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Human Connectivity: The Key to Progress

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Abstract

Progress results from human interaction. Advances in knowledge, transportation, communication, technology and industry have aided in social development only to the extent that they have brought greater numbers of people closer. It is only human ingenuity that has achieved. Historically, every event that marks a step forward in social evolution coincides with a discovery, invention or organizational innovation that brings people closer in contact. When two people meet, the knowledge, resourcefulness and capacity that they bring together grow not cumulatively but exponentially. Thus every additional connection made to the human network adds to its depth and richness. When this is done at a larger scale, between entire cultures and civilizations, the result is an explosion of creativity. Urbanization and advances in technology have accelerated this interchange between people and cultures. Unlike all other resources, human capital is inexhaustible, self-replenishing and has the potential to meet and overcome every challenge the world faces today. The logistics of bringing human minds together effectively holds the key to consciously accelerating human progress.

1. Social Power

Wikipedia has a predecessor in the mid 19th century. A large body of knowledge of the English language needed to be built. Professor James Murray, a Scottish philologer, gave an open call for volunteers to submit all the words they knew in English, along with the meaning, origin, usage and so on. The project received over six million submissions over a period of 70 years. These entries were verified, corrected and arranged. Thus drawing on the knowledge and time of tens of thousands of volunteers, the first edition of the Oxford English Dictionary was published. Crowd-sourcing is not a new idea!

We humans have always generated great power by coming together in groups. Not all attempts have been planned and systematic like the processes that created the dictionary or the online encyclopaedia, most have been unconsciously or intuitively done. All our impressions and images of the earliest humans depict them in groups. We lived in communities, hunted together, travelled in groups, and when we gave up our nomadic life, settled down in villages and towns. There was a benefit for all in thus belonging to a group, and the group gained a power far greater than the sum of all its component individuals. A man who slipped while boarding a train in Perth, Australia in 2014 made it to the headlines because of the way he was rescued. He was about to board a train when he slipped and one leg got wedged in

the gap between the platform and the railway carriage. Instead of bringing in machinery or carrying out an elaborate rescue operation, the station officers along with all the passengers nearby simply pushed the railway carriage away from the platform, and it tilted a few inches, just enough for the man to pull his leg out![1] Under normal circumstances, a crowded railway station sees people busily going about their own schedule, with hardly a glance at others. But this invisible network that we call society is very much alive, watching, hearing, responding. The recent Arab Spring showed even more dramatically the power of individuals coming together to rewrite history. This invisible, yet very tangible, power of society has shaped all human development.

2. Specialization

Society is a complex, organized structure composed of groups and subgroups of individuals and organizations that are interdependent and overlapping. These groups may consist of members of a family, caste, ethnic group, religion, profession, nationality or belief. Just as in a family, every member has a role to play, an authority and a set of responsibilities, and complements the other members in the group. An educational institution has a management board, a vice-chancellor or principal, teachers, supporting staff and students. Each has a specific role to play, and fulfils a unique and vital part in the education of youth. Among the subgroup of teachers, each teacher specializes in a different subject, and working together with the other teachers, gives the students comprehensive academic knowledge. This is one of the great strengths of organization in society, each member makes a unique contribution, and society, which is the whole, becomes greater than the sum of all its parts. This began in a primitive fashion with the barter system, and now spans the globe via the internet, bringing together people, knowhow, products and services everywhere.

The flip side of such cooperation is specialization. Because each member focuses on his or her core competency, it becomes possible for one to gain expertise in a field. This raises one's capacity and productivity, thereby raising the overall productivity of society. Henry Ford applied this process of specialization to raise production of Model T cars from 10,000 a year in 1908, to 2 million in 1925. He did this by introducing the moving assembly line. Earlier, a group of workers worked on a car from start to finish, much like horse carriages had been built earlier. Ford used standard, interchangeable parts for all cars, and conveyor belts that moved the cars being assembled along the factory floor. Workers stood along the assembly line, each fitting a part to the car. This saved time, enabled everyone to become skilful in his task, lowered costs, and raised production, profits, and salaries. Even the factory workers could afford the cars they assembled. What Ford accomplished through specialization in his factory, society does at a global scale.

Specialization increases quality as well as quantity. Today, research scholars are able to specialize in narrow fields of expertise because they form part of a larger, integrated system of knowledge and education. Where we had English teachers, today we have in addition an English teacher who specializes in the poetry of women writers in 18th century England, or the dramatic works of African Americans during the American Civil War. From the general practitioner, we have branched into specialists in Neonatology, Gynecologic oncology,

Paediatric allergology, sports medicine and so on. Medical science now includes more than fifty specialized sub-disciplines. Such specialization is a result of cooperation, between individuals, and between the individual and the collective. Everyone has the luxury to focus all their attention on one subject, task, or field, assured that all their other physical, social and psychological needs are being taken care of by others in society. A teacher deposits his money in the bank, knowing the bankers and the banking institutions will take care of it. The banker focuses on his daily tasks, knowing that the financial experts in the government will frame the economic policies that regulate the banks. Legislators need not worry about where their food will come from. The farmers, the supermarkets and everyone and everything in between take care of that. Educational institutions, educators and their research come up with products that assist the farmer, he can concentrate on his farm and improve his produce, and leave the rest to others. In short, the creative outcome of human relationships is the story of civilization. We have moved from hunting and gathering, sewing together garments and making our shelters all by ourselves, to choosing a career or position from which we can belong to society, contribute to it, and benefit from it.

Interacting and cooperating with others, complementing each other's work and specializing has resulted in the further growth of knowledge, in surplus production, commerce, trade, market, urbanization and technological advancement. It has developed individual capacities and enriched society.

3. Transportation

Specialization and cooperation that began on a small scale expanded with the possibility of fast and easy movement of goods and people. When an object has to be sent from one place to another today, some of the options that come to mind immediately are the postal and courier service. But before modern transportation facilities, before roads, a person had to walk, or ride on an animal, to transport the object. Deserts, mountains, seas, even rivers, sometimes halted the movement. The limitations of human endurance checked all movement. That changed with the advent of roads and transportation facilities.

Roads were the first fertilizer. Before the laying of roads, interactions and exchange were restricted within a small geographic area. A trip to a neighbouring village was often a slow, difficult or hazardous journey. Farmers had no incentive to produce more food than they and their neighbours could consume. The same was true for all craftsmen. The village was the whole market. When its demand was met, perishable excess production went to waste. But when roads were laid, animal carts could be used to transport the excess to neighbouring villages and market towns. This gave birth to wider markets. It gave producers the incentive to grow more crops. Farmers in an isolated French village used to feed their surplus grapes to the pigs until a bridge was constructed providing access to market towns early in the 20th century. Within a year, the village was exporting wine to the Middle East.[2] The coming of roads converted surplus production into profits. Thus, roads acted like fertilizer to stimulate higher agricultural production.

Similar growth is seen in every field due to improved transportation. Movement of large numbers of people and large quantities of goods was easier over water, so ancient civilizations

and cities developed along the coast or rivers. The 85,000 kilometres of roads that the ancient Romans built enabled their armies to march and supplies to be transported, and contributed to the building of the Great Roman Empire. The Silk Route, used from second century BC, was a network of land and sea routes connecting Europe and China via the Horn of Africa, Arabia and the Indian subcontinent. Apart from the economic benefits, this exchange of goods and more importantly, the human contact, impacted and improved the civilizations in all these regions. Ideas spread along with the travellers. The system of paper currency travelled from China to Europe, the Hindu-Arabic numeral system originated in India, moved to Persia and from there to the rest of the world. The Silk Road carried not only people and products, but also languages, inventions, organizations, religion, civilization and culture across thousands of miles, unifying previously isolated tribes, linking small kingdoms with larger kingdoms, and laying the first foundations for globalization many centuries before the word was conceived. Transportation brought people closer, faster more easily, and for that reason, was a major milestone in social evolution.

"The greater the human connectivity due to better transportation and communication, the faster has been the growth in GDP."

4. Communication

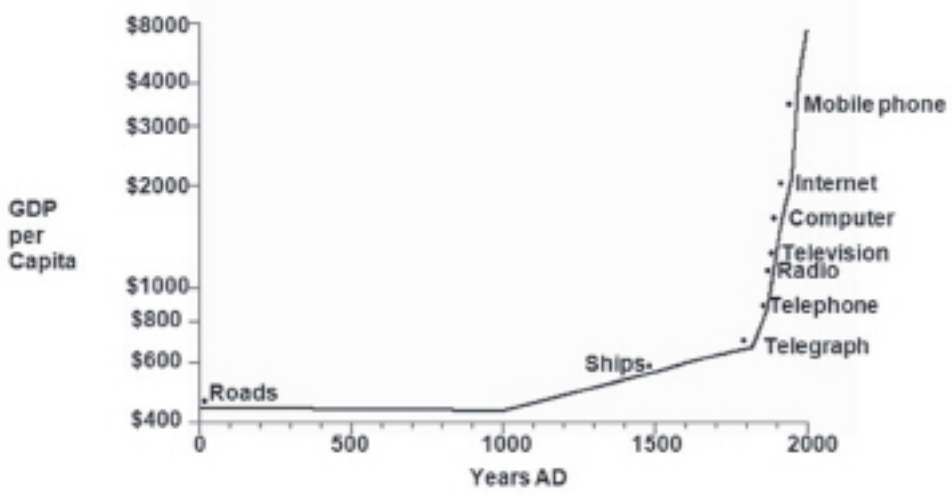
Gold was struck in California in January 1848. But the gold rush did not start till the end of the year. In August of 1849 an article appeared in the New York Herald about the discovery. Two months later the news reached Europe. At that time, news could travel only as fast as the fastest horse, which was the means employed by Genghis Khan to operate the fastest communication system between the Far East and Europe. It was only after the establishment of transcontinental trains and telegraph lines that information could move faster over long distances. The US presidential elections are held in November, but till the early 20th century, the inauguration of the newly elected president used to be in March the following year. This was because after the election, all the ballot boxes had to be transported to counting booths. After counting, the results from all the states had to be consolidated. Then the final results had to be sent back to all the states. On receiving news of the victory, the elected members had to meet and the new President travel to Washington DC, all of which needed a few months! Whereas it was a matter of months in the case of regions well connected by rail and road, news took a few years to travel in other parts of the world. Ten years after Indian independence, in 1957, a survey of 150 villages in central India showed that nearly 10% of the population was ignorant of the fact that the British no longer ruled the country and that India had become independent.

The printing press, books and newspapers liberated knowledge from handwritten manuscripts, disseminating information to large numbers of people over space and across time. Next, the Victorian internet, the telegraph, freed information from the physical realm. News travelled across the globe, without man, animal or machine having to carry it. Telephone personalized the spread of information. Radio and television did away with the

need for wires to transmit it. Today, computers, internet and mobile phones quite overwhelm us with constant, real time multimedia information. Tracing the history of transportation and communication is eye-opening because we see a close relationship with human development.

The greater the human connectivity due to better transportation and communication, the faster has been the growth in GDP. The infrastructure is important to the extent it brings people together. As the number of people who meet each other increases, and the speed with which information is exchanged grows, there is greater exchange of ideas resulting in greater creative capacity.

*Fig 1: Growth in GDP juxtaposed with the rise in Communication Technology**



The chart shows the growth in GDP over the past 2000 years juxtaposed with the rise in communication technology. Roads resulted in growth, but that remained nearly static, till ships were built. When information dissemination sped after the telegraph, the GDP growth graph began a steep climb. With every major step forward in communication technology, the gradient has got steeper. The growth can be attributed to many developments: more education, international trade, spread of democracy, migration, industrialization, the software revolution, global outsourcing of work... But fundamentally, all of these have one thing in common. They have brought people together—people in greater numbers, abridging time, overcoming space, removing linguistic barriers. It is the creative potential of this human interaction that has given rise to seed ideas, growth, development, and human welfare.

5. Urbanization and Multiculturalism

The Industrial Revolution led to massive urbanization and the growth of modern cities.

* Author's own graph. GDP Data Retrieved from http://www.efficientfrontier.com/ef/404/CH1.HTM

People migrated in large numbers from rural to urban communities and between countries. This led to the intermingling of different backgrounds and cultures. When the 13th century Venetian merchant traveller Marco Polo returned after 24 years to Asia, he published a book describing what he saw and experienced. Many in Europe could not believe what he wrote because it seemed so fantastic. That the Far East could contain such wealth as Polo described, such geographical wonders, organized administration, even such large populations seemed unbelievable. Polo was given the nickname, II Milione, or The Million, that reflected the public sense that he had exaggerated in his narrative. Other countries and cultures were so unfamiliar and appeared so strange that people could not believe they existed. Such alienation is removed today by our cities.

The wonders of diversity, contact, assimilation and exchange made possible in the cities have made them the centers and foundations of civilization and culture. In that sense, the city is a large university. People come together, to teach and learn from each other.

Education, art, literature, humour, music, aesthetics, justice, inclusive governance, liberty and intellectualism flourish in such a crucible of human interaction. Culture develops. It is said that it takes centuries of human experience to create a little history, centuries of history to create a little civilization, and centuries of civilization to form a drop of culture. Culture is that distilled essence of human wisdom acquired over many generations and centuries. The quintessence of culture is universal values that show us, as a species, the way forward.

Genetic diversity in a species enables it to actively adapt to changes and survive. It creates new generations that can flourish in any kind of changed future environment. Similar to the diversity at the physical level, mental diversity by way of tolerance, interchange of ideas and acceptance of opposing views can give us the social adaptability needed to meet any kind of future. The English language has grown and spread around the world, not only because of colonialism in the past centuries, but also because as it spread, the language adopted words from every culture and language that it encountered. The dynamism of North America is due to the tremendous power present there due to the mixing of races, ethnicities, nationalities and cultures of people who moved there from all over the world, particularly in the last century. What happens in a smaller scale in every city is replicated on the global canvas. Human contact, whether by migration, trade, imitation, or even war, is the ultimate catalyst for evolution of society and common humanity.

Mathematician and author William Byers writes that creativity comes from trying to reconcile conflicts. The mind creates stable conceptual systems to understand and represent reality. A conceptual system is an integrated family of concepts, that create a unified universe of knowledge and experience, in which everything can be explained by the logic of the system. But every conceptual system is based on some premises and perspectives, and comes with its limitations. There are some questions that cannot be answered within the framework of a system. Instead of ignoring the unanswered issues or explaining them away hastily, if we question the underlying assumptions of the framework, we see the boundaries that limit our mental functioning, we see the box, and can shift to a new, wider, conceptual framework, or think out of the box. The first step in this process of creating a spark is the collision of

two forces, or the meeting of two human minds. Urbanization and its virtual equivalent, the internet, provide the playing field for this creative collision.

6. Conscious Connectivity

Advanced communication technology has made two-way instant communication around the world possible. Information in multimedia format is available to all. The internet is free of all the limitations of the physical plane, and in turn, liberates everything that it comes in contact with. It connects everyone globally. It allows every individual space to express himself. It provides knowledge to all. Public awareness can be raised on any issue, by anyone. Universal education, not only primary, but all the way to tertiary, can be achieved. Business is conducted over it. The internet and communication technologies empower us all. The majority of humans used to be an undifferentiated, amorphous mass, with most of the power in the hands of a miniscule minority of kings, serfs, religious leaders and land owners. But today anyone can become a news reporter, a public activist, leader of a mass movement, writer, singer, trader and much more.

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The internet of things, or the internetworking of physical devices, buildings, vehicles and other objects, is going to blur all boundaries, between objects, between planes, and between humans and the world. We are headed for an ever more closely interconnected future. The continuing advances in transportation and communication technology, the declining costs and the resulting proliferation of electronic devices and connectivity hold an infinitely creative potential. Faster and safer travel, easier and more reliable transportation of goods, and interactive communication are all powerful, because they bring people together. Human capital is unique when compared to all other resources available to us. The more it is used, the more it grows. It has scope for infinite expansion and creative application. It has the potential to overcome every challenge we face today, and anticipate and prevent future ones. It can turn a problem into an opportunity.

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Notes

1. "Train rescue: Commuters use people power to free man trapped against platform at Perth's Stirling station," *ABC News*, 7th August 2014 http://www.abc.net.au/news/2014-08-06/man-freed-after-leg-trapped-in-gap-on-perth-train-station/5652486
2. Eugen Weber, *From Peasants into Frenchman* (Stanford: Stanford University Press, 1976)