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The Role of Technology in the Social Evolution of the Global Village

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Abstract

Technology has always been a significant driver for human development. Development is a creative process stimulated by interactions between people with one another and with their environment. Instances in history have depicted that society progresses rapidly in circumstances where there is high interaction between people who live in close proximity. Social evolution traces the process by which nomadic tribals settled down in agrarian communities which were gradually connected and linked together by advances in transportation and communication to support the development of towns, cities, city-states, megacities and modern nation states. Today the process continues as the increasing interaction and interdependence of all the nations of the world leads to the formation of a single global community. As this process advances, the knowledge and achievements of the higher levels gradually filter down to the smaller isolated units. Each stage of this evolutionary process is driven by increasing levels of connectivity, interlinkage, interdependence and mutually beneficial exchange. The breakthroughs were made possible by technological advances in transportation and communication: from the printing press, chronometer and steam engine to the telegraph, telephone, computer, internet and mobile networks we enjoy today. This paper views digital villages as the latest step in the developmental process utilizing advanced technologies to bring people together over vast differences at great speed. Extending these advances to the world's least developed communities marks a historic landmark in the evolution of global society with the promise of eventually making available to people everywhere the highest achievements of humanity as a whole.

1. Introduction – Short History of Smart Villages

The idea of a smart village in India, can be more or less traced back to Mahatma Gandhiji's philosophy of 'Gram Swaraj'. In 1946, Gandhi explained his vision wherein he stated,

"Independence begins at the bottom... A society must be built in which every village has to be self-sustained and capable of managing its own affairs... It will be trained and prepared to perish in the attempt to defend itself against any onslaught from without... This does not exclude dependence on and willing help from neighbors or from the world. It will be a free and voluntary play of mutual forces... In this structure composed of innumerable villages, there will be ever-widening, never-ascending circles. Growth will not be a pyramid with the apex sustained by the bottom. But it will be an oceanic circle whose center will be the

individual. Therefore, the outermost circumference will not wield power to crush the inner circle but will give strength to all within and derive its own strength from it."

In today's world, not only does the global community have a strong technological base but also innovative and sustainable technology that can drive development in leaps and bounds.

Gandhiji believed Swaraj could be achieved when villages serve as a unit of economic autonomy as well as a basic unit for participatory democracy. The masses need to be empowered to recognize their capacity to regulate, control and have authority over themselves. His vision of an ideal village or village Swaraj is that the village serves as a complete republic, independent of its neighbors for its own wants and yet interdependent for many others in which dependence is necessary.

In 1991, The M.S. Swaminathan Research Foundation (MSSRF) tried to apply Gandhiji's philosophy by creating a model project for 'Information Villages'. The idea was to extend the benefits of information technology to 10 villages in rural Pondicherry in South India. The project was part of a larger initiative called the bio–village project initiated in 1991. An information center was set up in each village and information was downloaded from the Internet and the villagers were given locally specific, customized information that could be of direct benefit to them, such as daily weather reports, local news, prices of agricultural crops, pesticides, fertilizers etc. Each center was equipped with three computers, three dial-up modems, telephones and a printer. The project was a great success then and received many awards such as the Stockholm Challenge Award in 2001 and the Motorola Gold Award in 1999. When the project was launched, certain technical challenges existed. Because of a restricted budget and the absence of rural telephone infrastructure, Internet connectivity was poor in quality, difficult to obtain and costly. Electricity was sporadic and unreliable.

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Since then, society has come a long way. Recent advances now make it possible to successfully apply and extend the basic concept in India and in developing countries around the world. In today's world, not only does the global community have a strong technological base but also innovative and sustainable technology that can drive development in leaps and bounds. Rural communities can be provided with access to alternative sources of clean, affordable, reliable, renewable energy such as solar and wind energy, which are environmentally friendly and more reliable and stable than the conventional grid power based on non-renewable thermal energy sources. Society possesses the necessary technical and industrial capacity, innovation and infrastructure to ensure responsible consumption and

production and create strong institutions for the empowerment of sustainable, smart villages and communities.

2. The Evolution of Global Society

To fully appreciate the significance and potential of the digital village strategy, it is important to place this emerging development in a historical perspective. Doing so will reveal the central importance that earlier forms of technological advancement and application have played in the evolution of society during earlier periods and the tremendous potential which they offer today to accelerate the development of rural communities and transform them into new models for progress in the 21st century.

History is not an aggregate of events or dates. It teaches humanity valuable lessons that they can learn from and implement so that the mistakes of the past are not repeated. Development is a creative process stimulated by interactions between people with one another and with their environment. In *The Ideal of Human Unity,* Sri Aurobindo observes that the social evolution of humanity is a process of progressive movement from smaller to larger social aggregates starting with small, isolated communities and progressively developing toward a more and more interconnected, independent and integrated global society. A historical study of that process reveals that society progresses most rapidly in circumstances where there is a high level of creative interaction between people who live in close proximity. The small kingdoms of ancient India, the tribes of Israel, the city states of Renaissance Italy and Germany, the modern metropolis and unique centers of innovation such as Silicon Valley and Bangalore are illustrative. Development of innovative technologies has been a driving force for the progressive emergence of larger, more integrated forms of social organization.

3. The Agrarian Revolution

This evolutionary process can be traced back to the development of agriculture about 12,000 years ago, which dramatically changed the way human beings lived together. The invention of agriculture was one of humanity's first great technological inventions. It replaced nature's process of food production with a conscious application of her methods to intensify food production in specific areas where human beings could settle down. Agriculture led to a shift from nomadic hunter-gatherer, tribal lifestyles to permanent, sedentary, and relatively self-sufficient farming communities.

In the development of agriculture, humanity consciously applied the creative power of the thinking mind as an instrument to foster the growth of civilization and social development. Development until recently has been largely subconscious, and not conscious. Man learns by imitating natural processes. The evolution of agriculture was an essential precondition for human development. However, it occurred only 10,000 years ago. One might wonder what took man so long to figure it out. It is only speculation that remains regarding the mental processes that led man to invent agriculture. To find which plants, leaves, fruits were edible must have been a labor of tens of thousands of years at a period when even written language did not exist. To observe where the edible plants grew, and to transmit that information and preserve it through oral communication from generation to generation must have taken

longer. Understanding causal relationships between two natural phenomena was not enough for the birth of agriculture, it was communication of the idea that led to it being practiced on a wider scale.

Subconscious observation that assimilated slowly over a long period of time must have led to the birth of a conscious realization, that by imitation of natural processes man could create his own food, instead of roaming, hunting and gathering which gave more space to uncertainty. Not just the edible crops but the relationship between crops, soil types, rain, sunlight, temperature and the changing of the seasons had to be also closely observed by man. Instead of roaming the earth to find food, human communities learned how to imitate Nature. This led to the development of higher order cognitive skills like planning, organizing, specialization of function, and timely execution of complex sequences of activities. As Garry Jacobs says, in his article on 'A brief history of mind and civilization', 'It led to the concepts of land as property and principles governing ownership. Agricultural surpluses spurred the development of trade and the advent of money, as a symbolic form of social power. The field of human productivity shifted from the land to the marketplace, from toiling on the soil to mutually beneficial interactions with other people. Trade between agrarian villages spurred the rise of rural markets and towns as commercial centers. The linking together to towns gradually led to the rise of cities, small kingdoms, and eventually to nation states and empires.' Social evolution traces the process by which nomadic tribals settled down in agrarian communities which were gradually connected and linked together by advances in transportation and communication to support the development of towns, cities, city-states, megacities and modern nation states. Today the process continues as the increasing interaction and interdependence of all the nations of the world is leading to the formation of a single global community.

4. Roads as the First Fertilizer

The growing interconnectivity between centers of production was greatly facilitated by the development of roads. Today we take roads for granted as an essential part of life. But prior to the 20th century almost all countries lacked an effective national network of roads to link distant places together facilitating transport of goods and people. In 1867, a French imperial prosecutor wrote, "The roads and railroads are the great motors of civilization". French history reveals that the expansion of the roads and railways played a premier role in bringing rural villages out of their cultural and economic isolation into the market economy and the modern world. Transportation or physical movement of goods was the first stimulus to this expansive process of social evolution. This development of roads served as the first fertilizer to social development. It became a stimulus for growing interconnectivity which gradually led to the establishment of trade routes that connected markets over longer and longer distances, such as the Silk route between Europe and Asia since the 15th century.

A program to extend the roads and railroads into the rural areas was implemented by the French in the latter half of the 19th century. It generated enormous benefits and had a significant impact. Farmers found demand for their agricultural production growing tenfold to serve new markets where they were able to sell their produce for 6 times or more the

previous rate, where previously they had just been selling to their neighbors or feeding the excess produce to their livestock. French farmers now had the incentive to upgrade to new crops and modern agricultural practices just to keep up with the demand opened up by access to larger, more distant markets.

Even in many traditional and conservative societies, change has come to be accepted as the only constant.

The French experience is a well-documented example of a world-wide phenomenon. It portrays a phenomenon that is still taking place in developing countries like India today. This pattern of development applies throughout the world. An article on the revolutionary importance of roads speaks about how new roads and railroads in the rural areas mean swifter movement of people and goods; greater carrying power than the head-load or the bullock cart; more resources for village life like coal, kerosene, fertilizer; more production because wider markets are within reach; greater consumption because more products are available—new foods for the diet, new building materials for the house, new tools, new clothes, etc.

Rural roads are rightfully the lifelines of village development. Roads link outlying communities to the rest of society. Rural connectivity is a critical component in the socio-economic development of rural people. It has the capacity to lift rural people above the poverty line. The importance of roads has been recognized in India and given priority by the planners. The total length of surfaced roads nearly doubled between 1961 and 1975. Under the Minimum Needs Program of the Fifth Plan, a target was set to provide roads to all villages with a population of more than 1500, but by the end of 1978 only about 12,000 of 29,000 villages in this category had been covered. Today roughly 50% of all villages still lack all-weather roads linking them with the outside world.

The automobile played an equally dramatic role in promoting connectivity and movement worldwide. Until recent times most modern advances of civilization were limited to the large cities. One had to travel to cities for high quality medical care, access to sophisticated manufactured goods and luxuries, higher education, libraries, cultural centers and entertainment. That began to change as human beings became more mobile. Few may be aware that until Henry Ford introduced the famed Model T Ford, total automotive production in the USA was only about 10,000 per year. The car was considered a luxury only affordable by the rich. Ford designed the first low-cost, mass produced car intended for the common many. Within two decades, Ford alone was producing about one million cars a year. One result was that people began moving out of the highly congested cities into more spacious and pleasant suburban communities in America giving rise to the development of suburban shopping centers which customers could approach directly by car.

5. The Victorian Internet

Roads and urbanization are physical catalysts for exchange and development, fostering relationships between people and organizations, and greater integration of society, while

trade is a vital or commercial catalyst. So too, the development of printing, newspapers, telegraph, telephone, radio, television, universal education and the internet have served as mental catalysts by facilitating communication over longer and longer distances at higher and higher speeds. We look back today on the advent of the telegraph as a primitive and very limited form of communications. But before the telegraph the transmission of information and messaging was limited to the speed of a horse or a steam locomotive. Indeed, the growth of the railways depended on the development of the telegraph during the second half of the 19th century. So remarkable was the impact of telegraph on trade, transport and communications across land and sea that it has been referred to as "the Victorian Internet"—because it played a catalytic role similar to that played by the internet a century later.

The future of digital India lies in promoting transformation of rural India into an electronically interconnected community of digital villages linked to the rest of the nation and the world beyond.

These and many other technological advances are examples of the process by which humanity has gradually evolved from a scattered hodgepodge of small communities into larger, increasingly interconnected social units. Civilization has evolved from a rural-agrarian based society in which less than three percent of people lived in cities and towns to an urban-centered, industrial society in which the population of the world's cities and towns now exceeds 40% of the total population. In their article called '*Engines of Development*' Robert Macfarlane and Robert van Harten say "Humanity is no longer satisfied with a low level or slow pace of development. Society, the world over has decided that it wants to live more comfortably, more intelligently and more progressively now. The force of that decision, which is the power of conscious human choice for unfailing success, began as a subconscious movement of the collective late in the last century and has now moved into an unrelenting insistent seeking by the society at large."

6. Conclusion – Digital Villages

In 1964, Marshall McLuhan coined the concept of "the global village" to describe a world in which communication is instantaneous and distances are annulled by technological evolution. His idea was that the whole world should be a single, interconnected village community. This visionary idea was conceived thirty years prior to the widespread emergence of the Internet. Today it is a reality.

But now there is a twist. The term global village today refers to the process of providing every village with the benefits possessed by global society. The digital vision is an expression of this idea. It seems only logical and inevitable that eventually this process of social development will extend the full benefits of humanity's global progress to all human beings, providing access to the most advanced facilities even to outlying rural communities. In

recent times the rising aspirations of people living in rural Indian villages is contributing to a tremendous release of social energy and unparalleled individual initiative. Here too we find technological advances serving as powerful catalysts for social transformation. Today the extension of sophisticated digital technologies to Indian villages is providing the means to bring the advances of national and international society to every community.

The concept of the global village is not only about connectivity but also about shared responsibility and conscious global citizenship.

Even in many traditional and conservative societies, change has come to be accepted as the only constant, such as seen in Dhanora village in Chambal, Rajasthan. The 'Adarsh Gram' Dhanora owes it to its people, not its politicians. Dhanora in Bari constituency of Dholpur district was like any other neglected village. It did not have the basic infrastructure of roads, electricity, schools or potable water. Cut to today, it stands as Rajasthan's 1st smart village, lit up by solar lights, boasting of pucca homes, painted in uniform colors. It has a 5 km long artificial canal, connected through eight percolation tanks, and toilets in all houses aligned to a sewage treatment plant, a skill development center, a meditation center and even a public library! Government participation in all of this was minimal. All the work was done at the community level by the villagers themselves, with the help of an IRS officer, Dr. Satya Pal Singh Meena, who was a native hailing from that village.

Over the past five years, India's pioneering advances in digital financial services have enabled hundreds of millions of Indians to open bank accounts, gain access to bank credit and receive government subsidies directly without the delays and corruption common to the previous system. India today is a pioneer and leader in promoting financial inclusion.

With rising internet penetration and the launch of 5G services in India, the urban-rural divide is being bridged in India. Prime Minister Modi said during his inauguration speech for 5G internet, "Today, every citizen of India is using technology to the fullest. Digital India has given every citizen a market. Even the smallest street vendor is using the facility of UPI. India's vision of digital connectivity can be seen in the steep increase in rural connectivity." With the continued spread of high-speed mobile communications in rural areas, we can now envision a day when every Indian household has access to high quality educational resources, products sold by online marketplaces such as Amazon and Flipkart, tele medical services, e-governance services and even bank accounts. The future of digital India lies in promoting transformation of rural India into an electronically interconnected community of digital villages linked to the rest of the nation and the world beyond.

In the modern era, the world has evolved into an interconnected system where economies, technologies, and societies are deeply interdependent. While this global integration has accelerated development and innovation, it has also exposed inequalities between regions with access to technology and those without. Addressing global challenges such as climate change, resource scarcity, and social inequality requires collaborative efforts that transcend

national boundaries. Thus, the concept of the global village is not only about connectivity but also about shared responsibility and conscious global citizenship.

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