

Gandhian Charkha and Appropriate Technology: A Challenge for the Technocrats

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Abstract— Six decades of post- independence policies have failed to eradicate poverty in India. In all these decades India have tried to blindly emulate the western industrial model and in the process has totally ignored the wisdom of the man who is known as Father of the Nation. Gandhi was not only a freedom fighter, but he was also a thinker in his own right. He developed the philosophy of Appropriate Technology and focused on Charkha as a tool for emancipation of Indian masses. The current paper argues that India can achieve its targets by developing an indigenous model based on appropriate technology which is labour intensive, instead of importing western technology which is capital intensive.

I. INTRODUCTION

India is rapidly marching towards industrialization, with liberalization of economy the march of industrialization has become even faster. But ironically the industrialization has not been able to fill the gap between the rich and the poor of the country. Moreover, the gulf between the rural and urban areas is still getting wider. The industrialization has created more problems than it has solved. The establishment of metropolitan cities and the continuous influx of people into them in the search of green pastures have put even more pressure on the limited sources and infrastructure. India in its search for industrialization has forgotten the age old wisdom, it has even ignored the philosophy of the man who is known as ‘the father of the nation.’

It is important to note that the government who always talks about emulating Gandhian philosophy, and in fact has left no stone unturned in developing Gandhism as a world famous brand, continues to ignore the wisdom of the great man. Gandhian concept of ‘ahimsa’ and ‘non-violence’ are known throughout the world. But these are not the only things that Gandhi had to offer to the world. In fact, Gandhian philosophy has assumed even greater importance in the current scenario where environmental degradation is dominating almost all the debates. The current paper is an attempt to build up a case for Gandhiji’s philosophy regarding development of India and

Charkha as his chosen instrument for the aforesaid goal. In fact, Charkha is a model for the modern technocrats to emulate; it is what a machine should be like: easy to operate, labour intensive, easily available and easy to transport.

During the reign of Mo-Tse-Tung, China used Appropriate Technology for rural development. While concentration in the urban areas was on building large scale, capital intensive factories, the focus in the rural areas was on the development of small scale industries based on appropriate technology [1]. The rural industries, making use of Appropriate Technology, were expected to take advantage of the country’s abundant local resources including industrial waste or scrap from large scale city-based factories. However, long before China’s use of Appropriate Technology, it had long been an important part and parcel of India’s culture and village industries even before 1930s. One of India’s early pioneers of Appropriate Technology was the ‘father of nation’, Mahatma Gandhi. In fact, many people refer to Gandhi as a father of Appropriate Technology and the “first appropriate technologist” [2]. Rybczynski points out: “It was Gandhi, who, before China’s Mao Tse-tung, recognized that the peasants should be the basis for economic development in Asia” [1]. Gandhi spoke incessantly of the need for village industries in India, while maintaining that India’s survival and future were dependent on the state of village where most Indians reside. The Charkha (spinning wheel) was Gandhi’s ideal Appropriate Technology device, and he saw in it a “symbol of freedom, self-reliance and a technical means that was right for India” [1]. The idea of technology discriminately enriching a minority of people at the expense of the majority or putting masses of people out of work to increase profit was in Gandhi’s view counterproductive and unacceptable.

Gandhian Charkha can be savior for the world and can act as an inspiration for the technocrats and scientists who are devoting their lives to reverse the environmental damage.

Environmental degradation and global warming are probably the most discussed issues today. Almost all of the scientists agree that the problem is created by the human beings who have worked hard to gain leisure. E.F. Schumacher sums up the problem: Our scientists and

technologists have learned to Compound substances unknown to nature against many of them nature is virtually defenceless. There are no natural agents to attack and break them down” [3]. Some of these Compounds which were hailed as wonder molecules at their inception were discovered to be the worst villains of environment. The example can be cited of chloro-fluoro Carbons which were hailed as wonder molecules were found to deplete the ozone layer, a natural protective shield against the harmful radiation of the sun. Similar is the example of polythene.

Gandhi's Charkha is an important symbol in this case. In fact, Charkha symbolizes many things at the same time. Charkha symbolizes clean, inexpensive and decentralized technology. One of the hallmarks of modern industrial revolution has been the size, complexity and the cost. The modern machines are so expensive that these “reserve the privilege of production to fewer and fewer people. On the other hand, Charkha symbolizes the machine that everyone can buy and operate. The steps to progress associated with AT provide a reasonable basis for

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 people and communities to understand the technological processes being employed therefore the local people are able to control it. This concept is also very different from high technology applications, where machines are complex and most of the users can't understand their working and have to call mechanics from far away places whenever the machines break down. Moreover, AT also stresses on sustainability. The components, equipment and materials used to create the AT devices are within the budget of end users. The infrastructure that is required in AT is available at local level. Again, this concept is philosophically different from modern high tech industries that rely upon strong external infrastructure which is available only at a few places. For Gandhi, Charkha is an important machine that can revive and revitalize Indian rural economy:

“I... Claim for the Charkha the honour of being able to solve the problem of economic distress in most natural simple, inexpensive and business-like manner. It is the symbol of the nation's prosperity and therefore, freedom. It is a symbol not of Commercial war but of commercial peace [4].

One of the most important problems with modern industrialization is that the industries can be set up at selected place only. The huge machines need broad metalled roads, trained work force, uninterrupted supply of energy. In other words, the modern machines are not the docile servants rather they are the masters. Their human slaves have to leave their families, dislocate from

their places of birth and leave their traditional economic activities to become a part of moderns industrialized process and live a life of ennui as depicted by Dickens in his novels. Gandhi was also acutely aware of this conditions:

I want the dumb millions of our land to be healthy and happy... If we feel the need of machine, we certainly will have them. that helps every individual has a place, But there should be no place for Machines that concentrate Power in a few hands and turn the masses into mere machine minders[3].

One of the Important product of this industrial revolution have been the rise of metropolitan cities. Huge human populations have established their bases around the industries that are run by these machines. These metropolitan Cities having a population more than a million generates about “5,00,00 tonnes of polluted water, 2,000 tonnes of solid wastes and 950 tonnes of air pollutants [5]. The human residents of these metropolitan cities live in inhuman conditions. Displacement has several severe impact on the psychological health of a person. Displacement leads to the breaking of joint family system which acted as a kind of “old age insurance to old age parents and other members of family [6]. According to the website www.indidivorce.com the divorce rates in India are shooting up because of the breaking up of joint families.

Moreover, the colossal machines have failed to solve the economic problems of India. These machines are capital intensive, but the need in India is to develop technology that is labour intensive. Gandhi's Charkha is the best example of technology that suits India. It not only allows the people to remain in the homes, but provides them with an extra of incomes

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Gandhi knew from the very beginning that the huge machines will create a problem of unemployment. For him the revival of cottage industries was the most important mission in his life, as the revival of Cottage industries means alleviation of poverty.

Revival of the Cottage industry and not cottage

industries will remove the growing poverty. When once we have revived the one industry all other industries will followI would make the spinning wheel the

Foundation on which to build a sound village life.. I would make the wheel the Centre round which all other activities will revolve. [7]

In fact, Charkha implies what Schumacher calls “Appropriate Technology.” [8]. The undisputed leader of the appropriate technology movement was E.F. Schumacher, a British economist who worked for sometime in India and Burma during 1950's and 60s. Schumacher propounded the philosophy in his book *Small is Beautiful*, where he described the central doctrine of Appropriate Technology as (a) simple, (b) small scale (c) low cost, and (d) non-violent. The U.S. office of Technology Assessment has further refined these tenets by describing Appropriate Technology as (a) small scale (b) energy efficient (c) environmentally sound (d) labour intensive (e) controlled by local community, and (f) sustained at the local level.

Persistent socio-economic problems of the III World countries, despite the decades of the massive infusion of advanced technology from the industrial world have raised the question about the appropriateness of this technology. Actually the technology creates only a few jobs for a small number of people due to high capital/ labour ratio. Due to this the production improves in the urban centres where the infrastructure is present to support big factories and the other areas remain undeveloped. This also worsens the unemployment conditions and lead to the migration of poor people to the industrial centres which put an extra burden on the cities. Schumacher blamed this technology, imported from rich countries, for creating what he called the “process of mutual poisoning.” This is a condition in which the industrial development adversely affects the economy of the traditional sector. He blames modern technology for high rates of employment, poverty, great income disparity and declining access to basic needs.

Appropriate technology as a development approach is intended to address such socio-economic problems especially in the rural and informal sectors. The argument for AT is that jobs should be put before the production, but the techniques can be developed which promote both. Stewart points out that Appropriate Technology does not mean compromising output: “The argument for appropriate technology is not that jobs should be put before output, but that techniques can be developed which promote both. Appropriate Technology is intended to raise productivity and incomes outside the advance technology sector and so extend the benefits of development throughout the population [1].

The Appropriate Technology movement is of greater importance to the developing countries' where the resources are currently stretched to the breaking point and will surely be exceeded in the future with further increase in population. So the only real chance for any type of quality of the most to be found by people of the industrialized and developing worlds working together to utilize all their resources in the most effective and efficient ways. The Appropriate Technology movement has at its philosophical heart the desire to capacitate people of all walks of life to create. Meaningful Employment 2. Comprehension of Technology 3. Self Reliance and 4. Reduced Environment Impacts. A significant benefit of Appropriate Technology is the creation of employment and service options that would not exist without this form of development. Modern high technology industries seek to provide maximum output of product while limiting human involvement. The efforts to achieve uniformity of product quality using high tech systems often leads to creation of dull, boring and monotonous work. Appropriate technology concept seek to accomplish the absolute opposite effect: maximum human involvement with reasonable product output.

Appropriate implies the technology that is localized, based on local geographical, social and economic conditions. In other words appropriate technology makes the use of the resources and labour that suits the local conditions. On the other hand, the industrial technology is universal, where human beings have to make change according to the suitability to the massive machines. According to Schumacher, the technology that is rampant in the world creates four important problems:

1. We can't close the gap between rich and poor,
2. We are faced with this polarization and the pattern of settlement.
3. We have these ecological problems.
4. We have the energy problems [8].

On the other hand “appropriate technology” is free from all these constraints. In fact, if the production is concentrated in many hands instead of one geographical Centre then the nature gets time to recover. In India, pollution has clearly become an intractable problem and the revered rivers of India, its lifelines: holy Ganges and Yamuna have been converted into drains by industrial pollution. After decades of mechanized industrialization enormous pollution has had a significant impact on the plane, some of which may not be repairable. With significant population increases anticipated, the chances are that the problem of pollution will increase further. A key concept of Appropriate Technology is the design and function of the devices that cause minimal negative impact on the environment. Success of Appropriate Technology is directly

measured with regard to its ability to operate and meet human needs without causing undue pressure or stress on the local environment. The Chemicals used in the industry pollutes holy Ganges without giving her a chance of cleansing itself. On the other hand, if leather industry would have been established at small scale at several places, then pollution would have been a tractable problem. In *Small is Beautiful*, Schumacher quotes Leopold Kohron the problem of ‘scale’: “Small scale operations. No matter how numerous are always less likely to be harmful to the natural environment than large scale ones simply because their individual force is small in relation to the recuperative forces of nature. There is wisdom in smallness if only on account of the smallness and patchiness of human knowledge, which relies on experiment for more than on understanding.

Another important aspect of Gandhi's philosophy that has often been ignored is summed up in his oft quoted quotation-- The earth provides enough to “satisfy everyone's need, but not for every one's greed.” Today production is based not on the principle of utility, rather it is based on greed. The business houses do not satisfy our needs, rather they lure us to change our gadgets without wearing them out. The best example can be given in the mobile phone industry. A Company changed a model within months with only slight change and lure the customers to buy it. Clearly motive is to learn more money with slight respect for environment. According to Wikipedia “The USA discards 30 millions Computers each year and 100 million phones are disposed of in Europe each year” [9]. Only 20% of this waste is recycled and rest of it is dumped in landfills and incinerators. This created a big environmental disaster as “an estimated 70% of heavy metal” in USA comes from discarded items. The picture is gloomy in India also. Lewis Mumford also criticized modern technology on the same basis. He criticizes the modern trend of technology which emphasizes Constant unrestricted expansion, production and replacement. He contends that these goals work against technical perfection, durability, social efficiency and over all human satisfaction [10].

Gandhi's work exerted a great influence on Schumacher, who envisioned a technology for the III world that was midway between, for example, a hand hoe and a tractor. According to him the concept of AT to be considered useful, it must be conducive to meeting the challenges following propositions:

➤ Workplaces have to be created in the areas where the people are living now, and not primarily in metropolitan areas into which they tend to migrate.

➤ This work places must be cheap enough so that they can be created in large numbers.

➤ The production methods employed must be relatively simple, so that the demands for high skills are minimized not only in the production process itself but also in matters of organization, raw material supply, financing, marketing and so forth.

➤ Production should be primarily from local materials and mainly for local use [120-121].

It is clear that India's model, a time lies in adapting an indigenous model. a time tested one as advocated by Mahatma Gandhi. Decades of emulation Western models of industrialization and working on imported machinery has only Complicated the problems. The population below poverty line is increasing, quality of life is decreasing pollution and environmental degradation is taking place at a rapid scale, but Indian government is still not ready to admit its mistake. The example can be cited of nuclear power generation. Though Gandhi and Schumacher would have advocated more use of solar power, an endless source of energy in the sub-continent.

Instead of investing huge capital in nuclear power plants, government can utilize it to erect an infrastructure that will utilize Indian climatic and geographical advantage. Nuclear power plants will be dependent of imported fuel but sunshine is abundant.

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