TECHNOLOGY AND COMMUNITY DEVELOPMENT BCD 216

LECTURE 9

DETERMINING A SUSTAINABLE APPROACH

Gandhi: self-reliance

Mohandas Gandhi (known as Mahatma Gandhi) advocated small, local, mostly village-based technology to help India's villages become self-reliant, resisting the dependence associated with colonialism, to aid in the freedom struggle against British and wealthy Indians. Gandhi promoted the philosophy of "swadeshi" or self-reliance. He did not believe that technological development was inherently synonymous with progress. He believed the powers of technology should be produced and used artfully and the benefits should be close to the individual and widely produced and distributed in a decentralised fashion.

Gandhi stated that his favorite technologies were the sewing machine, because it was invented out of love, and the bicycle, because it kept one's feet close to the ground. He felt that technology should not disenfranchise people or be used for violence - rather that it should be used to empower people broadly. The movement for self-rule was based on local economies, and Gandhi championed the spinning wheel, or *charka*, employed in the khadi movement in the 1920s, which produced cloth locally in an act of civil disobedience, causing the British monopoly on textiles to collapse. The spinning wheel is today seen at the center of the Indian national flag, and the flag itself must, by law, be made of khadi.

In the movement for *Swaraj* (home rule), Gandhi believed in a revolution of production, saying "It is not about getting rid of the tiger and keeping the tiger's nature". Saying "it is better for a machine to be idle than a man to be idle", Gandhi rejected the factory model of industrialization. He raised money to offer a reward for someone to invent a spinning wheel that could employ people in the same way, while producing more thread.

Schumacher: *Small is Beautiful*

E. F. "Fritz" Schumacher was an economist who acted as an advisor to governments. He was strongly influenced by Gandhi's philosophy, and took Gandhi's village development ideas further, coining the term "intermediate technology". Through his book *Small is Beautiful* and later by creating the Intermediate Technology Development Group (now *Practical Action*), he pioneered appropriate technology in development work. Schumacher's term *intermediate technology* is similar to appropriate technology. It refers to tools and technology that are

significantly more effective than traditional methods, but still an order of magnitude (one tenth) cheaper than developed world technology. Such items are generally within the economic reach of poor people, and according to proponents can lead to greater productivity with minimal social dislocation. Intermediate technology can also be built and serviced largely using locally available materials and knowledge, with minimal input from outside.

This is conducive to decentralization, compatible with ecology, gentle in its use of scarce resources, and designed to serve humans and avoid making them the servants of machines. In *Small is Beautiful*, Schumacher also proposed "Buddhist Economics," which "tries to maximize human satisfactions by the optimal pattern of consumption," as opposed to mainstream Western economics, which "tries to maximize consumption".

Features such as low cost, low usage of fossil fuels and use of locally available resources are advantages in sustainability. For that reason, these technologies are sometimes used and promoted by advocates of sustainability and alternative technology. Besides using natural, locally available resources (e.g. wood or adobe), waste materials imported from cities using conventional (and inefficient) waste management may be collected and re-used. Use of these cities' waste material allows the gathering of a huge amount of building material at a low cost. When obtained, the materials may be recycled over and over in the own city/community, using the cradle to cradle method. Locations where waste can be found include landfills, junkyards, on water surfaces and anywhere around towns or near highways. Organic waste that can be reused to fertilise plants can be found in sewage. Renovation or removal of material from building sites can provide a source of stone, soil and concrete.

The waste materials include

- plastics and aluminum
- ferrous waste materials (e.g. cans)
- sewage sludge (for use as a fertilizer, depending on pollutant levels and application)

The waste materials can be gathered by waste pickers, or – if possible – with more sophisticated machines such as materials recovery facilities (MRFs),and solid waste processing facilities. The latter may allow better separation of the different metals, plastics, and others resulting in a higher – and more efficient- yield. Also, waste pickers -besides usually not being equipped to disassemble the materials - risk being exposed to various poisonings.

Sewage sludge is collected not by hand, but through a sludge processing plant that automatically heats the matter and conveys it into fertilizer pellets (hereby removing possible contamination by chemical detergents) This approach eliminates seawater pollution by conveying the water directly to the sea without treatment (a practice which is still common in developing countries, despite environmental regulation). Sludge plants are useful in areas that have already set up a sewage system, but not in areas without such a system, as composting toilets are more efficient and do not require sewage pipes (which break over time). After collection, the obtained materials often need to be melted and recast in forges and/or may require bending, cutting, folding in a workshop. Plastics are a special case that are also melted in a workshop, using small, purpose-built hand-operated melting containers.