

## Entrepreneurship as a Career

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I envy the present generation of engineering students in AP! They have such a wide range of career choices!

In our time (early 1960's) there were very few engineering colleges around, so we were considered elite. Yet, for most of us, our career choices were limited to being an academic, a scientist, or an engineer at a government or public sector enterprise (the lower-left quadrant in Fig. 1). In fact many of us were quite content with being selected as an Assistant Engineer at the PWD department of AP Government. Once we put our foot in, our career advancement depended more upon how well we went along with our superiors than on our engineering performance or our capacity for technological innovation. Our only satisfaction was life-long job security.

Why was our generation so constrained? What has changed now? What new career choices are now available to you, the present generation of engineering students? In particular, is there potential for entrepreneurship as a career?

Fifty seven years ago, when India became an independent republic, economists round the world could be divided into two mutually exclusive camps. The capitalistic camp believed that overall public good is best achieved by encouraging market-oriented competition among empowered private individuals and companies. In sharp contrast, socialists believed that individuals are essentially driven by personal greed so they can't be trusted to be public-minded and, therefore, the responsibility for national economic growth should lie primarily with the government. In the event Indian political leaders of the day were more in sympathy with the socialistic approach. Thus was initiated India's long flirtation with central planning emphasizing the public sector at the expense of private enterprise.

The results were however mixed. While India made rapid progress in some sectors (e.g., the 'green revolution' in the agricultural sector), the overall rate of economic growth remained frustratingly low. But we were not alone in our failure. Almost every country following a similar

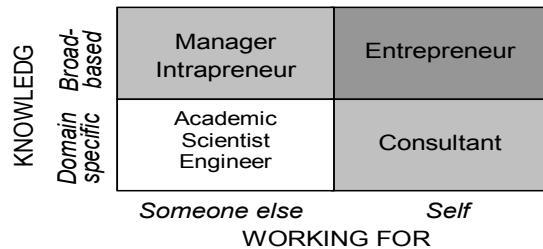


Fig. 1

path met the same fate when evaluated over a convincingly long period. By the end of the last century the writing on the wall was clear: economic growth cannot be planned in totality; and enterprises monopolizing bureaucratically stipulated industry sectors (read public sector units) cannot innovate and, hence, will stagnate.

Why did greed-driven capitalism outperform the more egalitarian socialism? Initially the answer was not clear even within the capitalistic camp, thus precipitating the ideological war between the two camps that lasted almost the entire twentieth century. This was because many of the arguments cited in either camp focused on the role of capitalist—the guys with the money. Capitalists saw them as the main drivers of economic growth. Socialists saw them as exploiters of labor. As it turned out, both had missed the main point.

One of the persons who initiated a more informed debate was Robert Solow, the winner of the Nobel Prize for Economics in 1987. Solow rigorously analyzed historical data describing the economic progress of a number of nations and demonstrated that the key to economic progress is not land, labor or capital but the capacity of the people to create new technologies and apply them in new ways, i.e., their capacity for technological innovation.

Fig. 2 illustrates Solow's observation convincingly. In the figure the wealth intensity of a nation (the average purchasing power of the people) is plotted against the technology index data collected by World Economic Federation demonstrates this amply. We see that wealth intensity increases exponentially with technology index (the capacity of the nation with regard to technology creation and use). USA is rich mainly because it is the most technologically advanced nation. China and India on the other hand have a long way to climb up the ladder of technology before they can reach a comparable economic state.

But what is the main source of technology growth? Joseph Schumpeter, an Austrian-American economist, is generally credited for having provided a convincing answer to this question (several decades before Solow's analysis). Schumpeter argued that innovation in business is the “fundamental impulse that sets and keeps the capitalist engine in motion.” Economic upswings in the capitalistic world are caused by three related phenomena: invention, innovation and entrepreneurial investment. Innovations mainly emerge from major discontinuous leaps in technology and organization achieved as result of a few, specially gifted pioneers. The

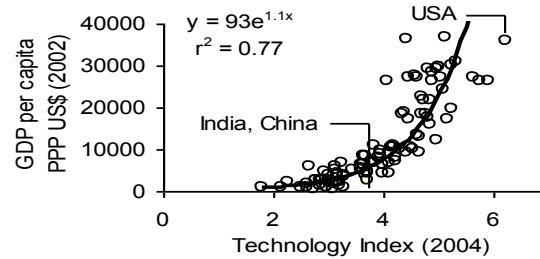


Fig. 2

pioneers are the “entrepreneurs” who are persons motivated by the “dream and the will to found a private kingdom”, the “will to conquer: the impulse to fight, to prove oneself superior to others”, and the “joy of creating.” The entrepreneurial efforts can come from large and small firms, often fresh start-ups.

However each time a new and superior technology is created some previously successful technology dies. There is no gain without pain. Schumpeter called this phenomenon “creative destruction.” A more popular name is ‘market-oriented competition’. The greater is such competition both within and across a nation’s borders the greater will be its technological and, hence, economic progress. This is why India started clocking impressive economic growth only after it started liberalizing its economy in the early 1990’s. Fortunately, around the same time, the world saw a spectacular growth in ‘globalization’ as a result of spectacular advances in communication and Internet-based technologies. This is why you, the present generation of engineering students in AP, is able to enjoy career choices from all the four quadrants of Figure 1.

You, today’s engineering students, don’t need to confine themselves to being an academic, scientist or engineer as many of us had to in our times. For instance in addition to the lower-left quadrant in Figure 1, the top-left quadrant is now fully available to you. Owing to globalization of industry and foreign acquisitions by many private corporations of Indian origin, there is an explosion in the management jobs available. Further, as the markets of these firms are global, they are now competing more on the basis of innovation rather than on mere price and quality. This means professionals with broad-based knowledge and intrapreneurial skills (same as entrepreneurial skills but exercised within a firm as a salaried manager) are likely to climb the corporate ladder much faster than those equipped with knowledge, however deep, within a narrow technological domain. Unfortunately, curriculum planners in AP have not yet fully grasped this point. Probably, being products of our era when domain-specific knowledge was at the premium, they continue to force all students into a narrow technical domains such as electric engineering, metallurgy and so forth without providing opportunities for developing broad-based, interdisciplinary knowledge and skills. However nothing stops you, the students, from organizing yourselves (e.g., by forming a Management Studies Group) and taking charge of your lives. Also don’t get hung up on finishing your engineering studies in four years. You can also get some work or community service experience while you study—although it might mean extending your undergraduate studies a bit.

But career choices belonging to both the quadrants on the left side of Figure 1 have one disadvantage. You are still employed by some one else. You still do not fully enjoy the “joy of creating” or dream of creating your own private kingdom. If you want to experience these higher

level excitements within your lifetime, you may start thinking of working towards becoming a consultant, or an entrepreneur (bottom-right and top-right quadrants respectively in Figure 1).

Indeed, recent engineering graduates from AP have already demonstrated a flair for becoming an IT consultant albeit in a foreign land such as USA. But this is still an arduous and occasionally uninspiring job. You still are taking orders from someone else, in this case from the manager of the particular project you are working at any given time. Equally frustrating is the fact that you get to work on any given project for a few months and then move on to a different project—inevitably in a different town. In short you become a *lambada*. But there is one advantage: you would be able to acquire some of the human-networking needed to become an entrepreneur (provided you work at it) sometime later—a very exciting prospect for people with the right mindset.

What is entrepreneurship? What is the mindset required to be an entrepreneur? Entrepreneurship is the process of creating something new with value in some market. The mindset required includes an inclination to devote the necessary time and effort, assume the accompanying financial, psychic, and social risks in anticipation of receiving the resulting rewards of monetary and personal satisfaction and independence.

Can Indians be entrepreneurs? Fortunately, the answer is an emphatic YES since, as discovered by an international organization called the Global Entrepreneurship Monitor, India is right at the top in terms of percentage of adults engaged in entrepreneurial activity (see Figure 3).

The only problem is that much of the entrepreneurial activity in India is necessity-based rather than opportunity-based. In contrast, almost all entrepreneurial activity in USA is opportunity-based.

Some of the entrepreneurial opportunities are technology-driven, i.e., they depend on the development of a new, breakthrough technology.

Such opportunities continue to be rare in India because of its relatively weak research and development (R&D) tradition and infrastructure. But the fact is that most innovations we see around the world today are market driven—they mainly involve adapting existing technologies to new markets. Now, today's India is a rapidly growing market. This means that there are unprecedented opportunities for you. If you think you have the right mind set, go ahead and grasp them. What is the needed mindset? I plan to address this question in a subsequent article.

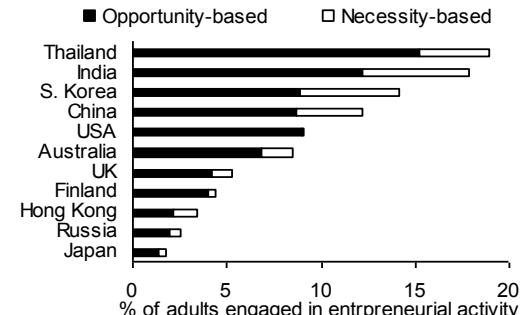


Figure 3