Deepak Malani’s Blog

ESOF 2014: Science Building Bridges

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How often, as a researcher or an engineer, do you talk about science or technology with common people around you? How do policy makers get to know of ground realities, about challenges and nature of research in Universities or Research Labs; and how do they decide on allocation of funds to areas of social/medical importance? How can young scientists figure out possibilities and resources to translate their research into products that reach out to the market?

To address these and many more diverse essentials of the research communities, there are agencies and initiatives, that I got to know about last month at a conference, which is said to have been attended by more than 4000 participants.

**Organizer and the Event**

EuroScience is a non-profit grassroots association open to research professionals, teachers, students, science administrators, policy-makers, etc. and generally to any citizen interested in science and technology and its links with society. It organizes EuroScience Open Forum (ESOF) every two years, bringing together all these stakeholders. I got a travel grant, as a PhD student to attend 2014 edition at Copenhagen, Denmark, where the theme was on connecting science with society.

**Inaugural, Plenary and Keynote Sessions**

In the opening ceremony, emceed elegantly by Dominique Leglu (L), there was an insightful and well articulated discussion with CERN director-general (R) and spokesperson, on the significance of discovery of Higgs boson. See related articles here and here.
TED Speaker Hans Rosling, made a dramatic presentation of world statistics on population, per capita incomes and energy consumption patterns and some forecasts. He highlighted how social progress was ahead of economic progress in developing countries. Related article. Also see: Documentary of Rosling's presentation Don't Panic: The Truth About Population

Former Latvian President Vaira Vike-Freiberga touched upon history of pursuit of science and research from European countries, and supported pursuit of basic research.

Physics Nobel Laureate Serge Haroche gave historical account of his 30 year research in isolating single atoms and photons in quantum QED cavities, using light shift effect and atomic interferometers (atomic clock). In the words of fellow participant Judy Halper, Haroche's talk seemed to have brought Bohr, Einstein and Schroedinger in the lecture room. He concluded saying time and trust are essential ingredients needed in doing blue sky research. Related: ERC funded DECLIC project (Decoherence of Light in Cavities) | Lecture Video

On the life sciences front, there was an extensive session by Cori Bargmann explaining relation of our behavior and circuits in the brain. Lecture Video.

Career Building Sessions
There were a bunch of sessions exclusively aimed to PhD students, during the first two days. Agencies like Eurodoc study multitude of factors concerning young researchers. They seem to play a critically helpful role for early stage researchers, in finding right professional career opportunities with industry research labs or academic positions. Online forum CARE connects research advisors to doctoral candidates. Also see: European Research Area (ERA) - multinational co-operative structure towards "integrating scientific resources" and European Research Council (ERC) - funding agency

Urban Design
One of the themes at ESOF was Urban Design and Sustainable Living. Martin Powell from Siemens, spoke about his company's contribution to modern integrated mobility design e.g. single ticketing solutions for bus, underground trains and metros. I could immediately appreciate this example, having used multiple transport services, a week earlier, while touring through Berlin.
Jørgen Chistensen’s (CTO, Dansk Energi) slides talked about Denmark’s charter of 50% energy demands of the country to be met by renewable energy by 2025; and then complete dependence on renewable energy by 2050. Kurt Nielsen highlighted Copenhagen’s mobility culture, where 40% of commuting is done by cycling.

**Young Entrepreneurs**

*Young European Biotech Network* brought in young entrepreneurs to tell us about their startup experience.

Eimear from Dublin-based *RestoredHearing* showed innovative therapeutic solutions to cure tinnitus (ringing of ears), and for buffering loud sound for use in high-decibel environments. *Sound Sponge* is a non-Newtonian clay-like material, that changes to liquid state with application of force and can be integrated with headphones, for buffering noise. This seemed a cost-effective solution compared to high-tech noise cancellation headphones. The smart team have got VC support, who has worked with Chinese manufacturing companies. Related article.

Another startup in agro-foods domain, has developed an orange beverage, with 20% anti-oxidants, addressing a target audience. Juan Cordon presented his ideas on making a product that addressed an unmet market need. Lastly Nicolas, talked about his intrapreneurship experience at GSK in making a nutraceutical to improve vaccine efficacy in developing countries.

**Science in the City**

*Kopenlab*, a collaborative space for citizen science, diybio, contemporary art and maker culture, setup several demonstrations and conducted hands-on workshops. On display were Dyl Geiger Counter; an old design of a mouse trap (that I accidentally hurt my finger with); mobile phone case designs that folded as a beer can or a car. Michelle conducted an Open Data Workshop, where participants analysed numbers on cycling accidents, cycle adoption factors across global cities and a google maps overlay of cycling dense regions in Copenhagen. Jacob and Jakob from CIID made the participants assemble a MIDI controller-synthesizer, that has evolved as a cheap, fat and open (CFO) music interaction design.
Besides, students and science-communicators from Danish Universities had setup an outdoor exhibition, where kids as young as 5 years, alongwith their parents, were thrilled to see and experience wind-powered generators and solar-powered lights, steam engines, sewage systems, electric vehicles, and 3D printers; and even building electronic siren and torch or trying to communicate using Ham Radios.
There, I met an wise old gentlemen, who was demonstrating biogasifier (surprisingly, I saw the product was imported from India). Jens Prom works with Copenhagen Municipality and had done several socio-scientific projects, in Java, Indonesia; trained nurses, and taught environmental conservation.

In another section, I met a bunch of researchers from Aarhus University, who (as a part of their research work) had themselves flown into an air-plane converted into biomedical lab, alongwith live tumor cells, to observe how tumor cells get separated when subjected to micro-gravity.
**Education**: *Engineering for children: a new way of teaching science* (*Engineering for Kindergarten*)

Being a volunteer in the field of activity based learning, my thoughts were further extended by the presenters in this session.

Ioannis Miaoulis, President of Museum of Science at Boston, questioned the audience, "What does Science in schools teach us?", Almost everybody had an answer that 'Science teaches about the world around us'. He then asked 'If I remove every engineering element from this seminar room, what would remain?' After a brief silence, he retorted 'Naked human beings'. He argued that if everything that a child sees around is an engineering creation, how does the kid learn to relate science in classroom to the engineering around him/her?
To demonstrate how to address a child's curiosity of working of a vacuum cleaner would work, the session had the participants make a vacuum cleaner using a cut-plastic bottle, a small yet powerful motor, plastic fan and a battery. Everybody in the audience seemed super-thrilled in building their mini-vacuum cleaner, that could collect pieces of scrap paper.

Related: Experimentarium Denmark’s first science center | ENGINEER Project - EU, article

In regards to learning models for those with special needs, I met Luz Rello who was awarded Young Researchers’ Award for her work on studying learning patterns among dyslexic children, and building digital applications that would enhance their learning process. Read evaluation summary for this award.

Quotable Quotes

“The Danish word for bridge is pronounced ‘bro’, and is also an English slang term for brother, or friend. That is exactly what science is.” Dominique Leglu

“When you look at photons, usually you destroy the photons.” Serge Haroche

“Today's atomic clocks tick at rate of 10^-17 seconds, i.e. one second per age of Universe”* Serge Haroche (i.e. *if one tick was one second of regular wall clock)

“We cannot think of future, if we do not understand the present.” Hans Rosling

Resources
1, ESOF 2014: Plenary and Keynote Lectures: Recorded Videos - Youtube
2, ESOF 2014: Presentation Slides of various sessions
3, Details on Sessions, Speakers and Attendees
4, Twitter Handles: #ESOF2014 #SCICITY

Related Articles, Weblinks
1, Science Communicators at ESOF
   Achintya Rao, twitter
   S Ananthanarayan: simplescience.in
   Dinsa Sachan: DTE, twitter
2, ESOF 2016 is going to be held in Manchester City.