Peace is not God's gift to his creatures , It is our gift to each other.

Elie Weisel

The report of the National Knowledge Commission - A Personal Reflection

A preliminary glimpse into the salient features and recommendations of the 300+ pages report

In the 21st century the ability of a nation to create and use knowledge capital more than anything else determines its ability to empower its citizens. This is the singular reason why nations all over the world lay emphasis on developing its human resources in as efficient a manner as possible. India today stands poised to reap the benefits of a rapidly growing economy and a major demographic advantage that will see the country having the largest pool of young people in the world in the next few decades. In the words of Dr. Manmohan Singh, Prime Minister of India, "The time has come to create a second wave of institution building, and of excellence in the fields of education, research and capability building so that we are better prepared for the 21st century." It is with this broad task in mind that the National Knowledge Commission (NKC) was constituted on 13th June 2005 as a high-level advisory body to the Prime Minister of India, with a mandate to guide policy and direct reforms. Its prime focus is on the on five key areas of the knowledge paradigm--access to knowledge, imparting skills, knowledge-creation, knowledge application and development of better knowledge services. This article aims to bring to light the salient features of the document which the commission brought out as a blue print to achieve its stated objectives.

Knowledge accessibility

The most important and incidentally the first step to creating a knowledge society lies in making tools of knowledge available to the population at large and to institutions and individuals in specific. The commission recognizes this and suggests a number of ways and means to this end. Particular emphasis is laid on the effective functioning of the libraries which have traditionally been the storehouses of knowledge in a society largely deprived of quality books at nominal prices until recently. A number of recommendations have been put forward which include-having a central body to govern libraries, allocating generous funds, encouraging community participation, digitizing entire sections. Quite understandably strong arguments have been made in favor of

augmenting our population's command over the language of English. This is especially true in light of the fact that in today's globalized world a person's knowledge of the English language more than anything, serves as an indication of his erudition. In this regard

the reports suggests an examination on a national scale on lines with the IIT entrance exams, making available plenty of text books in this language, training the staff better and making English a compulsory language at an early stage as possible remedies. The report also speaks at length on leveraging India's spectacular diversity with regard to languages and scripts and using it effectively as a means to disseminate information through translations, both human and machine. A strong case has been made for the establishment of networks and portals in view of the paucity of funds and materials that institutions in most parts of country face. This is to serve as an effective remedy to the need to import or manufacture equipment and facilities which would in most instances of higher learning require deep pockets. In today's web addicted world the internet domain has not been ignored either. Methods have been presented to use this burgeoning medium to disseminate information through the establishment of web portals and interconnecting various campuses of knowledge production for better osmosis of ideas and assets in order that the institutions carry out their activities hand in hand with those of the like type in a cohesive and efficient manner.

Imparting skills

In a country which has 65% of its population dropping out of high school, ignoring this basic platform of education can only sound its death knell. The

report throws light on the many disparities in the school enrollment citing caste religion and the most important of all gender as a few of the many issues that hinder a child's education in India. An important recommendation of the commission in this regard is the passing of a RIGHT TO EDUCATION BILL on the lines of the already implemented NATIONAL RURAL EMPLOYMENT GUARENTEE ACT. The same judgment is reserved for the higher education in the country which to say the least is facing a crisis of sorts at the moment. With regard to the professional educational scenario the report lays it threadbare that the quality of the institutions that impart this form of education leaves a lot to be desired and also serves to highlight the urgent need to effect a qualitative shift in the paradigm in order that the industry's (which in any case is the primary absorbent of these graduates) needs and concerns be addressed. The report cites vocational training as a remedy to overcome the shortcomings of the paucity of skills in an increasingly dynamic and competitive world. In order to address the problems caused by a myriad of factors such as terrain, domestic compulsions, and skyrocketing fee structures the report lays enormous emphasis on the need to develop the institutions which provide long distance and Open education.

Knowledge creation

A nation can develop in two ways – either it learns to use existing resources better, or it discovers new resources. Both activities involve creation of knowledge. This makes it important to consider all activities that lead to the creation of knowledge directly or help in protecting the knowledge that is created. It is with this view that the commission lays special emphasis on the need to have an effective robust yet transparent Intellectual Property Rights regime in place. The reports brings fore the often missed fact that it is innovation that has been the cause for our burgeoning economic growth. In order to provide an incentive for further innovations so that our companies and institutions become and remain globally competitive, the commission envisages a national innovation system, where entrepreneurship at the local and national levels is encouraged, and inter disciplinary studies in science and technology are undertaken

In Conversation

Dr.Jayant Murthy, Professor , Indian Institute of Astrophysics and Research Scientist, Johns Hopkins University speaks to *Anweshi* : A senior scientist flying down to our campus from Bangalore just to deliver a talk and spend some time with our students sounded much like a tale stranger than fiction. But as we got to know Prof. Jayant Murthy better we felt convinced that it was natural for a person like Prof.Jayant to do that for, such was the receptiveness, passion and clarity of expression he exemplified and primarily because of this, talking to him will remain an experience we will always cherish. As the conversation progressed we couldn't help thinking that we are talking to the Indian version of Homer Hickam and his teacher Freida Joy Riley (the main protagonists of the movie October Sky) . A committed teacher with deep passion for science popularization coupled with an impeccable sense of humor and voice with an admirable baritone, listening to Prof. Jayant also gave us a glimpse into what it would have been listening to the legendary Carl Sagan. We are grateful to Prof. Jayant for contributing an article exclusively for Anweshi.

Google))) Dissected

When we think of Starbucks, we think of coffee. When we think of FedEx, we think of overnight deliveries. When we think of Google, we think of search that works. But search is one among many of Google's products. Yet, none of these pop into our mind when we think of Google. Clearly, there must be something wrong...

Personality of the Month
N Udhaykumar B.Tech (ECE) 2004 batch. ...Col 1 Page 5

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...Contd from page 1 : **Knowledge Commission Report**

in order to encourage new approaches and methodologies.

Taking a distressing note of the dwindling avenues of researches both in basic and applied sciences in our country, the report minces no words in declaring the importance of R & D as a cornerstone of our competitive skills and strategies

Knowledge application
The knowledge commission recognizes Agriculture & Healthcare as areas which require immediate attention and redressal. It aims to use the knowledge gained through research and development to generate employment and also create a sustainable basis for the two important sectors to thrive. With an eye on the future envisaging new vistas and avenues which may open up for exploration and exploitation has become almost a cornerstone of any report that aims to serve as a vision document and ablueprint for future courses of action. The commission in its reports earmarks six sectors-Biotechnology, Nanotechnology, Social innovation and Grassroots bussinessmanship, Legal process accessibility , Government process re-engineering and Environment rapprochement as areas which are likely to influence our country's policies in the near future and recommends to the government that the necessary infra-

structure for these areas be secured as early as possible.It is true that a planned course of action is very much necessary for the successful implementation of any strategy of such a scale.

However if the management of our economy is anything to go by there usually is a yawning and sometimes potentially devastating chasm between a well thought out plan and a well implemented one. Despite all the pitfalls that we might encounter in our path towards making our great President Dr. Abdul Kalam's dream of a knowledge society come true, I would like to end on an optimistic note confirming an unshakable faith in the greatness of our land and its people who I am sure would go all out to ensure that India becomes and stays second to none in the application of knowledge and skills for the fulfillment of a noble ideal-ensuring a better life for the common Indian

jai hind

J.Madhusudhan
II ECE
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* The complete text of national Knowledge Commission Report is available in **VIDYA** on this link: http://vidya/teaching

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VIDYA Corner : Recent Additions

(**Electrical Sciences Section** : http://vidya/electrical)
1. Structure and Interpretation of Signals and Systems - 2006 Berkeley Video Lectures , 2. Introduction to Signals and Systems - 2006 Berkeley Video Lectures

(**Computer Science and Engineering Section** : http://vidya/computers)
1. Introduction to Fuzzy Logic , Text Information Extraction, Image Analysis, Semantic Web , IT / Computers Essentials for all, Quantum Computing Video Lectures , 2. Books on Design patterns

(**Aerospace Engineering Section** : http://vidya/aero)
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Cosmic Consciousness - KenWilber (Audio Book) ,
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(**Humanities/ Literature and History Section** : (http://vidya/humanities)
1. World Poetry Audio Archive
2. Towards a Better Vocabulary
3.Various Dance Forms of India
4. Interviews and Conversations

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Initiation into theory and practice of Aerospace Engineering

Aerospace engineering, often informally called rocket science,Aerospace engineering, often informally called rocket science, is the branch of engineering that concerns aircraft, spacecraft, and related topics. Due to its complexity, the term "rocket scientist" has come to indicate an intellectual of high caliber in popular culture. Aerospace design is usually the products of a complex synthesis of various technologies and sciences, such as aerodynamics, avionics, structures, propulsion etc. While the effort required in mastering any of the subjects within aerospace makes it challenging, it also makes aerospace education very invigorating and satisfying. Apart from its interdisciplinary nature, an Aerospace education is also unique in its requirement of a sound background in theory, technology and engineering practice.

Practicing aerospace engineers, depending on their specialization, work on cutting edge technology / science because the various constraints and requirements that the field places necessitate innovation at every stage. The innovations in turn result in both theoretical and technological advancements that have a direct impact on a wide variety of fields. It is well known that research and development activities during the 50's and 60's owing to the various national aerospace missions in the US and in the former USSR contributed much to the present technological development in many areas. The development of fiber based composite materials and other specialty materials, originally intended to be useful in aerospace industry, have found important applications in biomedical and other fields. High performance materials used for space applications, for instance, have been used for prosthetic limbs. Research in aerospace progresses by combining theoretical physics with experiments to provide fundamental background science. Computation, which has emerged as a legitimate scientific complement to experiment and theory, is now an essential component of research as well. Boeing 777, for example, was completely designed on computer without any mockups. Innovations in algorithms, software and hardware in order to enable efficient large scale computing are now part and parcel of aerospace engineering. The flows that aerospace applications involve are highly turbulent.

The complex nature of turbulence (often classified as the last unsolved problem of classical physics) is such that eminent mathematicians and physicists are working actively in the field and are highly interested in any progress in it. There is probably a Nobel Prize and the Fields Medal (the Mathematics equivalent of the Nobel Prize) waiting for someone who makes a significant contribution in this area. There is no reason why this cannot be somebody from an aerospace background!
With the traditional interfaces between various disciplines dying down today, there is an increasing need for scientists with engineering know-how and engineers who have a sound grounding in scientific principles. The design of almost any modern technological device requires an input from a wide spectrum of engineering fields. There is, therefore, an urgent need for specialists who are comfortable with the fundamentals of a wide variety of fields. Aerospace students get an exposure to a wide spectrum of sub-fields in physics, chemistry, computer science, electrical engineering, mechanical engineering and material science and hence, a sincere student is well qualified to contribute both directly and indirectly to these industries.

Within a span of nearly 30 years India has emerged as one of the leading nations, especially in space applications. Due to the comparative lack of funding, materials and experience our aerospace engineers were forced to come up with innovative solutions which have resulted in our current ability to produce high technology at low cost. There is still a dire need for skilled and innovative professionals in ISRO, DRDO, NAL and the defense forces. National projects such as Chandrayan, HSTDV etc also require advanced researchers. For students interested in higher studies there are many openings within IITs and IISc which would enable them to continue their studies while contributing to such projects of national interest.
Recognizing the talent pool that exists within India , MNCs like General Electric, Pratt&Whitney , Snecma, Honeywell, Airbus , EADS etc have started Indian operation centers. Global aerospace industry has been recording phenomenal growth in the recent past and the future projections are also astonishing, both for the commercial or defense segments. Employment opportunities are plenty for a well educated aerospace engineer.

Dr. Sarith P Sathian joined our Aerospace Engineering department after completing his MS and Ph.D from IIT, Madras. **satithsathian@gmail.com**
Dr. Balaji Srinivasan joined our Aerospace Engineering department after his B.Tech from IIT Madras, and did MS from Purdue University, Ph.D from Stanford University and Post Doc from University of Michigan, Ann Arbor.
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In Conversation : Dr. Jayant Murthy - Professor, Indian Institute of Astrophysics, Bangalore

Dr.Jayant Murthy grew up in Zambia and went to the US to do his UG and PhD from Johns Hopkins University, Maryland. With over 20 years of experience in space research/ teaching Prof. Murthy has worked on a number of vital space missions including the Voyager Spacecraft and *Hubble Space Telescope*. He is the recipient of *NASA/ GSFC National Research Council Fellowship* and was research scientist at Johns Hopkins University. He has to his credit 52 Refereed Publications . Dr.Jayant Murthy is currently Professor at *Indian Institute of Astrophysics,* Bangalore.

Could you give us an insight into what you are currently working on?

I've been back in India for eight years now. What I do is space astronomy and my science interest is in the inter-stellar medium which is basically dust and gas between stars. The project I am working the most on these days is the one we have collaboration with the Israelis to launch a payload on gsat4 satellite in the middle of next year. We are trying to build a space instrumentation group to do the hardware and build payloads, it goes a little slowly.

Who inspired you to go into this field?

I have always been interested in how things work…when I was studying from the time I was 8 or 9 I've always been reading science books and as I will say in my talk I grew up with Neil Armstrong , Neil Armstrong landed in the moon in 1969, I was 8 years old then and ever since then I've been interested in astronomy, it was not too much in looking into the sky, but figuring out how things work.

Could you tell us the exact difference between astronomy and astrophysics?

There is no real difference now. In old days astronomy was looking at the skies, where as astrophysics is understanding the physics of what is happening in the sky. But now it seems to change more, you can use either term for either one.

Were you steadfast in your childhood ambition as you grew up?

I've always been interested in

space…and for a while my parents, as would be the case with any parent, wanted me to do either medicine or engineering. So for a while I went into biology, in fact I did one year of biology. But I found that I was not very interested in it, I was interested more in physics. So, I switched out and switched back to physics.

What do you think of spending so much on science and technology, when many in the world are starving?

Spending so much is a relative term, if you look at the Indian budget, it is only .7% of our GDP, if you look at the American budget it is about 5%, in Europe it is nearly 3%, Japan is 2%. There is a correlation, the more you spend on science, the more advanced the country by and large. We should not spend 50%, but I see no reason why we cannot spend less than 3%. But the real problem in India is not even that, the real problem is not that there is not enough money in science. ..obviously we'd all like to be paid better. But the real problem is that there is no real encouragement for science…to do science!

In that case, do you support SETI (Search for Extra Terrestrial Intelligence)?

I think it is a great thing to do, in fact I have a talk prepared on it. Today I will be talking about space astronomy, but I do have a talk on SETI. It is something I have always been fascinated by. I do not know whether they will ever find anything.

Do you believe that there is extra terrestrial life?

I find it is inconceivable that there is not. From the time of Copernicus we have been moving away from being at the centre of the universe (first everything went around the earth, then everything went around the sun, then everything went around our galaxy). But now we are just one planet in a huge universe. ...what makes us special?

Do you believe in most of the UFO sightings?

No, I do not believe in most of that, any of that actually. I put UFOs with astrology.

Do you believe that some one out there is trying to reach out to us just like the way we are trying …? if they are there, would they be more advanced, what is your view in this or your imagination…?

I imagine that people are trying to contact other beings…but the time scales are so long. If you take the nearest star, it takes 4 years to get to the nearest star and 4 years back travelling with the

> **But the real problem is that there is no real encouragement for science…to do science!**
>
> **I think science is taught as a mysterious thing that you have to memorize and you forget it immediately after your exams. We have to teach science in a living way , we have to support places like the planetarium.**
>
> **I find that students of 10th , 11th and 12th, especially CBSE and ICSE kids are the ones who are the most interested. Some how we have to provide a path for those students to get into science.**

speed of light. This is fairly large time scale. Further, you are looking at 100 years, 20 years….it takes lot of commitment to do that.

If you take our position in science, it would be somewhere average. So I would say that there are some that are more advanced, some that are less advanced.

What steps should be taken for science popularization?

I feel that the younger the student, the more interested they are in science… I give talks to all students from 8th standard up to M.Sc and I find that students of 10th , 11th and 12th , especially CBSE and ICSE kids are the ones who are the most interested. Somehow we have to provide a path for those students to get into science.

Should science and technology be taken to the common man, or is it that just the products of science and technology would suffice, since it is the common man who is investing in science and technology?

Absolutely, we have a tendency to think that the world owes us a living because we are doing something special. But we are part of the society, we have to work with society, I think what we do is important. I think it is important to do science because doing science teaches you, it teaches rationality, it teaches you   to think about what you are doing. You may still go ahead and do what ever you are doing, but at least you thought about it. I think that is the message we must try to get out.

What are the steps you think we must take to help people realize the importance of science…say for example if you talk of cricket everyone knows a no ball or a dead ball is , on the other hand not many really know what is an atom…what is your take on it?

In many schools science is not taught

as a living subject… you have to learn Newton's laws by heart…you are told that they are the facts…Why are they the facts…well you don't know. Science really is common sense, it starts with some basic assumptions . Whatever science you do in school of obvious. I think science is taught as a mysterious thing that you have to memorize and you forget it immediately after your exams.We have to teach science in a living way , we have to support places like the planetarium…we some how make our space programme out to be something reserved for great people. It should not be that way. People are interested in space. I have always wanted to go and watch space launches, whenever there is a launch I try to go and se it. But we have rules preventing people from launching model rockets. I had a bunch of kids who were trying to build a rocket and trying to launch it, but they couldn't because of so many rules. We make it difficult for people to do anything really innovative.

We have an elective paper on Astrophysics, how do you think it is useful for us as engineers?

When you talk of science being useful, or any subject being useful…well, I do not think it will be useful in your career. People are interested in science; people are more interested in learning the way things work… But if you say Astrophysics, I could say 'evolution'… how does learning about evolution help in your life, it doesn't, you don't come across it . But that is what makes us humans…we learn about different things…we learn about evolution, we learn about solid state physics.

Could you tell us something about your past achievements?
My past achievements…well, I got my PhD in 1986…so it is over 20years. I have worked on a number of different missions starting out with my work on my PhD thesis, what was going to be my PhD thesis was an experiment that was going to be put on the space shuttle. It got a little delayed, so I worked on another aircraft for my thesis. Then we launched it and I got a couple of papers out of that. Since then I was working with a large number of aircrafts, I worked with Voyager data, with Hubble space telescope data… all on space missions. Now what we are trying to do is to put our own payload.

What have you done before getting your PhD, was it always astrophysics?
Well, It has always been physics…I was in Johns Hopkins University. It was a physics department until my final year

and later we became a Physics & Astronomy department. It was a pretty standard Physics curriculum.

Do you see movies?

Movies…yes, I DO !

Have you seen October sky?

Yes, October sky is a great movie...

We screened it here for the second time last week and the feedback was overwhelming…

Oh….i would like to read the book also, I have not read it yet. I didn't see it when it first came out. I saw it much later even though I have been wanting to see it for a long time. This is what I am going to talk about in a little while from now. I have stopped asking people if they have seen 'October Sky' because it turns out that most people have not. Most people have not seen Apollo 13 either, it is another great movie. Such movies capture the times, those were the times just after Sputnik, well this is the 50th (Oct 4th) anniversary of sputnik. That was a time when any one who is any interested in technical stuff, who is interested in space went out and built rockets and most of NASA's engineers have come from that generation. Now they are all retiring and it is causing a crisis.

Many of us wanted to build model rockets, but there are rules…

Well there are rules. In the US you can buy model rocket kits…with solid fuel boosters and every week at Goddard Space Center they used to have rocket launches where 10 year old kids to 87 year old great-grandfathers would come ands launch their rockets.

Dr. Jayant Murthy was interviwd by Miss. Neethi Muralidharan, Kothai Priyadarshini, Rajesh Rajan and Sreekala Madakkavil of team ASTHA.

ASTHA - Activities Update

ASTHA charter was officially aproved on Aug 23, 2007. The first public function was the induction programme "**Sanghosh**" held on Sept 5, 2007. The next public function was "Nakshatra", a programme designed to honour students who have achieved distinction in various fields and bring junior students in close contact with their senior counterparts to facilitate mentorship through sustained guidance and motivation. The first edition of **Nakshatra**, held on Sept 7, 2007, honoured the IBM Great Mind challenge 2006 award winners and the second edition honoured the GATE/ GRE toppers. The newsletter "**Anweshi**" was released on Sept 7 2007 by our Dean of Engineering by Dr.M P Chandrasekharan . In his address he gave valuble suggestions on how to set high standards for the newsletter and he remerked that "Anweshi" is an original effort by the students.This was followed by the launch of ASTHA website and screening of the movie "The October Sky".

Timeline
Aug 23, 2007: ASTHA Charter approved
Sept 5, 2007: Sanghosh, 2007
Sept 7, 2007: Nakshatra (Session 1)
Sept 7, 2007: Nakshatra (Session 2)
Full Body Meeting No. 1 : 08-10-2007
Please visit the website **www.amrita.edu/astha** or **http://vidya/astha** for more details.

The Next Fifty years in Space

Mankind entered the Space Age on October 4, 1957 with the launch of Sputnik by the erstwhile Soviet Union. The next 20 years witnessed a glorious period in space exploration culminating with Neil Armstrong walking on the Moon on July 20, 1969. An entire generation was fired with enthusiasm for space. Astronauts were deified; science fiction entered its Golden Age with such giants as Isaac Asimov, ArthurC. Clarke, and Robert Heinlein. It was clear that mankind would soon be setting up bases on Pluto and, like the Jetsons, we would use our flying saucers to go to work at Spacely Space rockets and come home to our loving family and robot dog.

However, the next 30 years have proved to be a consolidation period in which space became the preserve of governments or large corporations. Satellites were put up for communications or for weather forecasting or for military purposes but always with a conservative, risk free philosophy. As a result, the excitement has gone out of space. Space belongs to a small cadre of bureaucrats more interested in avoiding failure than in innovation. This attitude is apparent in everything any major corporation or space agency does, including NASA and our own ISRO. I still remember watching Apollo 11 from launch to return with a passion much exceeding watching India win the World Cup. Even for me, having been involved with space for the last 20 years, it is difficult to muster much emotion about the latest launch of a communications satellite.

Fortunately, we are entering a new era in space flight. The computer revolution brought in a group of young entrepreneurs who made fortunes by coming up with new ideas and adapting to new technologies. Many of these people are now applying the same energy and innovative thinking to different problems.

Some, such as Bill Gates, are redefining philanthropic causes such as universal access to medicines; others, such as Jeff Bezos, are passionate about space. Dennis Tito began a new era when he became the first "space tourist" in 2001 but paid an estimated USD 20 million. Virgin Galactic, part of Richard Branson's Virgin Group, and already having launched the first privately funded spaceflight with Space ShipOne plans to fly 500 passengers a year at 1/100 of the cost. With competition, I expect that the price may fall still further.

So what may happen in the next 50 years? Some of the traditional uses of space may disappear. With the convergence of telephone, internet and television on fiber optic cable, much of the market for communications satellites may disappear although access to remote areas and mobile communications such as ships or airplanes will always require satellites. On the other hand, other uses will certainly remain. It's hard to imagine that the world's governments will ever forswear spying; we can only hope that space won't be weaponized. More peaceful uses which are already indispensable and are likely to remain that way include GPS, remote sensing and weather forecasting.

One of the main motivators behind the growth of commercial space flight is space tourism and we may look forward to the day we can take a vacation on the Moon as easily as flying to London. However, whether permanent human habitation in space is possible is a different issue. Human beings are physiologically and psychologically adapted to life in a gravitational field with access to wide open spaces. Even the relatively short periods of time spent on Mir or Space Station Freedom have been difficult and one of the main challenges in sending humans to Mars is the long span of time spent in interplanetary space. Eventually these problems will be solved and we will find humans on Titan or Europa. In the next 50 years, I would be happy if permanent settlements can be set even on the Moon. Such missions will require new propulsion systems. There is now no alternative to chemical thrusters if we are to go to even Mars in a reasonable time but chemical thrusters are bulky and inefficient. New technologies such as ion engines are under development and have even been used in missions (Deep Space 1) but are not ready for regular use.

While commercial and government work has provided the funding for space flight, the innovation has come from science. Unlike the aforementioned bureaucrats, scientists are always trying to push the envelope. Failure is an accepted part of science. The last 30 years, after the era of "Firsts" was over has been a glorious period for space science with missions such as COBE which probed the very beginnings of the Universe (and the results from which two Nobel prizes were won) and Voyagers 1 and 2, our messengers to the stars.

There is no shortage of ideas for new and exciting missions, missions which will carry us to the stars, or at least bring the stars home to us. Unfortunately, we are moving back to an era of politicization of space where decisions are made not on rational grounds but rather for the cynical exploitation of public opinion. For developing countries such as China or India, this has taken the form of manned flight or Moon missions, respectively, intended to project a sense of national accomplishment although in the name of science. NASA, which once had science at its core, has now taken on manned space flight as its primary mission again at the cost of innovation. While such efforts may have their own justification, it is unfortunate that science is inevitably cut in the fight for scarce funds. In India, this is especially sad because of the discouragement of science at all levels, at home and by the Government.Certainly ISRO, despite "Research" explicitly being in its name, has never felt that it would be enriched by science. I believe that ISRO and science in general is now paying the cost.

The first 50 years of spaceflight have been like the first 50 years of aviation. The second half century of aviation has brought air travel to the common man. One cannot imagine a world without cheap air travel where one can go to sleep in Mumbai and wake up in London or New York. I fully expect that the second half century of spaceflight will do the same for space travel. Travel from the Earth to colonies in space or the Moon may be as easy as travel from Bangalore to Delhi. The difference is that there is always a next frontier in space; 50 centuries will not suffice for us to explore even our little corner of the Galaxy.

Dr. Jayant Murthy
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Personaity of the Month

N Udhaykumar, Carnigie Mellon University (CMU) , USA
The landmark paper N.Udhaykumar of the 2004 batch (ECE) authored was one of the 10 papers all over the world and the only paper by undergraduates at Student Research Workshop, Boston, Massachusetts, USA, 2004. He also spoke at the Eurospeech 2005, Lisbon, Portugal.Udhay is currently pursuing MS at CMU.

Udhay talks to Anweshi:

I am honoured to be chosen to answer these questions, although there are quite a few others whom I would have otherwise recommended **:)**

2. **What in your opinion are the benefits of the myriad of rules in our college?**
To begin with, I dont think the rules are unique to our institution. Infact, I have interacted with many students from other colleges and every institute have their own set of rules.There are both pros and cons. Everything depends on how you look at them.

3. **What, in your opinion, are the basic skills that a graduate should posses at the time of leaving college?**
Academic maturity and perseverance. The term "maturity" kind of sums up many critical skills including planning, professional communication, problem solving, clear thinking, etc. We are engineers who should know how to best use the resources around us optimally.

4. **Was there any thing you realized in the later part of your B.Tech programme which if had been realized earlier would have been very beneficial?**
At a personal level, I wished I had more knowledge and involvement in applying my skills to solve social problems around me. Almost everytime I passed by the Ettimadai village , I have noticed farmers and their families and kids playing in the government school, who are worlds apart from the scientific innovations happening inside the institution. Although I was aware of everything, it never occurred to me that there are lot of really exciting research challenges in bringing technology to these communities.

5. **What are your words for students who would like to chart uncharted/ innovative avenues as you have?**
Aim high, work hard and persevere. If you dont give up, you will soon find lot of avenues lending themselves in your way.

6. **What were the challenges that you faced while living abroad?**
The level of diversity here is something very new to me. As Indians, we always interact with people from different cultures, but diversity in American academia is at another level.

7. **What is the one thing that you would like to change in your life?**
I wish I had more knowledge about other religions and cultures. The first project I worked in CMU was to develop a dialog system for semiliterate health care workers in rural Pakistan. My team mate was from Karachi and my advisor was from Israel. I learnt a lot of technical stuff, but I was humbled at how innocent I was about their cultures and how knowledgeable they were about my ethnic background.

8. **What was the one great skill that you imbibed during your stay here in our campus?**
Calmness and humbleness. The institution and its aura teaches these qualities to everyone inside the campus.

9. **In what sector would you like to apply the exposure you are getting after your master's studies?**
I am interested in designing speech-based interfaces for semi-literate and multilingual communities in underserved regions.

10. **For the alumni of our institution and to our current students.**
Always remember that this is a great opportunity (your institution, your country and your field of study) which only few people are blessed with. So, make the best use of it and after you graduate, make sure you use your skills and some of your time to help others to avail the same. udhay.ece@gmail.com

The Google Model –'Search'ing for a reality check?

When we think of Starbucks, we think of coffee. When we think of FedEx, we think of overnight deliveries. When we think of Google, we think of search that works. But search is one among many of Google's products, in fact to name a few: GMail, Google Videos, Google Calendar, Google News, Blogger, Google Desktop Search, Picassa, Google Base, Orkut,GTalk, WiFi, GoogleDocs& Spreadsheets, GooglePage Creator,Google Groups,Google Print,Google Reader,Google Notebook, GoogleMaps, YouTubeand quiterecently, Google Gears. Yet, none of these pop into our mind when we think of Google. Clearly, there must be something wrong.

The problem begins with how branding works. A brand is essentially a word that the company owns in the mind of the consumers (think Search). There is only a limited space in the brain to store information, and as a result, any excess information is simply ignored as background noise. Since 2000, Google has been creating a lot of great products that simply add more to the background noise.

Google is an exciting company...maybe too exciting for its own good. In fact, the problem with Google is that it has too many Purple Cows.
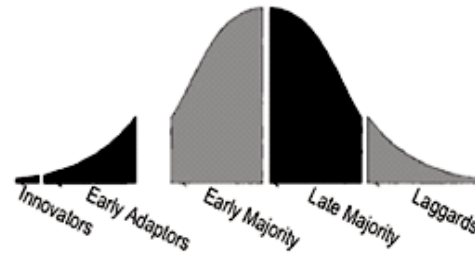
The Purple Cow
"Cows, after you've seen one or two, are boring. A Purple Cow, though...now that would be something. Purple Cow describes something phenomenal, something counter intuitive and exciting and flat out unbelievable. Everyday consumers come face-to-face with a lot of boring stuff-a lot of brown cows-but you can bet they won't forget a Purple Cow. A purple cow is a product or service that's remarkable. "Remarkable" simply means that a customer is willing to make a remark about it. If you create remarkable products, people will talk about them. If that happens, the word will spread about and your sales will grow. That explains the success of almost every fast-growing company of the last ten years" - Seth Godin, Purple Cow.
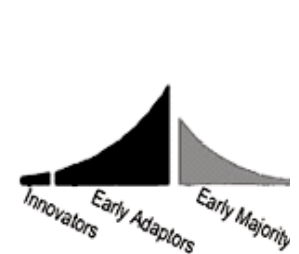Most companies strive to create Purple Cows; mini cooper and hummer are famous because people notice them. Google, on the other hand, has too many Purple Cows; in fact so many that, as a result, we pay less attention to them. The company isn't allocating the resources necessary for sneezers to pass along the word. Most of us early adopters don't go ahead and tell our friends and family about new Google services. This wouldn't be true if Google released products less frequent-

Life Cycle for Successful Products
Innovators Early Adaptors Early Majority Late Majority Laggards

Life Cycle for Products developed by Goog
Innovators Early Adaptors Early Majority

ly. By releasing too many great products too fast, Google has diluted the perceived value of their excellent services. The power of any brand is inversely proportional to its scope. Google is trying to create a product for everybody. The problem, though, is that their products target an already over crowded market. The 'everybody products' are already taken. Web portals are a thing of the past. The early adopters and word-of-mouth sneezers are too occupied to take time off and spread Google's gospel. The hard fact is that Google is not a leader in anything outside search; therefore, they should narrow down their focus on search alone.

Marketing Guru, Seth Godin points out that a company must design a product that is not only remarkable enough to attract early adopters - but is also flexible and attractive enough that those adopters will have an easy time spreading the idea to the rest of the curve. He lists four events that lead to a product failure

1. No one noticed it.
2. People noticed it but decided they didn't want to try it.
3. People tried it but decided not to keep using it.
4. People liked it but didn't tell their friends.

Google is marginally successful with the third point, but almost always fails at the fourth. New product releases are something the early adopters have come to expect from Google. Consequently, when Google does release a product, after a burst of few thousand sign ups, the adoption rate declines dramatically. The "buzz" ends with the early adopters, who simply move onto other applications soon afterward. Not surprisingly, they also fail to pass on the sneeze to the late adopters.

Advertisements don't bite
I have repeatedly heard Google executives assert that great products do not require promotion; this probably stems from the fact that, unlike other dot-com companies, Google Search did not spend millions on advertising to gain the limelight it enjoys today. Google's CEO Eric Schmidt said "We believe that we should be launching more products than what will ultimately become phenomenally popular. The way you find really successful new innovation is to release five things and hope that one

or two of them really take off. I think by that metric we've been doing really, really well. We should be able to put products out there and, without a lot of promotion, a good product will grow."

The only problem is that Google's products haven't been doing really, really well. The company continues to pass on the opportunity to put more resources into their products. The strategy that made Google Search successful isn't likely to make their other services successful as well. Google needs to do justice to its top notch software developers by improvising its current strategy for marketing products. The products are great, but they fail to catch on. It is Google's executives at fault, not the developers.

"You can have the most wonderful product in the world, but if people don't know about it, it's not going to be worth much...from a pure business point of view, the benefits of being written about far outweigh the drawbacks" - The Art of Deal, Donald Trump. Microsoft was born in a blaze of publicity. However, as the publicity dried out, the giant had to adopt massive advertising to defend its position. Google will lose their current momentum eventually, and they too will revert back to advertisements. First publicity, then advertising is the general rule...sooner or later a leader has to shift its branding strategy from publicity to advertising.

"Go back in history. By far the most successful brands are those that kept a narrow focus and then expanded the category as opposed to those brands that tried to expand their names into other categories" - The 22 Immutable Laws of Branding

By frequently releasing products, Google hopes to ensure rapid growth even if its search engine loses steam. Users would have more reasons to stay on Google's sites rather than move on to services offered by close rivals, Yahoo and Microsoft. This strategy is no different than Ford or Chevrolet releasing new models of cars to satisfy everyone. In the short term this might lead to a few more sales, however, in the long run it makes it more difficult to maintain the company [1]. Google became a global phenomenon not by trying to be all things to everyone; they became out rageously successful by doing one thing insanely great; search. Now, however, they are beginning to lose focus by expanding out instead of vertically integrating [2].

Contd... Google Reality Check

Conclusion

In conclusion, the company has many great products; however, most of these never reach beyond the tech savvy crowd. For a product to be successful, it must be transferred from the innovators to the rest of the crowd. Since Google has so many Purple Cows, and the company offers little marketing leverage to these products, the word of mouth simply doesn't reach beyond Digg or TechCrunch readers. Google's half hearted attempt at pushing their products out the door is detrimental to the product, and in the long run, also to the company. For the future, Google can do two things to insure growth; stop releasing products that have little relevance to its core business and aggressively market the products it already has out on the Internet. In short, Google needs products that complement its search business.

Notes

[1] The emphasis in most companies is on the short term...while frequent release may bring in easy money in the short term, in the long term it wears down the brand until it no longer stands for anything. Fortunately, Google is beginning to realize the problem with creating too many irrelevant products. However, I feel that by entering print/radio advertisements, they continue to take steps away from Search.
[2] "Good things happen when you contract rather than expand your business." - The 22 Immutable Laws of Branding.
[3] These ideas are never my own. In fact, I don't think any idea can ever be independently developed. The thoughts presented here were inspired by the authors of these books: "Purple Cow " by Seth Godin, "Crossing the Chasm " by Geoffrey Moore, "The 22 Immutable Laws of Branding " by Laura and Al Ries, "The Search " by John Battelle, and "The Google Story " by David Vise.

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anweshi_edit@yahoo.co.in

Product Review : iPhone : A Cellphone-cum-iPod

Expectations are high from Apple's iPhone, but are everything so rosy as painted for this cellphone-cum iPod? Check out

Apple is at it again. After reinventing the personal computer in 1980's with the Macintosh and spearheading the digital media revolution with its iPod portable music and video player, it has entered into the mobile phone market with its touch-screen iPhone.

Apart from functioning as a phone, iPhone can act as a media player and also as a wireless Web surfing device. The likes of Motorola, Nokia and Samsung are taking on this challenge seriously, but is iPhone worth the fear? Yes, only if you ignore its high price and the fact that it is not 3G.

The good
iPhone combines three products- a mobile phone, a wide screen iPod and the Internet- into one small and lightweight handheld device. It is powered by a main processor and memory chips from Samsung Electronics, an audio processing chip from Britain's Wolfson Microelectronics and a Wi-Fi wireless chip from Marvell Technology Group.

You can use it internationally. It's a quad-band GSM phone and will work around the world. Before you travel, just make sure that international dialing and roaming are enabled and that the places you're going offer GSM coverage.

Also iPhone works with your PC and Microsoft Windows. It supports popular e-mail standards like IMAP and POP3. Beside, iPhone works with most popular e-mail services, including Yahoo! Mail, Google Gmail, AOL and Mac Mail. Yahoo! Mail supports 'push' e-mail and can automatically deliver new e-mail messages to your iPhone. Like an iPod, your iPhone will charge using the included USB 2.0 cable connected to your computer or to included USB power adaptor.

The bad and the ugly
With more than 500,000 units sold since the launch on 29 June 2007, iPhone has undoubtedly become one of the rages of all time. But, not everything is so rosy for iPhone. It does have a multi-touch screen, 4 to 8GB of storage capacity, and an iPod too. But, what it doesn't have is video capture capacity. It is not 3G and you cannot transfer music from one device to another, the way you do with your regular smart phones.

You must have a real heavy pocket to afford this 135gm iPhone. iPhone sells for double of its production cost, says technology industry researcher ISuppli. The most expensive model, which retails for $599, has component and manufacturing cost of $265.83.

Similar to iPod, you cannot replace the battery of iPhone; you will have to send it to Apple for replacement. And Apple will take at least three days to change your battery costing you around $79, plus $6.95 shipping, i.e., $85.95 per unit. In Indian currency, it's around Rs.3435. Besides, you will have to pay local taxes on this.

What's more, iPhone's finger touch screen could limit its appeal to people who use smart phones such as RIM's Blackberry and Motorola's Q, which both have keyboards

A cheaper way out

Realizing the fact that sales of iPhone are expected to be limited to a small percentage of the market due to its high price, Apple plans to launch a cheaper version of iPhone in the fourth quarter that could be based on the ultra-slim iPod nano music player.

The Nano iPhone will be priced at $300 or lower, as against $500 to $600 for existing verions.

iPhone Specifications
Screen size: 8.9 cm
Screen resolution: 320x480 at 160ppi
Input method: Multi-touch
Operating System: OS X
Storage: 4 GB or 8 GB
GSM: Quad-band (MHz: 850, 900, 1800, 1900)
Wireless data: Wi-Fi (802.11b/g) + EDGE+ Bluetooth 2.0
Camera: 2.0 mega pixels
Battery: Up to 5 hours, talk/video/ browsing. Up to 16 hours, audio playback.
Dimension: 11.5 x 6.1 x 1.2 cm
Weight: 135 grams

Sagar B Yadav
I BTech (EIE)

At work and play - A glimpse

Prof.Shastry - Our professor in charge in action outside the classroom.

Before the cricket match started - Introducing oneself.

ASTHA members meeting on 8th Oct 2007

After the meeting - The first year students getting tips from the ten pointer (Anup nambiar)

The hall was full and so were our hesrts !

When the mime boy doubled up as the birthday boy...

Asthan's pick : A pattern that connects and the unifying spirit

Science is nothing more than the logical study of nature and the goal of science is a better understanding of how nature works. **Technology**, in contrast, is the practical application of scientific knowledge to solve a specific problem. **Engineering** is the most practical form of technology. An **Engineer** is likely to use well understood technology to find a practical solution to a problem.

Prof. Amalendu Bandyopadhyay, Birla Institute of Fundamantal Research in his article "Into the Unknown " in - Oct5 , 2007 issue of Frontline magazine.