

## Indian Contributions to American and Global Progress

While traveling and giving lectures in India in the winter of December, 2002, a few questions that were presented to me was how America seems to be so progressive, as if it is the Americans themselves and their lifestyle that should be followed. However, I pointed out that it is the inter-cultural contribution that makes the progress in America possible, including those made by Indians. The following includes a few of the points I made in answer to such questions.

1. Who is the co-founder of Sun Microsystems? Vinod Khosla. The Sun founder also had an Indian Professor in Computer Technologies at Louisiana State University.
2. Who is the creator of the Pentium chip (needs no introduction as 90% of the today's computers run on it)? Vinod Dham.
3. Who is the third richest man in the world? According to the latest report on Fortune Magazine, it is AZIM PREMJI, who is the CEO of Wipro Industries. The Sultan of Brunei is at 6th position now.
4. Who is the founder and creator of Hotmail (Hotmail is world's No.1 web based email program)? Sabeer Bhatia.
5. Who is the president of AT & T-Bell Labs (AT & T-Bell Labs is the creator of program languages such as C, C++, and Unix to name a few)? Arun Netravalli.
6. Who is the GM of Hewlett Packard? Rajiv Gupta.
7. Who is the new MTD (Microsoft Testing Director) of Windows 2000, responsible to iron out all initial problems? Sanjay Tejwrika.
8. Who are the Chief Executives of CitiBank, Mckensey & Stanchart? Victor Menezes, Rajat Gupta, and Rana Talwar. Indians are the wealthiest among all ethnic groups in America, even faring better than the Caucasians and natives. There are 3.22 million Indians in USA (1.5% of population).
9. Furthermore, the Consul General in New York, Mr. Pramathesh Rath has said that India (as of 2002) is the largest source of international students accounting for more than 11 percent or 67,000 of the over half-million studying in various universities in the U.S. In this case, Indian students for the first time outnumbered the hitherto largest source of international students, which was China.  
For the period of 2002-03, Indian students remain number 1 in U.S. university enrollments, totaling 74,603, up from the previous year. This accounts for a good 13% of the 586,323 international students. This means the Indian student population in the U.S. has doubled in the last 7 years. The U.S. authorities also appreciate this since it brings in large sums of money for the U.S. economy. It also allows the Indian talent to contribute to the U.S., as well as brings home to India a work force with cutting edge skills.
10. Indian doctors, numbering more than 35,000, constitute over five percent of all physicians in America.
11. Indians constitute ten percent of all medical students in America.
12. Indians also own nearly 40% of all the small and mid-size hotels in the country.

13. Another point is that three-fourths of all graduates from the prestigious IIT university in India are in the U.S.

14. Let's not forget that it was such spiritual visionaries as Srila A. C. Bhaktivedanta Swami Prabhupada, Vivekananda, and others who first brought notice of the true glories of Indian Vedic philosophy to the American public, and helped change the public's view of spirituality, popularize the vegetarian diet and yoga, and make "Hare Krishna" a household word.

**Additional facts** were recently published in a German magazine, which deals with

#### WORLD HISTORY FACTS ABOUT INDIA.

1. India never invaded any country in her last 1000 years of history.
2. India invented the numerical system. Aryabhatta invented 'zero.'
3. The world's first university was established in Takshila in 700 BC. More than 10,500 students from all over the world studied more than 60 subjects. The University of Nalanda built in the 4th century BC was one of the greatest achievements of ancient India in the field of education.
4. According to the Forbes magazine, Sanskrit is the most suitable language for computer software.
5. Ayurveda is the earliest school of medicine known to humans.
6. Although western media portrays modern images of India as poverty stricken and underdeveloped through political corruption, India was once the richest empire on earth.
7. The art of navigation was born in the river Sindh 5000 years ago. The very word "Navigation" is derived from the Sanskrit word NAVGATI.
8. The value of pi was first calculated by Budhayana, and he explained the concept of what is now known as the Pythagorean Theorem. British scholars have last year (1999) officially published that Budhayan's works date back to the 6th Century, which is long before the European mathematicians.
9. Algebra, trigonometry and calculus came from India. Quadratic equations were by Sridharacharya in the 11th Century; the largest numbers the Greeks and the Romans used were 106 whereas Indians used numbers as big as 1053.
10. According to the Gemological Institute of America, up until 1896, India was the only source of diamonds to the world.
11. USA based IEEE has proved what has been a century-old suspicion amongst academics that the pioneer of wireless communication was Professor Jagdeesh Bose and not Marconi.
12. The earliest reservoir and dam for irrigation was built in Saurashtra.
13. Chess was invented in India.
14. Sushruta is the father of surgery. 2600 years ago he and health scientists of his time conducted surgeries like cesareans, cataract, fractures and urinary stones. Usage of anaesthesia was well known in ancient India.
15. When many cultures in the world were only nomadic forest dwellers over 5000 years ago, Indians established Harappan culture in Sindhu Valley (Indus Valley Civilization).
16. The place value system, the decimal system was developed in India dating back to at least 100 BC.

**To elaborate on these points:**

A similar article to the one above was originally sent into the *Indian Express* newspaper, June 22, 1999, by Maxwell Pereira, and reproduced in the *Annual Research Journal - 2000*, by the Institute for Rewriting Indian (and World) History, which follows.

Some may dispute the facts, like, "India never invaded any country in the last 10,000 years of her history." But when many cultures were nomadic forest dwellers over 5,000 years ago, India established the Harappan culture in the Indus Valley. The world's first university, established in Takshila in 700 BC, had 10,500 students from all over the world studying more than 60 subjects. The large university at Nalanda, dating from the 4<sup>th</sup> century BC, is acknowledged as one of the greatest achievements of ancient India in the field of education. And Sanskrit, through Latin, is accepted as the mother of all European languages. A 1987 report in *Forbes* magazine said Sanskrit was the most suitable language for computer software.

India contributed to the number system by the numeral 0, innovated by Aryabhatta. Algebra, trigonometry, and calculus originated in India. The quadratic equation was solved by Sridharacharya in the 11<sup>th</sup> century. The Greeks and Romans contented themselves with rather small numbers, while Hindus (the then inhabitants of the land of Sapta-Sindhu) used units as big as 10 raised to the power of 53 with specific names as early as 5,000 BC, during the Vedic period. Today, the largest unit in use is *tera*, or 10 to the power of 12.

The solar year was calculated as 365.25875684 days by Bhaskaracharya in the 5<sup>th</sup> century, hundreds of years before the astronomer Smart. The value of *pi* was first calculated by Bodhayana, who also discovered the Pythagorean Theorem in the 6<sup>th</sup> century, long before the European mathematicians. The place value system and the decimal system were developed in India in 100 BC. [Further research has placed the dates mentioned in this paragraph as actually being much earlier for some of these inventions, as explained in *Proof of Vedic Culture's Global Existence*.]

Ayurveda is the oldest school of medicine codified by Charaka 2,500 years ago. Sushruta, the father of surgery, conducted complicated procedures dealing with cataracts, artificial limbs, fractures, urinary stones, plastic surgery, caesarean section and brain surgery 2,600 years ago. Over 125 surgical instruments were in use. The use of anesthesia was also known in ancient India.

A century-old suspicion that the pioneer of wireless communication was Prof. Jagadish Bose and not Marconi now stands proven. And *Nature* has reported that a Danish physicist and his team in the US have slowed down light from the speed of 300,000 km per second to 71 km per hour, using the Bose Einstein Condensate to stall it in its path. And the forensic use of fingerprints was discovered and developed in Calcutta.

The art of navigation was born in the river Sindh 6,000 years ago. The very word "navigation" is derived from the Sanskrit *naugatih*. Although modern images of India show poverty and underdevelopment, it was the richest country on earth until the arrival of the British. Christopher Columbus was attracted by India's wealth. According to the Gemological Institute of America, until 1896 India was the world's only source of diamonds. Furthermore, the earliest dam for irrigation was built in Saurashtra. According to the Saka King Rudradaman I, a beautiful lake called Sudarshana was constructed on the hills of Raivataka in Chandragupta Maurya's time.

In regard to games, there is no doubt that the game of chess is an Indian invention in the form of Shatranj or Astha Pada. Polo originated in Manipur. The first man on Everest was Tenzing Norgay, not Sir Edmond Hillary.

**Some additional facts about India are the following:**

1. The number of companies listed on the Bombay Stock Exchange, at more than 6,000, is second only to NYSE.
2. Four out of 10 Silicon Valley startups are run by Indians.
3. With 800 movies per year, India's film industry overshadows Hollywood.
4. The organized lottery market in India is US\$7bn (2% of GDP).
5. India consumes a fifth of the world's gold output.
6. Indians account for 45% of H1-B visas issued by the US every year.
7. Growing at 6%, in 25 years Indian GDP on a PPP basis will be at the same level the US is at today.
8. Six Indian ladies have won Miss Universe/Miss World titles over the past 10 years. No other country has won more than twice.
11. Bank deposits in India roughly equal 50% of its GDP OE again, among the highest in the world.
12. Indian Railways is the largest railway network in the world under single management.
13. India has the third-largest army in the world, nearly 1.5 million strong.
14. India is the largest producer and consumer of tea in the world, accounting for more than 30% of global production and 25% of consumption.
15. India is the world's premier centre for diamond cutting and polishing. Nine out of every 10 stones sold in the world pass through India.
16. India has the highest number of annual bulk drugs filings (77) with USFDA.
17. India is home to the largest number of pharmaceutical plants (61) approved by USFDA outside the US.
18. India's Hero Honda is the world's largest motorcycle manufacturer, with 2002 production of 1.7m units.
19. Other than US and Japan, India is the only country to have built a super computer indigenously.
20. Indian Railways is the largest employer in the world, with a staff of 1.6 million people.
21. It is the second-largest cement-producing country in the world, producing more than 110m tonnes.

22. Of the Fortune 500 companies, 220 outsource their software-related work to India.
23. There are 8,500 Indian restaurants in the UK, 15% of the country's total dining-out establishments.
24. India is the largest democracy in the world, with nearly 400m voting in the last national elections.
25. India has the second-largest pool of scientists and engineers in the world.
26. India has the third-largest investor base in the world.
27. According to the Gemological Institute of America, up until 1896, India was the only source of diamonds.
28. The Kumbh Mela festival, held every 12 years in the city of Allahabad, attracts 25 million people OE more than the population of 185 of the 227 countries in the world. In fact, in 2001, it attracted 27 million people on the main holy days in January, and 71 million over the course of the 6 weeks of the whole festival.
29. The Indian city of Varanasi, also known as Benares, is the oldest, continuously inhabited city in the world today.
30. There are 3.22 million Indians in the US.
31. Indians are the richest immigrant class in the US, with nearly 200,000 millionaires. From a sample of 2004 US Census based surveys, Asians are the highest earning subgroup with a median income of \$57,518 compared to the national average of \$44,389.
32. India is ranked the sixth country in the world in terms of satellite launches.
33. There are over 70,000 bank branches in India - among the highest in the world.
34. The State bank of India is the world's largest Bank in terms of branches.

### **Additional and Interesting Quotes About India.**

We owe a lot to the Indians, who taught us how to count, without which no worthwhile scientific discovery could have been made. Albert Einstein.

India is the cradle of the human race, the birthplace of human speech, the mother of history, the grandmother of legend and the great grand mother of tradition. Mark Twain.

If there is one place on the face of the earth where all dreams of living men have found a home from the very earliest days when man began the dream of existence, it is India. French scholar Romain Rolland.

India conquered and dominated China culturally for 20 centuries without ever having to send a single soldier across her border. Hu Shih. (Former Chinese ambassador to USA)

ALL OF THE ABOVE IS JUST THE TIP OF THE ICEBERG, THE LIST COULD BE ENDLESS. BUT, if we don't see even a glimpse of that great India in the India that we see today, it clearly means that we are not working up to our potential; and that if we do, we could once again see India as an ever shining and inspiring country setting a bright path for rest of the world to follow.

With all this evidence anyone can see the potential India and her people have exhibited in the past, only to have had it stifled and squashed by its conquerors over the centuries. Nonetheless, it could again become a global influence if allowed to do so, which is something that is again gradually happening after a long struggle toward freedom.

[Much more information of this kind is presented in Stephen Knapp's book "[Proof of Vedic Culture's Global Existence.](#)"]

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## **ADDITIONAL INFORMATION ON THE AFFECTS OF IMMIGRANTS ON THE AMERICAN ECONOMY**

A team of student researchers in the Master of Engineering Management program of the Pratt School of Engineering at Duke University led by Executive in Residence/Adjunct Professor Vivek Wadhwa, Research Scholar Ben Rissing, and Sociology Professor Gary Gereffi, has documented the economic and intellectual contributions of immigrant technologists and engineers to US competitiveness -- to understand the sources of US global advantage as well as what the US can do to keep its edge.

The results released on January 4, 2007, show a significant contribution by immigrants of Indian origin:

\*\*Indian immigrants have founded more engineering and technology companies in the US in the past decade (1995-2005) than immigrants from the U.K., China, Taiwan and Japan combined. Of all immigrant-founded companies, 26% have Indian founders.

\*\*Chinese (Mainland- and Taiwan-born) entrepreneurs are heavily concentrated in California, with 49% of Mainland Chinese and 81% of Taiwanese companies located there. Indian and U.K. entrepreneurs tend to be dispersed around the country, with Indians having sizable concentrations in California, Texas and New Jersey and the British in California and Georgia.

\*\* While in New Jersey, the share of Indian start-ups was a whopping 47 per cent, in Texas, it stood at 25 per cent. This was followed by California with 20 per cent, Florida with 18 per cent, New York with 14 per cent and Massachusetts with 10 per cent.

\*\*Almost 80% of immigrant-founded companies in the US were within just two industry fields: software (33%) and innovation/manufacturing-related services (46%). The software field contains computer programming services, prepackaged software, integrated system design, processing services and information retrieval companies. The innovation/manufacturing-related

services field includes a variety of electronics, computer and hardware design and service companies in addition to engineering services, research and testing.

\*\* Immigrant groups from India, UK, Mainland China and Taiwan founded innovation/manufacturing related service companies in similar proportions over the past decade (accounting for 42% to 46% of all engineering and technology companies founded by each group). Entrepreneurs from India and the U.K. gravitated as well toward the software industry, which accounted for 46% and 43%, respectively, of their startups; but they were minimally represented in hardware-oriented sectors such as semiconductors and computers/communications. Immigrant founders from China and Taiwan started companies in a broader range of industries, and were more likely to start computers/communications (with 25% and 27% respectively) and software companies (19% and 17%). In addition, they were more likely to be founders of semiconductor companies (8% and 7%) than their Indian or UK counterparts.

\*\*Indian immigrants are the primary founders of immigrant companies in the innovation/manufacturing-related services fields. Just under a quarter of the immigrants who founded companies in this field are from India, followed at a considerable distance by Taiwan and China at 6% each. The Indian immigrant group contributes as well to the biosciences and computers/communications fields but is not a dominant force. In biosciences, India and Germany each contribute 10% of the companies founded by immigrants; the UK, France, Israel and Korea trail at 6%. In the computers/communications field, India-, Taiwan-, and China-born founders together accounted for just over 50% of all the immigrant start-ups from 1995 to 2005. India- and China-born immigrant entrepreneurs each founded 15% of the immigrant founded semiconductor companies from 1995 to 2005. These contributions were trailed by those of immigrant founders from the Philippines (10%) and Taiwan (10%). Finally, within the software field, Indian immigrants established 34% of the immigrant founded software companies from 1995 to 2005.

\*\*Based on an analysis of the World Intellectual Property Organization (WIPO) patent databases, the largest group of immigrant non-citizen inventors were Chinese (Mainland and Taiwan-born). Indians were second, followed by the Canadians and British.

\*\*A comparison with Saxenian's 1999 findings shows that the percentage of firms with Indian or Chinese founders in the Silicon Valley had increased from 24% to 28%. Indian immigrants outpaced their Chinese counterparts as founders of engineering and technology companies in Silicon Valley. Saxenian reported that 17% of Silicon Valley startups from 1980-1998 had a Chinese founder and 7% had an Indian founder. The new study found that from 1995 to 2005, Indians were key founders of 15.5% of all Silicon Valley startups, and immigrants from China and Taiwan were key founders in 12.8%.

\*\* In Research Triangle Park, 18.7% of startups had an immigrant as a key

founder, compared with the North Carolina average of 13.9. Indians constitute the largest immigrant founding group, with 25% of startups, followed by immigrants from Germany and the U.K., each with 15%.

\*\*Between 1990 and 2000, the population of Indian scientists and engineers (S&E) in Silicon Valley grew by 646% (while the total foreign-born S&E workforce grew by 246% and the region's total population of S&E, both native and foreign-born, grew by only 103%). In short, the growth of Indian entrepreneurship reflected the influx of Indian scientists and engineers to the region.

\*\*Silicon Valley's immigrant entrepreneurs led the nation in the 1990s by starting dynamic technology businesses that generate substantial wealth and employment in the US. Today they are contributing to the creation of new centers of technology and skill in their home countries. As these entrepreneurs collaborate with former classmates and colleagues in once peripheral economies like India and China, they are providing access to the markets and know-how that are critical to success in today's global economy.

\*\*There was at least one immigrant key founder in 25.3% of all engineering and technology companies established in the U.S. between 1995 and 2005 inclusive. Together, this pool of immigrant-founded companies was responsible for generating more than \$52 billion in 2005 sales and creating just under 450,000 jobs as of 2005. These immigrants come to the U.S. from all over the world to take advantage of the business, technology and economic opportunities in the country. Almost 26% of all immigrant-founded companies in the last ten years were founded by Indian immigrants. Immigrants from the U.K., China, and Taiwan contributed to 7.1%, 6.9% and 5.8% of all immigrant-founded businesses, respectively. These immigrant-founded businesses are unevenly located across the country. California and New Jersey represented hot spots for immigrant-founded engineering and technology business; Washington and Ohio possessed relatively low percentages of immigrant founded businesses. Some immigrant groups displayed tendencies to start businesses in a particular state. For example, 81% of businesses founded by Taiwanese immigrants were located in California.

\*\*This research shows that immigrants have become a significant driving force in the creation of new businesses and intellectual property in the U.S. - and that their contributions have increased over the past decade.

\*\*The key to maintaining US competitiveness in a global economy is to understand America's strengths and to effectively leverage these. Skilled immigrants are one of America's greatest advantages.

The full report can be read at [http://memp.pratt.duke.edu/downloads/americas\\_new\\_immigrant\\_entrepreneurs.pdf](http://memp.pratt.duke.edu/downloads/americas_new_immigrant_entrepreneurs.pdf)