

Maslow's Hierarchy of Needs theory to reinforce Scientific Research in India

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Abstract:

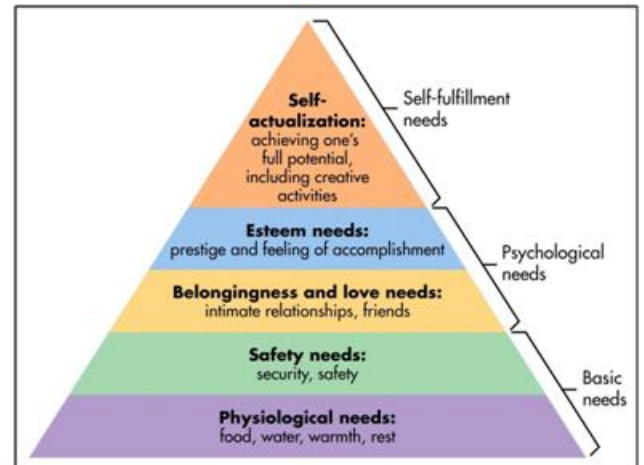
Science, Technology and Humanities are the three important pillars of any country's economy. The development of these three areas plays a prominent role in the development of an economy. One of the oldest civilizations in the world, the Indian civilization has a strong tradition of Science, Technology and Humanities. India was actively contributing to the field of science and technology centuries long before modern laboratories were set up.

Many theories and techniques discovered by the ancient Indians have created and strengthened the fundamentals of modern science and technology. At that time there is no special demarcation between Science, Technology and Philosophy. Most of the ancient Indian scientists are also great philosophers. Humanities always reinforce the development of science and technology. Management is one of the humanities, where no scientific researcher has minimum knowledge in it.

Moreover, they consider it as an inferior discipline to them. India is backslidden in the area of Science of Technology compared to most of the western countries due to the division of knowledge into disciplines and, integration between disciplines is least focused. This paper tries to critically examine the loopholes in the management of scientific research in India and propose the methods for the reinforcement of scientific research through the applications of Maslow's theory of Hierarchy of needs.

Introduction:

Maslow's (1943, 1954) hierarchy of needs is a motivational theory comprising a five-tier model of human needs, often depicted as hierarchical levels within a pyramid [1].



Maslow stated that people are motivated to achieve certain needs and that some needs take precedence over others. Our most basic need is for physical survival, and this will be the first thing that motivates our behaviour. Once that level is fulfilled the next level up is what motivates us, and so on. This five-stage model can be divided into deficiency needs and growth needs [2]. The first four levels are often referred to as deficiency needs (D-needs), and the top level is known as growth or being needs (B-needs). The deficiency needs are said to motivate people when they are unmet.

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Also, the need to fulfill such needs will become stronger the longer the duration they are denied. For example, the longer a person goes without food, the hungrier they will become. One must satisfy lower level deficit needs before progressing on to meet higher level growth needs. When a deficit need has been satisfied it will go away, and our activities become habitually directed towards meeting the next set of needs that we have yet to satisfy. These then become our salient needs [3]. However, growth needs continue to be felt and may even become stronger once they have been engaged. Once these growth needs have been reasonably satisfied, one may be able to reach the highest level called self-actualization.

Every person is capable and has the desire to move up the hierarchy toward a level of self-actualization. Unfortunately, progress is often disrupted by a failure to meet lower level needs. Life experiences, including divorce and loss of a job, may cause an individual to fluctuate between levels of the hierarchy. Therefore, not everyone will move through the hierarchy in a uni-directional manner but may move back and forth between the different types of needs. Maslow noted only one in a hundred people become fully self-actualized because our society rewards motivation primarily based on esteem, love and other social needs.

Application to Scientific Research in India:

To be constantly creative, one needs to be above the first three levels of Maslow Hierarchy. This is also where the most prominent scientists, mathematicians, and inventors reside. It is believed that some of those who made their name in science (famous) were either rich enough to never have to worry about the basic needs or were passionate enough to get by at little on each level. Since the question is India-specific, Vikram Sarabhai and Homi Bhabha were born to famous industrialists. J C Bose was born to a civil servant and went to England to pursue his studies. I shall, however, point out the exceptions too.

There were CV Raman and Ramanujan who proved their mettle in spite of being born in not so rich families. But they did get by on little in sheer pursuit of truth and passions and went above the degree to the level of self-actualization [4]. This was magnificent and that's why they are so highly revered. In India, throughout their lives, people have kept dancing within the first two levels of Maslow's hierarchy. Several were confined to three levels. Some were able to make it to the fourth level and only a few reached the highest level of Self Actualization.

So the major reason is development, or in simple terms money. Now, and of course, there are many reasons, which people in science and engineering frequently observe for the relative backwardness of Indian science and technology, but they all sprout directly or indirectly from the relative poverty in developing nations. The following is the list to give a depth to this answer.

Research Funding:

This is a major reason of relative backwardness of India in the research world. A Ph.D. in one of the best research institutes in India is paid a maximum of 28000 INR per month which roughly equals 434 USD which is terribly less in the current scenario when HRD ministry proposes INR 75000 per month fellowship for IIT researchers in March, 2017. Researchers are time and again pulled down from the self-actualization level to the need to fulfill their physiological needs [5]. The situation worsens when they have a family (wife and kids) which most Ph.Ds does have. And since Ph.D. is the most defining period of a scientist's life, it slowly eats away the student's creativity and intelligence if he/she is not strong enough.

Language barrier:

Although English is very widely spoken in India, it is still not the primary language.



We can see many research scholars, at the Universities and Colleges, searching for synonyms of a word they want to use in their papers, complaining about the lack of training in technical writing or even fighting pettily with co-authors on the correct use of punctuation. All those who are sufficiently good at these things, write a good Statement of Purpose and leave the country to pursue higher studies abroad. A very few of these people return to do science in India. Some start their businesses, others never return [6].

Current situation:

The Current scenario of scientific progress (mainly in theoretical science) is not up to the mark. So much has already been invented that most of the researchers have hit the dead end and are left wondering where can they go or innovate. This ultimately results in burnout if they are not strong enough. (Even Feynman kept complaining about being born later than Newton and Einstein as he believed he could have invented their theories pretty easily) And then there is the information overload on the internet and everywhere which creates even more as people are exposed to possibilities [7]. So if a professor is working on devising a new smart material and the next day he/she feels that he/she actually can get funding, if he/she does an applied project instead, he/she is bound to be confused about the purpose of his efforts. Generally, he/she will get better output (again financially) if he/she works on the real world stuff and leaves theoretical domain. Similar is the situation in which he/she gets an opportunity to do a startup.

Theoretical and practical skills:

Indian researchers lack an understanding of the importance of these two factors. We can see many researchers (even professors) who have rock strong conceptual knowledge but who struggle with implementing their ideas through experiments or presenting them to prove their worth. Likewise, many have rock strong practical understanding, excellent presentation skills and can get things done anytime but

their conceptual understanding and theoretical background is so weak that they are unable to innovate something radically new. I believe, however, it varies from person to person [8].

Respect from society for professors and scientists:

The fourth level of Maslow's hierarchy of needs is Esteem. Believe it or not, respect and status are a major factor in self-satisfaction. In India, barring some top universities and educated societies, professors and scientists, leave alone those pursuing a Ph.D., are not given much respect, which is unfortunate and baffling at the same time. In developed nations, professors and scientists are regarded as the stereotypes of highest minds on the planet while in India this is not actually the case (Those from India already know this). This results in lack of contentment in professors and the epic level of brain drain from a country [9]. Actually, and usually, only money is respected in India. But that's expected as people are born in such a competitive environment (with the population in billions), that they are forced to be competent in order to survive. So, higher the money you earn higher respect you will get (usually). And money is not actually the area of scientists or professors.

Greed and Peer Jealousy:

Another thing which builds upon the lack of financial resources and terrible level of competition due to population density in developing nations is the greed for money and jealousy from those who have more is quite expected and obvious [10]. This results in relatively poor work ethic in academia (again barring top universities), a culture of rat race, people envying their peer's achievements, and ultimately the inability to reach self-actualization for innovating something new to become known (leave alone famous).

Conclusion:

India is an incredible country with a significant bunch of creative, passionate, and hard-working people. It is quite expected that as India will prosper and become



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more and more developed (rendering more money and growth in science and technology), the scientific talent will gradually unearth. Prime Minister of India, Modi said at the Indian Science Congress in the month of January, 2017, "India is now sixth in scientific output in the world. By 2030, India will be among the top three countries in science and technology, and among the most attractive destinations for the best talent in the world." Modi specified that the data was from the SCOPUS database, one of the two databases that track global scientific output. In order to achieve that goal, the government should focus to support the wellbeing of the researchers and research institutes in a concrete manner by addressing the issues mentioned in this article.

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