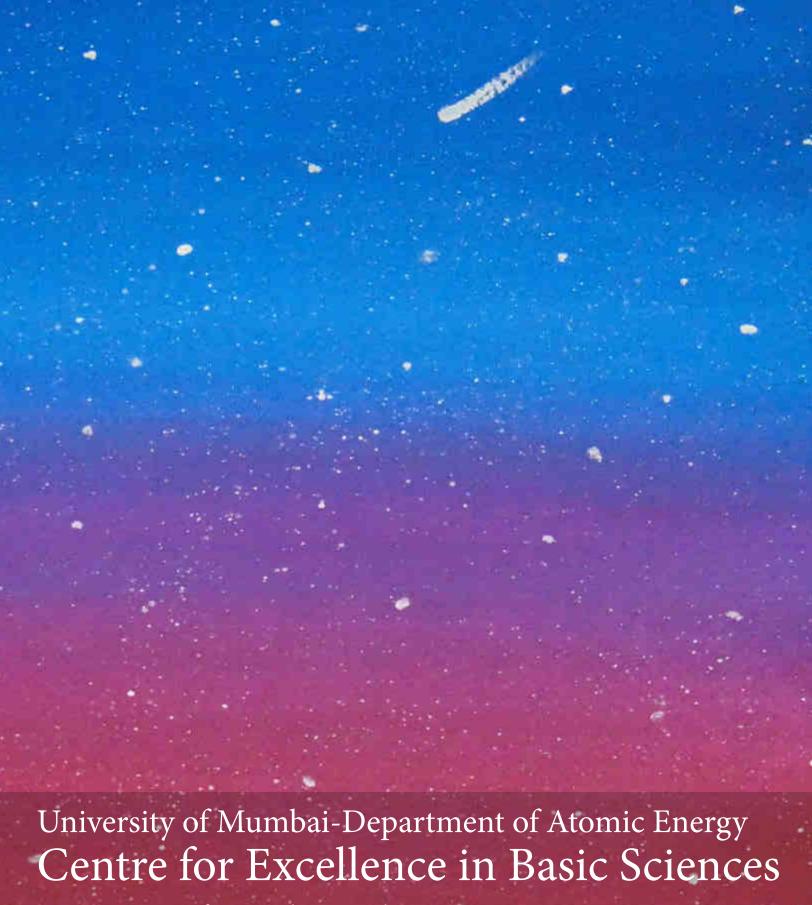
Dhwani
Symphonia



CBS CLUB

ART ORIS





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