



Connecting Thinkers...

## Editors' Message



Dear Thinkers,

There are times when a small incident may lead us to think deeply about something that we have not been paying much attention to. This happened to me recently. While going through some old books and papers, I found a couple of poetry books which I had bought almost a decade ago. I opened the books to read a few stanzas and felt a gush of memories from the days when I bought those books and used to read them.

Among other things, what struck me most was how busy we have become in life, and the routine that we are stuck in. Sometimes the routine feels like a prison where we are often struggling to get out; yet sometimes it feels comforting, almost like we are in control of everything that's going on around us. Jog back your memory a little and think about yourself a decade ago. Our lives were so different; we were so different. Let me ask you some questions, which may seem out of place here, but... when was the last time you visited Cubbon Park? Or drove to Nandi Hills or Mysore? When did you last watch a play at Chowdaiah Memorial or Rangashankara, or attend an exhibition at Chitrakala Parishad?

These thoughts emerged after reading Walt Whitman's poem *O Me! O Life!* This poem also finds reference in the movie *Dead Poet's Society* where the significance of this poem is explained succinctly:

*We don't read and write poetry because it is cute. We read and write poetry because we are members of the human race. And the human race is filled with passion. And medicine, law, business, engineering, these are noble pursuits and necessary to sustain life. But poetry, beauty, romance, love, these are what we stay alive for.*

Through *Thinklet*, we often remind ourselves to excel in Research, continue what we are doing despite setbacks and (hopefully) recharging ourselves enough with enthusiasm to complete the task at hand. What we never tell ourselves is that it is alright to take a break. It is alright to let go of an overwhelming situation and get back to it when one feels better. It is perfectly acceptable to take a vacation with our family, and get back to work refreshed. If one cannot leave the city, there are plenty of avenues available here as well. So while the children in schools and colleges have a month of summer vacation left, why don't we indulge in a small break ourselves and go and appreciate nature, dance, music, art and come back with renewed zeal for our research!

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## GUIDE'S COLUMN

### Research in Engineering Institutions

The priority of many faculty members working in any Engineering college today is to register for Ph.D., in a reputed university and obtain the doctoral degree. In recent times, the rules for Ph.D. are stringent in all universities. When scholars aim to start their work, they begin with thinking about the available research facilities in a university.

Engineering colleges in India have largely focused on under-graduate and post-graduate curriculum and have created basic laboratories and software facilities. Very few have upgraded their infrastructure required for research. Funded projects and publications are often limited to a few faculty and/or departments.

There is a serious need for technical institutions to inculcate suitable research culture among their staff and students. All stake holders linked to Engineering education and research ought to think about creating research facilities by allocating seed money required for research and adequately reinforce securing of research projects and publications in peer reviewed journals.

I am happy to note that Jain University has recognized the importance of research and is encouraging many research scholars by establishing several research centres in the domain of Engineering and Technology. Being associated with the Centre for Emerging Technologies, I am happy to report that there are many ongoing funded projects in the Centre. The faculties of Centre for Emerging Technologies have several International Journal Publications under Jain University affiliation. The Centre has become a good platform for many research scholars to carry forward their research. If the establishment of such research centres is encouraged in technical institutions, it could solve many problems faced by research scholars.

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## ‘May the Force Be With You’

Einstein said “There are only two ways to live your life. One is as though nothing is a miracle. The other is as though everything is a miracle.” I believe my life is the other. Over the last few years I kept moving with the flow, even when sometimes I was unable to comprehend the significance of it. Today when I look back at my life and research journey, I can see a lot of events that lead me to where I am today. I can now connect the dots.

My fairly successful corporate HR career at Bangalore and New Jersey took a backseat twice. I decided to hear my heart more than my head and prioritised my family life over everything else. I was not sure if my decision was right. I did feel guilty many times when I saw my colleagues moving forward in their careers, designations and monetary well being. I blamed myself for my debacle in all three of them. On my return to Bangalore, I decided to take a career plunge again for the third time. This seemed less overwhelming than an international relocation coupled with motherhood sans much family support. That survival gave me courage to leap forward into yet another opportunity. This time my inner voice led me to the field of academics.

*Frustrated without any acknowledgement and response I had almost given up hope when things fell into place like pieces of a puzzle.*

Academia was never in my radar except in my childhood playtimes when I imagined being a teacher, pilot, doctor etc. to my younger sister. I began sending emails with my resume to every management college I ‘Googled’ in Bangalore. Frustrated without any acknowledgement and response I had almost given up hope when things fell into place like pieces of a puzzle. I got an opportunity to teach at a prestigious MBA institute at South Bangalore. Today I see God’s hand in my first meeting with their HR faculty. He was pursuing his Ph.D. at Jain University and convinced me to do the same in just one long conversation. Thus began one of the most eventful journeys of my life ... research at Jain University.

Research journey for me is like diving into the deep sea of knowledge hoping to find one’s own prized pearl. The guides and the teachers like a scuba diving expert share with you all the life skills needed to make the research journey safe and enjoyable. However there is no clarity of the end result when you embark on the journey. I have experienced fear and nervousness many times. Then comes a time when one has persevered enough and descended deep down in the subject, that enlightenment dawns. Things begin to make sense and you find peace in spite of all the chaos around. For me research journey has been a personally very satisfying one. Though I look forward to the degree that awaits me at the end, the journey itself has been one of great learning and revelation. My data collection phase has taken longer than anticipated. I am still struggling with it right now as I write this article. I have learnt to accept with all humility that some things are not in one’s control. I have become more patient and learned to make peace with it. Research presentations in class and paper presentations over the last three years at various national and international conferences have made me a more confident public speaker. I have gained confidence in my own abilities.

My research study has forced me to break my personal inhibition of meeting strangers and striking conversations. Today I meet people from diverse backgrounds, empathise with them, understand their work, present my story and seek a mutually beneficial relationship. Research has taught me to collaborate with people. Last but not the least, writing articles like this one and the huge task of writing a thesis soon is creating confidence in to break yet another myth in my life i.e. to author a book. This research journey has changed me for the better. I feel the force behind me and I wish the same for all my research colleagues at Jain University.

May the force be with all of you!!

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## Wireless Sensor Networks-ZigBee (IEEE 802.15.4) Protocol

The key concept of Wireless Sensor Networks is highlighted in the field of research due to its numerous potential applications such as machine failure diagnosis, battlefield surveillance, and home security and so on. The IEEE 802.15.4 standard supports various topologies such as peer- to-peer, star and cluster tree topologies that can function over beacon and non-beacon-enabled modes. Specifically, the beacon-enabled mode has the unique characteristics of IEEE 802.15.4, where it is controlled by the central coordinator that broadcast periodic beacons for node rendezvous and association control.

*The cluster tree network has great attention due to its adequate power saving procedure and light-weight routing.*

Amongst the ZigBee topologies, the cluster tree network has great attention due to its adequate power saving procedure and light-weight routing. A cluster tree network composes several clusters; each one has cluster coordinators and numerous device nodes. A PAN coordinator works as a root to organize the clusters in the network. The beacon frames have been broadcast by the PAN coordinator and coordinators at regular interval to complete the entire cluster networks. In a cluster tree topology, the beacon frames have been periodically transmitted by the PAN coordinator for its coordinator nodes same way the beacon frames has been periodically transmitted by the coordinator node for their device nodes. Moreover, while the coordinator nodes transmit the beacon frames at a time, collisions will take place among these beacon frames. Hence, the child nodes in the cluster will not able to synchronize and interconnect with their coordinator nodes. The collision seems to be a main issue in the cluster tree network of IEEE 802.15.4 beacon-enabled mode, where the network performance can get degraded.

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## Porcine Transplants – Hope for the Next-Gen Humans!

‘One cannot have the bacon and keep the pig too’ - this may not hold true for long as pigs will soon be reared not just for meat but also as potential organ donors for human transplantation therapy. Transplantation from animals is known as Xenotransplantation. The reason pigs have been identified as one of the most potential sources is due to its large size and physiological similarities to human organs.

*Many immunological and genetic engineering studies are being carried out for safe porcine organ transplantation to humans.*

Scientists across the globe are working to provide a stop gap to human patients to obtain organs for transplantation. Many immunological and genetic engineering studies are being carried out for safe porcine organ transplantation to humans. Pharma companies such as Switzerland-based Novartis; Boston-based Genzyme and Britain-based PPL Therapeutics have been working towards Xenotransplantations by investing great deal of money for more than a decade.

One problem associated with Xeno-organ transplantation is rejections and infections from the new organ and species. Many cell surface antigens are found to be involved in the acute rejection process. In addition, transplantation of pig organs involves risk of transmitting porcine viral diseases to the human. Administration of immune-suppressant drugs is an established approach by which transplanted organs is made immuno-tolerant to the recipients.

The transplanted heart is shown to survive for more than 500 days in baboons treated with immunosuppressive drugs. This alternative transplantation tool and advancement seems to open newer horizons in human transplantation therapy.

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## Research Experience in Lisbon

Research experience abroad? First of all let me start by thanking The Almighty for making my dream of getting the 'Namaste scholarship' come true. The journey had started with excitement and expectations of doing research at 'Instituto Superior Técnico (IST)', Lisbon, Portugal. This experience was a spotlight in my career which has provided a remarkable experience in research and in personal life.

In the beginning of my stay there, I struggled a bit because of the difference in the working nature, climate, culture, life style and

*Working in a sophisticated laboratory headed by talented mentors helped me build my confidence to carry out my research projects independently.*

language. As I started interacting with fellow researchers and the professors, my task became smooth and enjoyable. It is my great privilege to work in the well established lab under the supervision Prof. M. A. Santos, who introduced me to a new world of valuable ideas, new techniques, novel design schemes and new approaches to interdisciplinary studies in Organic Chemistry.

Working in a sophisticated laboratory headed by talented mentors helped me build my confidence to carry out research projects independently. Being there for almost a year helped to sharpen my technical skills and also develop my communication skills. Now I am proud to claim that I can independently carry out inert atmosphere reactions and comfortably handle pyrophoric and air and moisture sensitive chemicals with the most sophisticated techniques.

Being away from our motherland is difficult but at the same time it is necessary to come out of our shell to experience a totally different research world. This journey is not only about research but has also offered me the wonderful opportunity to learn about the rich culture of Portugal. I would like to thank 'ERASMUS \_NAMASTE' project for providing financial support, host University (IST Lisbon) for an excellent opportunity for carrying out my high end research, and my supervisor Dr. Rangappa S. Keri for his support and guidance.

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## Talk on 'Ecology: Indian Perspective'

On April 4th 2016, I was invited to speak on 'Ecology: Indian (Indigenous) Perspective' to the students in Lund University, Department of Religion and Philosophy. The focus of my presentation was to understand how environment is used as a commodity and how the vested interest is making a profit from this, damaging the ecological balance. It is important to realise that a change of perspective can transform our understanding of the relation between people and environment. Hence, the principal aim, I think, is to help people better comprehend this perspective and to apply it to their work situation.

*It is important to realise that a change of perspective can transform our understanding of the relation between people and environment.*

Discussion with students and faculty members from different disciplines revealed how environment takes a centre stage in Sweden. Some of the students informed me about how many young people are taking to second hand clothing in an attempt to save environment. Details such as these are appreciated and will also encourage youth in other countries for innovative measures that can be easily adopted. At the end of the discussion, we felt that the result of our fascinating dialogue with different cultures and traditions pursuing the historical developments of some of the concepts from the indigenous sources are to be disseminated widely, while finding ways to delink the environment from the market economy.

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## Semen Cryopreservation: The Frozen Father

Cryopreservation of semen is the storage of semen at sub-zero temperatures of  $-196^{\circ}\text{C}$  in liquid nitrogen. The sperms are mixed with a protective solution called semen extender, containing lipoproteins, sugars and cryoprotectants, e.g. glycerol. These extenders help to

*The significance of cryopreservation lies in the fact that semen obtained from a single ejaculate can be extended and also be used for multiple inseminations.*

maintain the membrane integrity and hence keep the sperm cell intact. The extended semen is packed into straws, frozen in liquid nitrogen vapour and plunged into liquid nitrogen for long-term storage. Semen cryopreserved in this manner can be used for insemination. The significance of cryopreservation lies in the fact that semen obtained from a single ejaculate can be extended and also be used for multiple inseminations. In case of buffalo bulls, semen from a single ejaculate gives up to 200-300 straws, when diluted with the extender and can be used to serve 200-300 buffaloes.

Semen cryopreservation is a widely established method in humans, animals, fishes and insects. In humans the main purpose of cryopreservation is for use in assisted reproductive technologies like artificial insemination, in-vitro fertilization and intra-cytoplasmic sperm injection. In animals, it is used for breeding and for the improvement of genetic potential in animal species. In rare cases, it is also used for endangered animals such as primates, elephants and wild felids for the purpose of species conservation. In the near future, semen cryopreservation, especially in humans, could become a common practice so as to preserve parenthood and maintaining a healthy body condition.

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## The Taste of Research: Part I

Multitasking was my routine for the last 17 years. My taste for research started when I got the opportunity to spend quality time by myself without any other multitasking routine, thanks to the Erasmus scholarship. I chose the University of Groningen in Netherlands as a base for my research. Groningen, also known as the City of Talent, has about 48% of international students from among its 1,500 Ph.D. students. It is considered as the most innovative as well as the happiest city in the Netherlands.

For my thesis 'Goal Setting and Employee Performance - Comparative Study of Public Sector Enterprises in India and The Netherlands' I chose two public sector units in Netherlands (as a comparison with Indian public sectors), the Netherlands Railways and Amsterdam

*Groningen is considered as the most innovative as well as the happiest city in the Netherlands.*

Schiphol Airport. My research thesis created a lot of interest as it was a less ventured area and attracted attention both among policy makers and employees from the organizations chosen. The opportunity was exciting as I had to interact with the officials both from the Ministry (which frame policies related to goals of these units) and from the organization.

The translation of official data from Dutch (official language of the Netherlands) to English seemed tough, as the Google translator failed to capture the true essence of the documents. However, Prof. H.B. Winter who was guiding me at the University patiently sat through all my interviews to make me understand the finer details. I was also amazed at the speed and precision with which he corrected my chapters.

*We will cover some of the personal experiences of the author in Netherlands in the next issue of Thinklet.*

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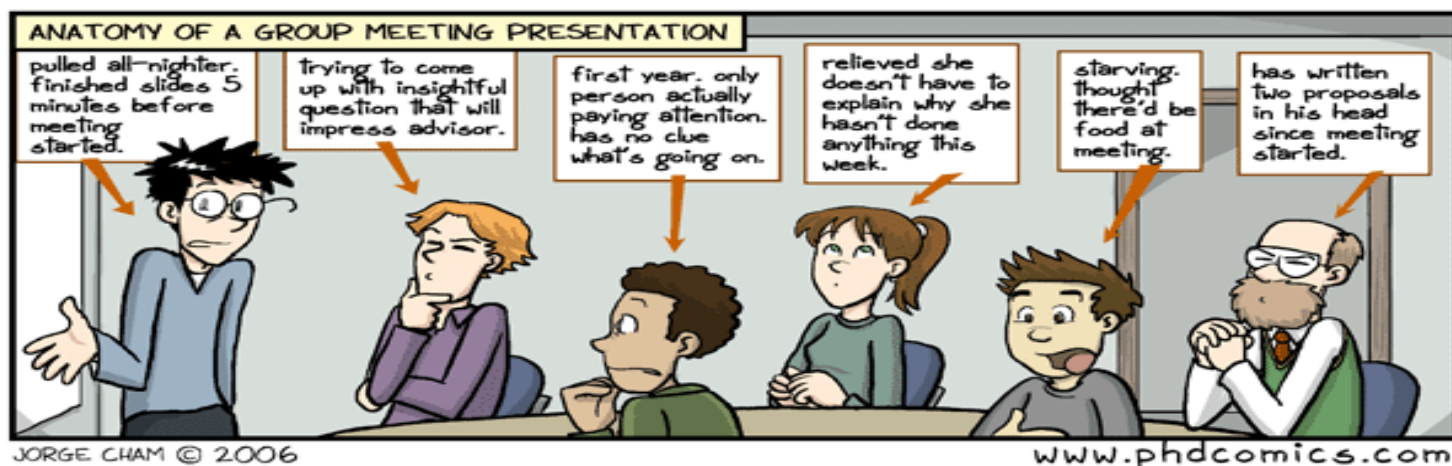
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## Research Retreat May 2016

The University is organizing its annual Research Retreat on 21st and 22nd May 2016. The Research Retreat is a useful platform for doctoral students at Jain University to present the progress in their research work and get feedback from experts. Besides subject wise concurrent sessions, the Retreat has a range of General Plenary Sessions and Faculty Plenary Sessions at which experts from the field of research interact with doctoral supervisors and scholars. Additional break-out sessions are also being planned this time around. The Retreat has received an overwhelming response from doctoral students and guides. Prominent guest speakers have confirmed their participation and a detailed report on the Retreat will be carried in the June issue of Thinklet.

*“One always tends to over-praise a long book, because one has got through it.”*  
*-E. M. Forster*



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250 WORDS  
PLEASE INCLUDE YOUR NAME, E-MAIL ADDRESS AND THE KNOWLEDGE DOMAIN OF  
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