

Nurturing and Retaining Indian Talent for Making India a Knowledge Super Power

by

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1. I was traveling from Johannesburg to Mumbai. In the plane, I picked up the latest issue of Time magazine. I read the interview of Peter Mandelson, who is Tony Blair's most valued adviser. I was struck by what I read. He said 'in the space of a decade, China and India have emerged as dramatic, dynamic competitors. Over here and in America, there is a sense that this has put our jobs and livelihoods at stake'. Would you have ever imagined US & Europe being challenged by India?
2. Just about a year ago, I was having a dinner with the famous economist Jeffrey Sachs. We were discussing the Goldman Sachs report, which predicts that India along with China and USA will be the three top economies of the world by 2050. Jeffrey Sachs said that he disagreed with this report. I wondered why. I thought he meant that India could not perhaps be the part of this privileged pack. I was surprised when he said something quite to the contrary. He said that this could happen sooner than 2050 and also that if India plays its card right, it could occupy even the top position!
3. But there is more to come. As a member of Indo-German Consultative Committee, I remember attending a meeting in Bonn. There was a presentation by a senior German member. He expressed a concern that one third of Germany in the next 10 to 15 years will be more than 60 years old. A question was put to our German friend. Germany and Japan became economic powerhouses because they excelled

in technological innovations. But then innovation is the domain of the young. How could a predominantly old Germany survive when it becomes old? The reply came quickly from our German friend. He asserted that in the twenty first century, Germany would be sourcing the innovations from a country that is expected to lead in innovation-and that country will be India.

4. We all thought that he was being nice to the Indian delegation. But that is not the case. What he predicted is already happening. One hundred and fifty major companies from USA and Europe have set up their research, design and development centers in India in the last five years and they are not small. Some of them employ 2000 to 3000 employees. They include big names such as Boeing, Daimler Chrysler, Du Pont, General Electric, General Motors, Intel, IBM, Microsoft, Siemens, Unilever and so on. And more are coming every day. Why is this happening? As legendary Jack Welch, the CEO of General Electric (GE) said during the inauguration of GE's R&D Center in Bangalore 'India is a developing country but it is a developed country as far as its intellectual capital is concerned. We get the best intellectual capital per dollar here – thanks to the amazing quality of Indian talent'. I believe the key word in his remarks is 'Indian talent'. Let me explain.
5. The turnaround in the fortune of different countries at different points in their history has been attributed to different factors. For USA, it was roads and railways, which led to the big spurt in its economic growth. For Britain, the same factor was textiles. For Denmark, it was milk and milk products. For Sweden, it was timber and timber products. For Middle East, it was oil. What is the oil for India in the 21st Century? I strongly believe that it is IT. And by that I do not mean IT as in 'Information Technology' but IT as in 'Indian talent'. It is this talent that is going to catapult India to great heights in the comity of nations.
6. But what makes me confident about the unique power of this Indian talent? This confidence comes to me when I look at all of you here today. Look at the fantastic richness of Indian talent in this convention hall. If there was a measure through which we could quantitatively estimate the talent per square foot, then I believe that

the highest density of that talent in the world today is here in this convention hall today! And as a Maharashtrian, I feel proud of this fact.

7. The uniqueness of the Indian mind has been well accepted. It was the Indian mind, which recognized the power of the fusion of mind, body and spirit. The products of Indian mind have influenced the events of the twentieth century. For example, we could not talk about digital economy if binary digits, comprising the numerals 'zero' and 'one' did not exist. But who invented zero? We all know that it was the Indian mind, which invented the concept of 'shunya' or the zero.
8. But then you would say here he is one more of those Indians gloating about the glory of our past. Let me assure you that this journey of Indian mind continues unabated. For instance, we always worry about the fact that in Olympics after Olympics we hardly win any medals inspite of being a country of a billion. But I am proud to say that when it comes to the Olympics of mind, we win all the time. Last year, in the Science Olympiads for the school children, we had sent 19 young Indian children. There was a competition amongst eighty nations. Do you know how many of them returned with medals? All 19 of them. So powerful was the quality of those young minds. And so is the case with the quality of all the 3000 minds, who have gathered here.
9. Let us just take one example of the IT industry. The dominant position of Indian diaspora in the US IT industry is legendary. I read the report 'India and the Knowledge Economy' by the World Bank Institute three days ago in Delhi. I was proud to read that approximately 300,000 Indians now work in Silicon Valley. They account for more than 15 per cent start-ups. They have an average annual income of about 200,000 US dollars, almost 5 times compared to the US average!
10. And it is not in terms of income alone that they have done well. What Indian diaspora has been able to accomplish is path breaking, whether it is Suhas Patil of Cirrus Logic or Gururaj Deshpande of Sycamore Networks or Vinod Khosla of Sun Microsystems or Victor Menezes of Citibank or Rajat Gupta of McKinsey or Raghuram Rajan of IMF or Rakesh Gangwal of US Airways or Arun Netrawali of Bell Laboratories. The list goes on. They have all done us proud.

11. And the young generation continues to dazzle us too. I was happy to see MIT's Technology review ranks of top innovators in the US under the age of 35. 9 young Indians were included in that list. What they have done is amazing. Here is Smruti Vidwans from University of California. She has invented a new approach to develop drugs against Tuberculosis. Here is Ravi Kane of Rensselaer Polytechnic Institute, who discovered a simple method for rapidly creating cellular carbon nanotube structures of different shapes. Here is Ramesh Raskar of Mitsubishi Electric, who developed a large computing systems combine images from multiple projects.
12. But then you would say that all this Indian talent is in USA. You talk about Indian talent in Silicon Valley in USA. Any one can legitimately ask as to why do Indian genes express themselves in Silicon Valley? Why don't these same Indian genes express themselves in the Indus Valley? Let me address this issue by sharing with you an anecdote.
13. I was involved in the process of interview for the Chief Innovation Officer of National Innovation Foundation, which I chair. I found that the individual that we were interviewing had an experience in branding a product. I said 'I want to brand my India. How would you do that?' He was puzzled. He had branded soap, a refrigerator, but he wondered as to how he could brand a nation? I said 'I will make it easy for you. Let me tell you as to how other nations brand themselves. For instance, US brands itself as a land of opportunity!' He immediately replied, 'I will brand India as a land of ideas'. Now here is the issue. India is a land of ideas but it is US that is a land of opportunities. That is why our young people with aspirations go to USA, which provides them an opportunity to reach their own potential. The challenge before all Indians, whether they are in India or abroad, is to make India the land of opportunity.
14. It is perceived that people go to the developed world in search of gaining a higher income – physical income to be precise. But I do not think that is the only reason. Otherwise, why would the proportion of scientists and engineers from Japan who went to USA, and never returned, would have increased by 100% during 1995 to

1999 as shown by the 2002 NSF study? After all, Japan is a rich developed country unlike India. The answer is provided by the Italian scientist Riardo Giacconi, a Noble Laureate in Physics, who summed it up beautifully, when he said ‘A scientist is like a painter. Michael Angelo became a great artist, because he had been given a wall to paint. My wall was given to me by the United States’. Are such walls to paint are now being given in India? In other words, can India be perceived as a land of opportunity? I am happy to find some winds of change.

15. I spoke to the Chairman, NASSCOM recently. They have done research on returning Indian professionals. He told me that during the last three years over 25,000 professionals have returned, around 90% of them being IT professionals! I spoke to the CEO of a major venture capital company, which exclusively funds biotech start up companies. He told me that 60% of the proposals they have cleared are from young techno-entrepreneurs, who want to return from USA. I went to GE’s R&D Center a few months ago. They have 2400 professionals working there. They told me that 700 of them were young Indians, who had returned in the last 3 to 4 years. I met the Intel chief last month. He told me that in their Indian R&D Center, they are having 2600 professionals. 400 of them have come back from USA over the last 3 to 4 years. Admittedly, this is a trickle and not a torrent. But it is heartening to see the change.

16. But the real good news is from the side of Indian industry, which is beginning to realize that if they do not innovate, they will perish. Indian drugs and pharmaceutical industry survived so far by copying known molecules. Now at least ten Indian companies are inventing their own new molecules by getting into discovery research. I spoke to several pharma industry leaders. Collectively, they are looking to employ now hundreds of bright young Ph.D.s. In fact, they are complaining about the shortage of suitably skilled Ph.D.s. in India! Other sectors of industry are booming too. In auto industry, the wheel has turned the full circle. Fifty years ago, it was British Morris Oxford, which was sold as Indian Ambassador on Indian roads. Today, it is Indian Indica that is being sold as City Rover on London roads!

17. In R&D, India's real advantage is cost cum competence. Take our space programme. The R&D budget of this programme is barely half a billion dollars, say 5% of General Motors R&D budget. Today, we design, develop, test and fabricate our own launches. We have moved from one sophisticated launching vehicle to another. We have moved from ASLV to PSLV to GSLV. Not only do we launch our own satellites today but that of our foreign customers too and that includes Germany and Korea. Tina Cory, the Director of Application and Training of Eosat, which is a US based satellite imagery marketing firm recently said 'IRS series of remote sensing satellites is a 'jewel in the crown'. Should we not be proud, when those who know the market, say that our IRS may actually achieve 30 percent of the global market? And all this is done with 5% of the General Motors annual R&D budget, since our annual space R&D budget is barely half a billion dollars!

18. With such an advantage, the challenge before all of us Indians is to work together to make India into a **real land of opportunity**. The role of Indian diaspora can be very pivotal in this case. India recognizes this. A separate Ministry has been created to deal with this most valued human capital asset namely the Indian diaspora. The Government of India recently amended the citizenship Act of 1955 to offer dual citizenship to all overseas Indians who migrated from India after 26th January 1950. This opens up infinite possibilities for productive partnerships with the Indian diaspora. We now need to change our perception of the word 'migration' and replace it progressively by 'mobility'! Indeed now we can move from the notion of 'brain drain' to 'brain gain' and even further to 'brain circulation'.

19. The fact that even without the physical return of the Indian diaspora, they can contribute in the development of India, can be provide by our success in the software industry. Many IT professionals in US rely heavily on strengths back home of the huge pool of skilled computer experts and software professionals-to subcontract work to their country of origin, thus creating a 'virtuous' cycle for the Indian IT sector and economy. India diaspora's contribution mostly in the form of knowledge linkages, that is, with foreign markets has helped Indian firms to absorb technical and managerial knowledge. The initial impetus for outsourcing to India

has come from employees of Indian origin. The success of the Indian diaspora has also attracted the attention of major MNCs to India's potential in the IT sector.

20. Government can do a lot in taking measures to retain the Indian talent in India. I am happy to see some recent initiatives taken by the Government of India through its Department of Science & Technology. One of the notable initiatives is Ramanujan Fellowship. Any young outstanding Indian scientist, who wants to return to India, will be given a monthly remuneration of Rs. 50,000 with Rs. 5.00 lakh per year for contingency to help him in his research. This Fellowship will be available upto 5 years. There is no upper limit on the number of such Fellows. Hopefully, such Fellows will find a challenging opportunity in an institution or industry. We need many more such initiatives.

21. I have talked about getting the Indian talent back that was lost to us. But what about spotting talent and nurturing it in India? We need to 'catch them young', as they say and then mentor them. Let me give an example of what my own CSIR is doing.

22. CSIR has set up the CSIR Diamond Jubilee Invention Award for school children. The objectives of this to spot creativity and innovativeness amongst children and create interest and awareness for intellectual property amongst the children. Any Indian student enrolled in an Indian school below the age of 18 years can compete in this award competition. We have run this competition for three years. We have received thousands of entries. It was amazing to see the power of Indian talent. The age group of these young inventors ranged between 11-18 and from class six to twelve.

23. The Braille developed by Madhav Pathak from a Jabalpur school received the first CSIR Diamond Jubilee Award. Madhav Pathak improved a conventional Braille slate to make writing easier for the blind. It was very tedious for a blind child to memorize more than 300 combinations, since reading and writing is done in the opposite way for a conventional Braille slate. Madhav's innovation makes it possible to read and write from left to right. This invention later received international prizes too.

24. But CSIR does not stop at just spotting the talent. It nurtures it too. CSIR applied for patents in the name of Madhav. Further, the model developed by Madhav was improved by one of CSIR's laboratory, namely, Central Scientific Instruments Organization (CSIO) in Chandigarh. A prototype was developed by CSIO and was evaluated at a blind school in Chandigarh. The new prototype is an improved pocket version providing more space to read and write both for conventional Braille writers and the new Braille writers. We will take Madhav's innovation forward now. Who knows what difference the product coming out from this young Indian talent can make to the blind of the world?

25. I do strongly believe that we need to do much more to spot and nurture young talent all around the country. This process has to begin from the level of school children itself. And this cannot just be the responsibility of the Government. The corporate world must contribute it in a big way. In this context, I am happy to see the efforts by leading corporate's, such as Tatas, Birlas, Reliance, Mahindras, WIPRO, etc. Interestingly even multinational companies such as Microsoft, INTEL, BASF, and Dupont are also searching and recognizing young Indian talent.

26. I would say that every Indian, whether in India or abroad must help the cause. On 3rd July last year, I addressed 3,000 NRIs in Atlanta in USA. At the end of my talk I gave an idea. Apparently, there are 300,000 professionals in Silicon Valley whose average income is more than 200,000 US dollars. This makes it an annual income of 60 billion dollars. Supposing they would be able to spare one cent out of 10 dollars in supporting and nurturing young Indian talent, we would have 300 crores in Indian rupees. If we assume that a total support to a single student will need Rs. 10,000 per year, we are talking in terms of helping 3 lakh students. The central point I made is that the loss of one cent out of 10 dollars will not make any difference to them. But it will add so much to the Indian talent pool. The idea was received with great enthusiasm. That convinced me that you can take an 'Indian out of India' but not 'India out of an Indian'. Therein lies our hope.

27. I have, by now, developed the reputation of being a 'dangerous optimist' about the great future of India. The reason I earned this reputation is attributed by some to the

address that I delivered to the gathering of 5000 scientists at the Science Congress in the year 2000 in Pune. I had said, “The next century will belong to India, which will become a unique intellectual and economic power to reckon with, recapturing all its glory, which it had in the millennia gone by”. I am confident that it will nurture and retain Indian talent in India, then not only will we become a knowledge super power, but we will also assume a predominant position in the comity of nations, which had always belonged to us.