

The Impacts of Global Inequality in Social Networks: Examined in Three Major Theories

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Abstract

The rapid growth of modern long-distance communication technologies both in term of quality and quantity and the consequent emergence of cyberspace in parallel with the real world, has led to new forms of inequality which can be interpreted in three different ways. Using the three-generation theory of social networks (Oral networks; Long-distance networks; and, Digital networks), one can make domestic comparisons, and find countries in which the majority of the population are within the third category or the digital network. On the other side of the extreme, are nations who are still under the limited conditions of the first and second categories of oral and long-distance networking. This paper presents a chart using a combination of different statistical indicators to illustrate the inequality in question. The focus of this paper has been on the two countries of Iran and the United States as its case study. The conclusion at the end suggests that tackling and reducing the inequality in question has to do with 'national will and national facilities' as well as 'individual will and individual facilities'.

Keywords: global inequality; communication power; oral networks; long-distance networks; digital networks

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Introduction

When for the first time the concept of 'global inequality' was brought to light in the late 20th century, the focus was mostly on issues such as lack of education in Asia compared to Europe, how scarce food resources were in Africa, while they were considerably abundant in North America and Europe as well as income per capita, gross domestic production and other similar standards which were tremendously higher in some parts of the world than in other parts. All the statistics were indicative of inequalities and injustices at a global level. Nowadays, a new form of inequality has emerged that can be explored from three different perspectives: A- The Communication Ecosystem Theory, B- The Global Dual Spacization and C- The Three-Generation Theory of Social Networks

The Communication Ecosystem Theory

In 1970, that is 45 years before the introduction of the notion of 'communication ecosystem', the term 'media ecology' was coined by American author and media theorist Neil Postman. He referred to media ecology as the symbolic relationships existing among people, the media technology and the way they're consumed (Postman, 2000, p. 10-16). For example, an idea was formulated when a 2012 field research project was launched on the content and the way four visual messages were received in six different countries (1). The results led to the hypothesis that the communications world is changing. Indeed it says, the audience of the media used to be the masses in the past but now they have changed into messages which are 'massed' in both their forms (written, visual and audio) and content, thus, establishing a certain communication ecosystem. A communication ecosystem is defined based on the model of the original concept of ecosystem which is the interaction of organisms (such as different masses of living creatures in a certain geographical environment) with material (such as soil in the same geographical environment) and energy (such as sunlight, wind, etc.) (Blew, 1996, p. 171-173; Tansley, 1935, p. 284-307). Now, likewise, any written, oral and visual content, which under the influence of some source of power, is 'massed' will be considered as equal to organism in the communication ecosystem. The material here are all the

communication tools ranging from postmen on horse-back in ancient times, to stamped letters in the post box, telegram, telephone, books, newspapers, radio, television, etc. to more modern-day means such as the internet, weblogs and websites. In addition, the third concept of energy is defined under norms written or non-written, as well as rules and regulations. The interaction between these three elements would be the definition of a communication ecosystem (Figure 1) which is an umbrella notion covering all communication contexts (Mohsenian Rad, 2015, p. 11). These days, massed messaging is mainly a phenomenon which involves the participation of the communicator who makes use of modern tools to share a particular message on cyberspace and therefore plays the simultaneous role of the sender/receiver or the communicator/communicated. In the past, that power was at the hands of ruthless rulers and dictators. One such example of a massed message is former Libyan leader Muammar Gaddafi's 'Green Book'. It can also appear in the form of portraits of authoritarian rulers on the streets and huge walls, on schoolbook first pages, the front of theatres, on bank notes and coins and a host of other places.

At times, the format is of a massed message. For example, one could refer to the era prior to modern-day communication tools, when in most countries even the developing ones massed messages would come in audio format, that is people's direct conversations or the radio broadcasting, rather than telegrams, letters, newspaper or books.

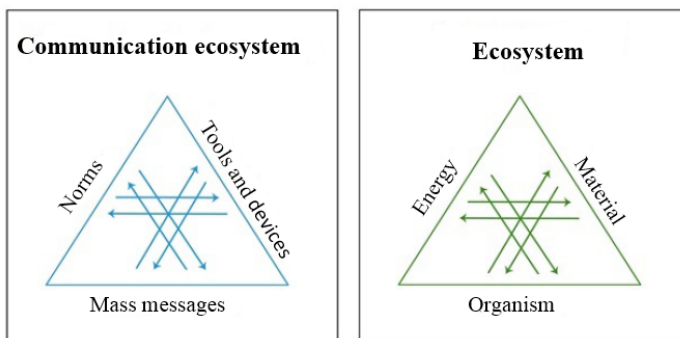


Figure 1. The ecosystem created as a result of the interaction among material, energy and living creatures (Tansley, 1935, p. 284-307), as compared to the communication ecosystem produced by the interaction among communication tools, norms and massed messages (both in form and content) (Mohsenian Rad, 2015, p. 11).

Despite the latest modern-day developments in media communication tools, one can easily detect the different formats of massed messaging in two different communication ecosystems. One example is the massive volume of written messages that come with commodities in developed countries compared to underdeveloped countries. 'Communication ecosystems' are quite different from 'communication climates' as termed by Ronald B. Adler and divided into such categories as warm, calm, cold and stormy. Still, the definition is closely related to that of a communication ecosystem. In fact, in communication ecosystems one may encounter varying climate conditions at different times, just the way Adler refers to it as stable and unstable. Something that may look calm at one moment can turn turbulent at the next. Calculating a communication climate is indeed not as simple as looking at a thermometer. In fact, here (in communication ecosystems) the criterion is the warmth and emotional status covering the relationship between the two sides of the communication (Adler, 2009, p.206). For an instance the climate change in the communication ecosystem, one may refer to what happened in January 7, 2014 in France. The message of the terrorist attack on Charlie Hebdo office and journalists in Paris was mass messaged in the first few hours more in audio-visual form than in any other medium. As a matter of fact, as with the world of nature, where some environments are favored as pleasant ecosystems while others are unbearable, the world of media shares the same quality when it comes to the potential possibility for a message with a certain content or form to mass messaged.

The Dual Spacization Theory

On the debate on 'virtual space', the paradigm of 'the Dual Spacization of the World', referring to the real and virtual spaces, was introduced and developed by Saeid Reza Ameli, who argues that one cannot gain an understanding of the world by merely grasping the real world alone and relying on the one-space notion. Indeed, both need to be simultaneously understood. In other words, understanding the virtual space without considering the factors of the real world makes one's outlook and the whole study flawed (Ameli, 2011, p. 24). To study the virtual

space, Ameli takes meta-factors as parameters which influence everything, arguing that elements such as 'speeding-up of space', 'comprehensiveness', 'constant accessibility', 'meta-place', 'meta-time', 'universality', 'fluidity', 'intensification of reality' and the state of being 'multi-mediated' are among factors which affect life in the second space (virtual space) and create a double-spaced life (Ameli, 2011, p. 26). Each of the above-mentioned concepts has its own specific definition. Some are clear like 'constant accessibility', while others like 'intensification of reality', are in particular not easy to understand. Referring to Jeff Zaleski's 'Soul of Cyberspace'. 'Reality has a certain pace and continuity', the reproduction of which in subjective levels of the virtual space has created changes in the specifications of the physical space. As a result, the reproduced reality is still reality. However, from the physical space, it seems to enjoy a greater speed, intensity and power as it reaches individuals (Zaleski, 1997 as cited by Ameli, 2011, p. 29). Indeed, highlighting reality; could be the first factor in intensifying reality in the virtual space, one interesting example mentioned by Ameli as he likened it to an apple, saying a re-highlighted apple with an intensified reality might look better and could be tastier than the real one.

A tremendous global inequality can also be observed by taking the approach of the dual spacization theory. This inequality comes apart from those members of the world population who have a 'flawed understanding' as argued by Ameli. Indeed, he addresses those who enjoy the chance of presence in both of the two spaces, but may have a faulty notion if they fail in understanding the difference between the real space and the virtual space. Such a minority could be found even in developed countries such as the United States, particularly among the ageing population who may have no motivation for a presence in the virtual space, thus suffering from a flawed understanding of the world. Now, the inequality in question here has to do with societies where due to low levels of 'national will and facilities', members basically suffer from a low chance of participation in the virtual space, let alone deciding about understanding it or not. In other words, there is no space at all to decide on in the first place, thus making the whole argument pointless. One clear example of such case is Eritrea where the internet penetration rate is only 1% and

about 78% of the population live in rural areas with no access to landline communication (Central Intelligence Agency (CIA), 2015a). Therefore, they basically have no chance to be exposed to the virtual space where they would face the decision whether to grasp it or not and avoid the flawed understanding. This is another sort of modern-day global communication inequality.

The Three-Generation Theory

Social networks are a series of social connections which directly connect an individual to other individuals and indirectly to a greater number of people. The connection is made possible through either direct contact or intermediary means (Mohsenian Rad, 2012, p. 38). The importance of social networks lies in the fact that they make up the individual's social relationships through connections (Shepard, 2007, p. 151). The major function of these connections creates a sense of belonging in the individual and draws different types of support systems for the individual (Shepard, 2007, p. 153). The theory (2) states the idea that the contemporary world is experiencing a third generation of social networks. The first generation as exhibited in Figure 2, refers to oral networks made up of partial networks which are scattered, disconnected, thinly-linked and rarely crowded. In each partial network there used to be centers establishing the two-sided connections of the members. In Iran, those centers have been bazaars, coffeehouses, public baths, water storages, venues of mystic rituals, mourning sites, mosques, gatherings on occasions (Abolfazl charity and similar gatherings) etc. Here, the mail carriers and pigeons have been the elements establishing the connections between the networks.

Up until the 18th century, the form of social networks in the countries which are known today as developed nations was more or less the same as they used to be in oriental countries. It was usually a combination of a large number of small limited networks or partial networks. For instance, prior to the 1776 American Revolution, the 13 colonies used to live without any connections together. This lack of connectivity could be justified by 1- Geographical distance 2- Horses being the only means to travel and 3- The lack of communication due to wide linguistic diversity, such as French, German, Scottish, Ibo Ashanti and Leni-Lenape.

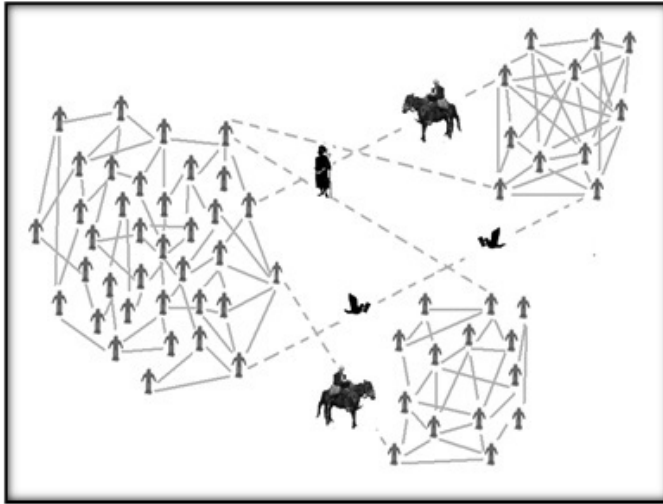


Figure 2. A mass of numerous partial networks with thinly-linked interactions relying on humans and animals (the first generation of social networks of universal shape)

The second generation of social networks or ‘Tele-Networks’ grew during a 37-year period starting from the publication of the first stamps in Britain in 1840. It developed further following the launch of the first telegram line between Washington and Baltimore four years later and the first telephone line again in the United States in 1877 (3).

The means which created the second-generation of social networks were rapidly developed and became widespread in the West. Only five years into the introduction of the telegram in the United States, the total length of the lines reached 10,686 kilometers (Zahryardi, 1849, p. 1). Another example is the post which spread across the entire Europe in a matter of 20 years, technically becoming part of the lifestyle of the Europeans and Americans (Mosaheb, 2002, p. 669). The same holds true for the telephone, which rapidly spread home to home. In 1910, there were 7,635,400 telephone lines in the United States, around 25% of which had been installed in rural areas (Hardeman, 2003, p. 232). The fast development of communication tools in the West facilitated the connection between two individuals with long distances through such means as the post, the telegram and the telephone, thus “the partial networks of the first generation were linked in a matter of a few decades, turning into a massive unified

network.” Such a development immensely impacted the structure and the functions of social networks. On the importance of the telegram, Marshal Herbert says “In most European countries, the telegram sparked a diversity of smaller national groups and intensified the continuous arrangements and mosaics...it rapidly weakened the centralized structure,” (McLuhan, 1998, p. 297-300).

The situation in the underdeveloped countries, however, was different, marking the first form of inter-nation inequality. There were three major areas of differences causing inequality: 1- The three major means of communication reached those countries much later. 2- The total share in those facilities for the general population of these countries was minor. And 3- The distribution was not homogenous.

While analyzing the details of the differences, one comes across Iran and the case of interest usage. The first series of stamps were released in Iran in 1868 namely 28 years after they started being used in the West. It took four years to be used by an extremely low-educated society. Still, even after the majority of the population learned about the post and its functions, the spread was slow as there was a limited network that it covered. All the towns and villages across the country were not in that network. As a result, based on 1958 statistics, only one out of 171 Iranians used the post once a year (Statistics Yearbook, 1966, p. 479).

Although the telegram was launched in Iran on the 13th anniversary of its introduction in the West, it was only used between two of the King’s palaces with a 2km distance. Even 14 years later, when the line was upgraded to a 319km distance, it was still meant for communication between the king in Tehran and the prince in the city of Zanjan. In 1958, the total number of telegrams sent and received across Iran was 4,682 by an entire population of 18.5 million (Iran Statistics Yearbook 1966, p. 479). That means only one among every 4,000 people would use the telegram, while the rate was five times higher in the United States (Historical Statistics, 1976).

The status of the telephone communication was more or less similar. The first line was launched in Iran some 45 years after it was launched in La Porte, Indiana. The first Iranian network

comprised of 3000 lines, in 1947. During the first three years, no lines were added to the network and no new branches were launched in other parts of the country (Mo'tamedi, 1997, p. 40 - 41). In 1958, the share of Iranians telephone usage per capita was extremely low, standing at 0.025 while the figure was 16.6 in the US, 14.3 in Sweden, 12.8 in Canada, 3.7 in Austria and 1.3 in Spain (Hardeman, 2003, p. 233). In other words, on the 70th anniversary of the invention of the telephone, the communication power of any member of a social network in the US was 664 times greater than an Iranian. In fact, all the telephone lines in Iran had been installed only in the capital Tehran (The Fourth Plan Report, n.d., p. 196), while over half a century before that, about one fourth of the American telephone users were in rural areas (Hardeman, 2003, p. 232).

As shown in Figure 3, using all the information above, one can come to the conclusion that the second generation of social networks in developed countries is homogenous and widespread. This connection was made possible through the post, the telegram and the telephone. As a result, the distribution was defined based on the distribution of the population and not the distance. In addition, due to their nature, these three means of communication would allow little room for inequality in the developed countries.

The transition from the first generation to the second generation in underdeveloped countries which were later referred to as developing countries was different from what happened in the West as it was associated with domestic inequality. Although the model of social networks was transformed compared to the first generation, the problem was the large number of partial networks which were reduced to only three. The new model was made up of the partial networks available to those living in the capital, the rich, and the elite which have been illustrated in the following model in the large upper circle on the right. The model is to some extent similar to its western second-generation.

The large circle on the left represents the majority in places where they mostly had access to the telegram but none to the telephone. There was this small minority who were unable to use the post due to illiteracy. They were basically stuck in the slow process of transition from the first to the second generation. Indeed, the people who still lived in the first generation of communication

networks were fading (people in remote villages). Such a trend, benefiting the educated, the rich and the city residents on the cost of the people living in rural areas, continued until the third generation of communication networks were established, leading to a rise of both domestic and inter-nation inequalities.

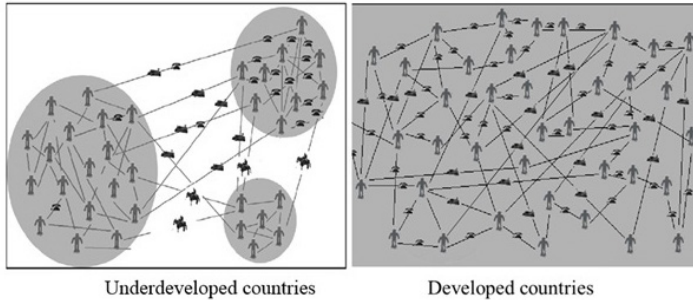


Figure 3. A model of social networks formed by the telegram and the telephone in a developing country, Iran (a combination of the first and second generations as well as the transition from the first to the second generation of communication networks).

The communication tools that were the basis for the virtual social networks and laid the foundation of the third generation of communication networks, shared the same specifications as the tools in the second generation, namely the post, the telegram and the telephone. But, as Shepard explains, those tools were no longer slow and hard to use as they were in the past (Shepard, 2007, p.152)

Robinson (2008) as cited by Panteli (2009, p. 8) describes the new virtual social networks as a second life for human beings in a different place with a new activity. To him, the network has major qualities: it is multi-mediated, massive and crowded as well as it has multiplayer. The virtual social networks are online, creating a virtual space where one can experience a different geographical environment while they are within the internet space. Although here the communication does not take place in its traditional form, it still holds potential similarities to it (Panteli, 2009, p. 6).

One of the advantages of virtual social networks is the facilitation of 'social contact'. A rapidly growing the sense of group membership in particular networks thanks to the possibility for everyone to share the content of their messages (texts, pictures, audio and videos) to a list of followers who have signed up to receive them. Members of the third generation of social networks,

indeed, have new options and fresh capabilities due to new facilities which were not available to the second generation of social networks. At the same time, the third generation of social networks managed to eliminate some of the second-generation facilities. One clear example is the telegram. The same fate may await landline telephones as well.

The capabilities of the third generation of social networks have provided the same communication among members of a small partial network common in the first generation of social networks, the only difference being that the third generation contacts take place in virtual space. The most popular products are social media networks such as Viber and Telegram, to which one can add Wikis, namely open-source websites accessible to all users who can add and edit their content. There are also podcasts, audio and video files which users share online. Another means of communication are forums where users exchange views on different subjects. There are also microblogs which are a combination of social networks and small blogs with tiny contents being updated by users.

Developed countries view the third-generation of social networks as a crucial social resource and asset, trying to make them available and reachable to all members of the society (Neubeck & Glasberg 2004, p.106). The project aimed at providing access to everyone has already been carried out in many developed countries and is still growing. In 1991, only 1.4% of the employees in the US would telecommute. The figure rose to 5% in 1999 and is expected to reach 40% in 2020 (Wood, 2010, p. 252).

Third-generation social networking in developed countries mainly fulfils personal communication demands rather than public issues. In developing nations, however, part of the users' participation is meant to fill in the communication gap imposed by state censorship and intervention. Still, it must be noted that even in some developed countries, there are signs of domestic inequalities when it comes to participation in third-generation social networks. But here the problem is mainly the lack of individual will and not national will. It seems that the inequality with regards to access to third-generation facilities is still an issue in the United States too. However, the rate is much lower than in Iran. For instance, based on a 2013 report, 11.6% of American

households had no access to the internet but that's because the families had no willingness to possess it. Among the rest 88.4 households some 10.3% have a low-speed line. Still, the trend is not the same in all states. For instance, the household access rate is 94.4% in Utah (85.7% access high-speed line, 9.2% access low-speed lines). The rate in Mississippi is 14% lower than Utah (62.3% high and 27.7% low) (US Census, 2014). As a matter of fact, the nature of the third-generation social networks make domestic inequality an inevitable phenomenon. One research in the US, for example, has demonstrated that a user's connections in social networks has to do with his or her level of education. In other words, people with higher education levels are more connected in social networks. On the other side of the extreme are the elderly. The same model exists for city residents compared to those who live in rural areas (Shepard, 2007, p. 1527). The same research has also shown that the access and connectivity for the rich, men and the whites are greater compared to the poor, women and blacks respectively. This side of the third-generation of social networks and the level of inequality has turned into worrisome issues for western scholars. Neubeck & Glasberg, for instance, considers domestic inequality a strong impediment to social justice and the key factor for social progress (Neubeck & Glasberg, 2004, p. 107).

When the chance for a new form of communication was made available to developing countries by the third-generation of social networks, the tendency to replace the second-generation with it was much greater compared to developed nations. This could probably be explained by the nature and history of traditional communication in developing countries. The warm welcome was as a research in the 1980s demonstrated in developing countries the connection between an individual with their family, neighbors, relatives, friends, etc. would make up 35 sorts of communication demands (Wright, 1975, p. 255). However, the rate is expected to gradually decline. Adding to that, the functions of the third-generation social networks in developing countries has been different from developed countries. This is explained by the low speed internet and pint-sized bandwidth combined with software issues such as filtering and state control. This difference has also changed the structure of the third-generation social networks

in developing countries, where lack of access to satisfactory and standard local media, intentional or unintentional inability of media to fulfil the demands of the users, have made them resort to global networks. Evidence shows that the more the third-generation develops and the more the user power increases in the third-generation social networks, the state censorship as well as self-censorship will decline. This is part of the capability of which people's connection to social networks challenge the existing social structures and disrupts the long-standing and stagnant social orders (Neubeck & Glasberg, 2004, p. 107).

One of the major characteristics of the third-generation social networks in developing countries is the widespread usage of mobile phones among people. A comparison between the internet and the mobile phone usage shows that the former demands a certain level of literacy (ability to read Latin letters) and numerical knowledge along with the ability to afford a computer and a landline telephone. But when it comes to mobile phones, there is no need for that level of literacy nor the expense. The issue of the fast growth of mobile phone usage along with the high usage of the Internet in Iran clearly marks that difference. In fact, the early cellular phones (non-smart ones) managed to easily replace landline telephones as well as the heavy charges of the telegram (which also demanded the physical presence at the offices and later ownership of lines). In other words, the non-smart mobile phones became the means for the transformation of the second-generation of social networks in developing countries, with the internet providing the grounds for their public participation in the third generation of social networks.

The first Iranian mobile communication network with only 9200 lines was launched in Tehran in 1994 (Mo'tamedi, 1997, p. 49). From 2002 onwards, the trend witnessed a huge sudden growth, so that the figure in 2008 increased 3000 times compared to that of 1994 and 12 times more compared to 2001 (30 Years of Communications, 2009, p. 21). According to Iran's Ministry of Communications, the rate has been the highest in the Middle East (Kheyrikhah, 1998).

Four years after its international introduction, the short message system was opened in the Iranian network, covering half of the users in 2004 and spreading to all the 8.6 million lines

in 2006 (interview with Public Relations Chief of the Iranian Telecommunications Company). The spread was massively received by the public and on the eve of the new Persian Year (in March 2008) alone, some 215 million congratulatory text messages were exchanged among Iranian users, despite the fact that 53% of the Iranian cities had no mobile coverage back (Kheyrkhah, 1998, p. 4). In addition to using mobile phones for traditional customs such as messages on New Year eves and religious occasions, the Iranian social network, also exchanged jokes, and sarcastic texts mainly with political themes. In fact, they were short because the non-smart phones offered limited characters, insufficient for more serious, lengthy and analytical messages. Based on the latest statistics, 85% of Iranians possess mobile phones, while the figure for internet access is a mere 28% (the rates in the US are respectively 100 and 87) (CIA, 2015b). However, the variance for distribution and access in Iran is relatively high. In addition to the above-mentioned difference in comparing the two countries, the inequality in the speed of internet and the bandwidth are significant issues. Furthermore, as was the case with the early years of the development in the second-generation of social networks, here again, there is an unequal distribution combined with a wide gap between rural and urban populations as well as the educated and the uneducated with regards to internet access which has made the model of the third-generation of social networks in a developing country like Iran quite different from developed countries. For instance, until 2005, no Iranian village had access to the internet. Four years later, only in 9300 there were ICT offices (2009 Statistics, p. 11). That means 85% of the country's villages, meaning 40% of the population had no internet access (figures from 2007 Statistics Yearbook, p. 110) and considering the people who accessed the net through ICT offices in those 9300 villages were deprived from the level of free access in cyberspace as enjoyed by users with personal computers. Indeed, in many Iranian towns, there are lots of people glued to their mobile phones while they have no access to the net or even have any idea about it. Even though they may only use the text message system, since using the internet demands certain level of knowledge about other languages specifically English as well as computer skills, thus, using the internet becomes almost

impossible for them. As a result, those Iranians who replace their ordinary phones with the new smart ones might not have the same status in terms of their social networking activity compared to users in a developed English-speaking country. The above-mentioned facts indicate the same difference of usage in developing and developed countries alike. They emerged in the second generation of social networks but exist through the third generation as well. This has been illustrated in Figure 4. On the right side, one can see the model of the third generation of social networks in developed countries, which is completely nationwide and is in the form of similar shapes domestically interconnected with the capability of links to the outside-world networks. The model on the left is for developing countries. On the upper right of the model there is a partial network which has all the features of the third generation with a status similar to that of developed countries, from which the connection to the outside world is made possible. On the left, there is a large circle in which there are members who technically enjoy staying in the third generation of social networks thanks to their access to facilities as well as national and individual will. They can even use the old second-generation means plus non-smart cell phones that are widely interconnected in the third-generation circle. There are also portions of the population that are still part of the first generation. Among them are people with a nomadic lifestyle living in remote mountains and deserts, residents of small-population villages in deprived provinces as much as 11 million people over the age of 15 who are still illiterate.

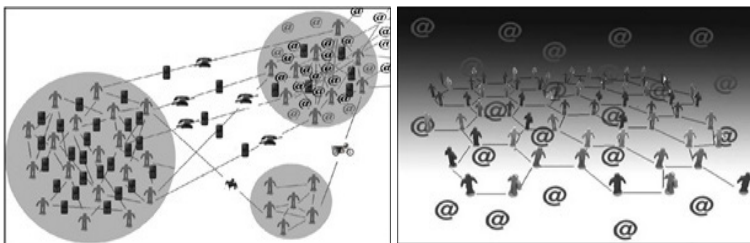


Figure 4. A model of social networks formed by internet in developing nations such as Iran (a combination of first, second and third generations) alongside the relatively homogenous and widespread third-generation network in developed countries.

Facilities, National and Individual Will in Battling Inequality

The change in communication ecosystems, better understanding of the virtual space and greater participation in the third

generation of social networks are not gained through individual or national will alone. Indeed, reducing the inequality examined and discussed through the three theories of communication ecosystems, dual spacization, and the three generations of communication networks, demands a relative balance of elements making up facilities as well as individual and national will. The parameters in question could be categorized into the following:

A. National will and facilities

1. Nationwide electricity network
2. Availability of equipment and centers needed for widespread distribution of internet access across the country
3. Providing necessary bandwidth for maximum usage of the worldwide web
4. Facilities for full mobile phone coverage in all parts of the country
5. Supplying the necessary hardware and software for synchronizing and merging the mobile phone network with the internet access
6. Providing essential hardware and software for merging the mobile phone network with media
7. Eliminating all sorts of media monopoly and preparing the necessary grounds for free competition in media production and distribution
8. Providing literacy programs to people stuck in rural locations still using old generation of communication networks (first and second generation)
9. Transforming existing paper data banks (libraries, archives, etc.) into digital data bases and resources
10. Availability of state and private sector services in digital social networks
11. Accepting the freedom of access in the digital network and the de facto freedom of the internet

B. Individual will and facilities

1. Financial ability to afford necessary tools like computers, smart phones, etc. to establish genuine participation in digital networks
2. Having access to a level of education proportionate with

- the level needed for participation in digital networks both in the national and the international languages
3. Motivation to experience new and alternative forms of technology and communication
 4. Personal positive experiences in using digital networks;

A Suggested Model and Index for Presenting the Status of the Three Social Networks in the Contemporary World

It is possible to use international indexes (such as penetration ratio of internet, speed and band-width in each country, the ratio of landline telephones, cell phones and smart phones in 100 and etc.) to offer a more precise model on the status of global inequality based on the three discussed theories. The result of such an analysis is shown in Table 1. The first row indicates digital social networks, whose indices are calculated in six lines and are then used to compare a developed country, the United States with a developing country, the Islamic Republic of Iran. The details are as follows:

The first row includes the internet penetration rate at 84.2% in the US and 31.4% in Iran. The second row shows figures of the first row as the area of two circles in square centimeters. In the third row, the radiuses of the circles in the second row are calculated as 5.2 and 3.2 cm. The fourth row compares the bandwidth of the two countries as taken from resources. In the fifth row, the bandwidth in the US (64089) is shown as 1, thus the figure for Iran is 0.256 in comparison. The sixth row seeks to find the difference of the internet bandwidth and speed in various countries using the factor of the 'facility index'. For instance, a user in Sweden enjoys a bandwidth 55 times more than a user in India and 38 times higher than another user in Niger (Fastmetrics, 2016). The basis of the index will be a combination of the bandwidth and the speed in any country compared to the global average (the present study has taken 146 nations in 2013). The study of those countries found an average bandwidth of 115798 and an average speed of 5.347 Mbps. Now, if one takes X for the bandwidth and Y for the speed in the following formula, the figures for the US and Iran will respectively be 0.345 and 0.45.

The second section which has to do with the oral network is made up of three rows. The first row indicates the illiterates in

2013, 1% were in the US and 15% were in Iran. The second row deals with the first-line figures as areas of two circles in square centimeters. In the third row the radiuses of the circles are taken as 0.2 and 2.2 cm². And the third row is about the second-generation network or the long-distance communication network. The three rows contain the following information:

Table 1. Existing indices and facility index for one developed and one developing country

Social Network Model Factors	Developed	Developing
Digital Network		
1 Internet Penetration Rate	84.2%	31.4%
2 Are – Digital Network Circle	84.2	31.4
3 Radius – Digital Network Circle	5.2	3.2
4 Internet Bandwidth	64089	4632
5 Internet Speed	1	0.256
6 Internet Bandwidth and Speed Index	0.345	0.042
Oral Network		
1 Percent age of illiterate	1	15
2 Are of Oral Network Circle	1	15
3 Radius-Oral Network Circle	0.2	2.2
Tele Network		
1 Area – Tele Network Circle	14.8	53.6
2 Radius- Tele Network Circle	2.2	4.1
General Information		
- Population	318892103	80840713
- Number of Landline Phones	139000000	28760000
- Number of Cellular Phones	310000000	58160000
- Number of Smart Cellular Phones	173000000	697920
- Total Landline and non-Smart Cellular Phones	176000000	86222080
8 Total Landline and non_Smart Cellular Phones Per Capita	55	107

The first row represents the area of the two circles showing the share of this generation of networks compared to the other two. The easiest and most practical way to calculate it is to reduce the total of the areas of the two circles of the two digital and oral networks from 100. Since it was shown in the rows of the two previous sections that the 84.2 units in the US can become members of the digital social network and the illiterate make up 1% of the population, and then 14.8 units are members of the second generation or the long-distance network. The second row deals with the first-line figures as areas of two circles in square centimeters. In the third row the radiuses of the circles are taken as 2.2 and 4.1 cm².

For a more tangible picture of the second-generation networks, the fourth section of the table offers general data on the population, number of landlines, cell phones, smart phones and the sum of those figures per 100 people.

For the circles in the above table, the one representing digital networks in countries without filtering were drawn without a border, while the ones suffering from filtering were shown with dotted border. Meanwhile, the ‘facility index’ was shown as a column inside the circle of digital networks. Figure 5 displays three different generations of social networks in Iran and the United States based on 2013 statistics.

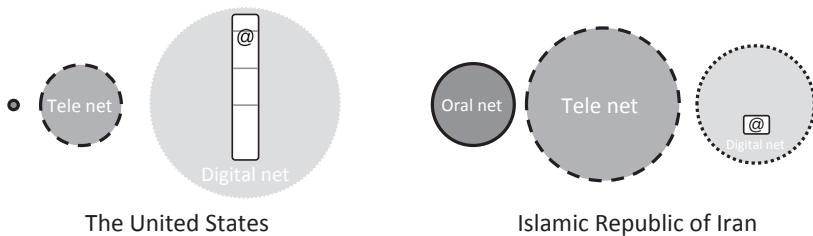


Figure 5. Circles representing the three generations of social networking in Iran and the United States in 2013.

The research also shows to calculate the area of the three circles showing the status of social networking on the first generation (oral), second generation (long distance) and third generation (digital) from the bottom to the top for all the countries, then the order would be a triangle, a rectangle and an upside-down triangle.

Therefore, if the area calculated for the first generation is larger than the other two, as with the case of Niger in Figure 6, it would be shown as a triangle. If the total area of each generation is equal, it would be shown as a rectangle like the case of India and if the third or digital generation is bigger, then it would be an upside-down triangle like the case of Sweden.

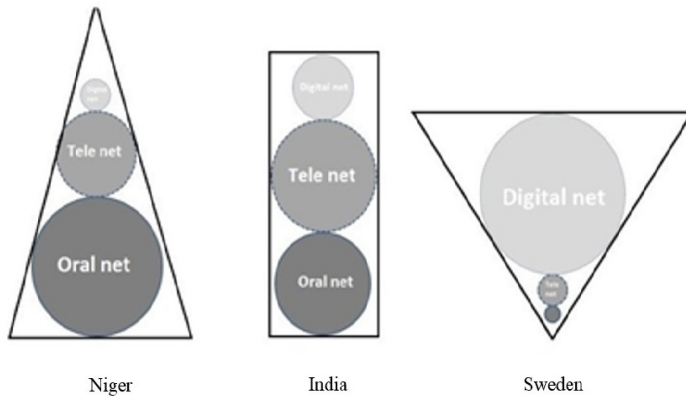


Figure 6. The arrangement of circles representing social networks in different countries shown inside a triangle, a rectangle and an upside-down triangle. (Sweden, India, Niger)

The following is an explanation on the above arrangements:

1. Triangle arrangement

It refers to countries in which the majority of the population are still members of the first-generation social networks, such as Niger, where 71.3% of the inhabitants are illiterate and the internet penetration rate is only 1.7%. The country with a population of 17.5 million people has only 116 thousand landline phones. However, there are some 5.4 million non-smart cell phones which make up a 27% share in the circle shown in the model. Therefore, the largest circle which is the one in the bottom is related to the first generation with a share of 71.3%. The second circle represents the second generation with a 27% share, while the top circle showing the digital generation has received only a 1.7% share. One could generalize this, saying countries with a triangle arrangement are suffering from a chronic lack of knowledge. The population in those countries will be informed only in case of media focus and hype and when the partial networks in use

between the other two circles make the population aware about a particular fact.

2. Rectangular arrangement

Countries which have an equal or larger circle representing their second generation compared to the other two circles fit a rectangular arrangement in the model. One case is India, where 37.2% of the population of over 1.2 billion is illiterate, the internet penetration rate is 15.1% and the share of the second-generation networking is 47.7%. In India, there are only 31 million landline phones, while the number for cell phones is some 893 million. In such countries, members of the digital networking generation can easily transmit the news about social situations and the activities of the ruling and powerful elite to the others through one-to-one, one-to-some and one-to-all forms of communication, and at the same time share their views, beliefs and interpretations. However, they lack the means to establish the contact with the other two generations namely the other two circles. The residents in the second-generation circle have access only to long-distance communication which are meant only for conveying short messages in the forms of one-to-one and one-to-some and not the one-to-all communication. They can also make very short comments in the size of the old telegrams. In fact, here sharing cannot go beyond short messages, and is rather expressed as a feeling or a joke and fails to reach the people in the circle which housed members of the digital generation social networking. In other words, those people have the facility to acquire the information, but the information mainly comes from traditional masses rather than new and modern media tools.

The residents of the circle representing the first generation have no provision or means to establish long-distance contact with the members of the other two circles, thus suffering from a state of chronic media blackout. They do at times sneak into the other two circles through the small holes to access information and that is when media begin to highlight a certain issue. Then the first-generation users will receive information in a multi-staged process, consuming a superficial level of information from the other two circles. It seems that regarding the level of knowledge on their surrounding environment, in the rectangular

arrangement, people from different walks of life are categorized in three separate groups and are more or less deprived from the depth of views and the opinions of others.

3. Upside-down triangle arrangement

The countries where the digital network has a greater share compared to the other two circles are covered in the upside-down triangle arrangement. One example is Sweden, in which the ratios of the three circles for the first and second generations are respectively 1 and 4.2 units, while the figure for the third generation is 94.8% (World Bank, 2015). It is in this arrangement that the majority of people have access to information provided by monitors on social situations and the performance of the ruling system and the powerful elite. Here the communication is easily made possible through one-to-one, one-to-some and one-to-all channels and users have the chance to share their comments and interpretations with others. The larger social network here is practically very much similar to the partial networks of the 18th century prior to the advent of the post, telegram and telephone. The difference is the fact that in the past, such communications stipulated physical presence in a certain geographical point. But now, in the case of Sweden for instance, it is the common beliefs and topics of interest which gather people in one spot. There is also another crucial difference: the various small and unstable partial networks in the digital generation can rapidly join and create a unified powerful majority with common and equal levels of information. One example is what happened in the wake of the 2015 terror attacks on the Paris-based Charlie Hebdo office.

Still, there are societies, in which digital social networks suffer from slow internet speed and a pint-sized bandwidth, leading to problems in information feeding. More importantly, state-imposed filtering can exacerbate the situation and cause information malnutrition, because the users will have to acquire and consume the information they demand not from their own circle rather from the border of other circles. Although there are widespread and cheap proxies that allow users access blocked data, they bring about new problems which affect the consumption of information.

Apparently, the forms of the two triangular and rectangular arrangements may look the same in democratic and undemocratic

societies. Still, there are differences from within. In democratic societies, the residents using the digital networks have access to the free flow of information and therefore play a key role in affecting the content of the data as it is being transmitted through the entire three networks. In fact, in those countries as the arrangement moves from the rectangle shape to the upside-down triangle, the ruling system will be more vulnerable and will have a harder time trying to hide facts and convince the society about issues which are of public ramifications. However, for countries which have the triangle and rectangle shapes but no democratic system, there are residents in the first-generation network who fall victims to the state-led short-term populist propaganda. Here, those in the second-generation network may decide to criticize the ruling authoritarianism, but that won't go beyond simple short-message jokes. Indeed, the sole merit of the second-generation network for them will be merely emptying their anger and getting it off their chest through jokes and nothing more. And here the users of the third-generation network will be only analyzers of the system's performance within their own circle without having the power to affect the entire population and the other two networks.

Concluding Remarks

Up until the turn of the 18th century, people in different countries, no matter how educated or wealthy, were more or less members of oral partial networks. Under normal circumstances, they were thinly connected and the bond would become stronger in critical situations. All in all, the first generation would make up an oral national network. In the early 19th century, however, in a matter of only 37 years, three major tools of communication, namely the post, the telegram and the telephone, were introduced and changed the already existing traditional modes of communication. In developed countries, the change rapidly led to the development of a new third generation of social networks which connected the earlier long-distance communication networks into a one unified network. In underdeveloped countries and later the developing countries, nevertheless, it merely led to the formation of three separate networks which led to the emergence of a new era of domestic inequality in information access. Since the end of the 20th century, the internet came to the public sphere, creating

the third generation or digital networks. The new development brought forth a cyberspace alongside the real world on the one hand; on the other, it created the chance for mass messaging of information at the hands of the public, something which used to be exclusively controlled by powerful rulers. This prepared the grounds for altering the communication ecosystem which is the fruit of 'the message or the massed message'. In the meantime, the emergence of the third-generation networks not only brought about inter-nation inequalities as witnessed during the advent of the second generation it also enforced the phenomenon of domestic inequality which had never existed before. Indeed, in the new generation of social networks, it was the individual facilities and will which began to play a key role (it was no longer only about being literate, rather a high level of education and financial ability were needed to afford a computer or a smart phone). As a result, the members or potential users of each network were presented in the form of circles. The arrangement of the three circles representing the three networks led to larger forms in triangular, rectangular and upside-down triangular shapes, each standing for a certain social condition.

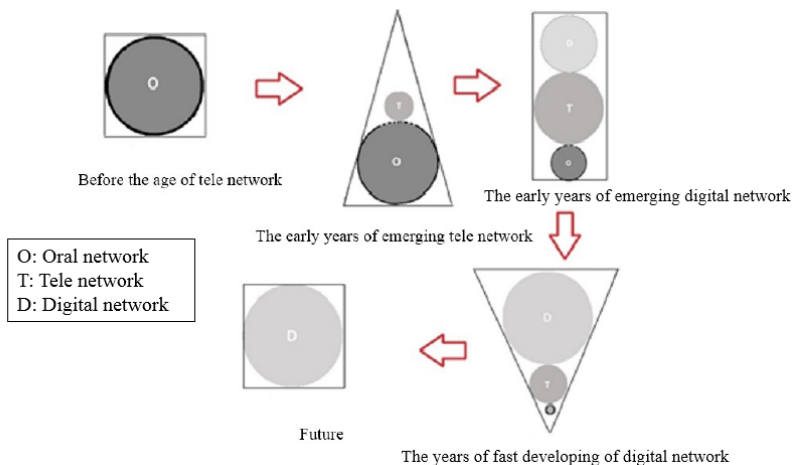


Figure 7. Circulation of social networks from the square shape in the 17th century to rectangle, triangle, upside-down triangle and the transformation into a square in the future once again

Assuming that the arrangement would be a square shape for the status of networks prior to the 17th century, it seems that

one can draw the conclusion that the same shape will reemerge in the future. Then with the likely development of simultaneous translation tools for all languages and the ushering in of the post-global-village era (market of the message) (Mohsenian Rad, 2005, p.1- 38), the single-square arrangement will be able to give rise to a new renaissance by dramatically reducing the communication inequalities.

Notes

- (1) My special thanks go to Dr. Hassan Jamali-Nik in the UK, Dr. Farzin Fahimi in Germany, Dr. Elham Amiri-Majazi in Australia, Dr. Abdolreza Zakat Roshandel in Canada, Vahid Baqeri in the United States, Dr. Davood Zareian and all my students and colleagues in Iran.
- (2) The theory was first raised at the Global Communications Association conference in India's Bangalore in November 2009. The title was 'Three Generations of Social Networking'. One year later, it appeared in the form of an article entitled: 'Three Generations of Social Networking; An Overlapped Presence in Developing Countries: The Case of Iran' and was published in Allameh Tabatabaee's Journal of Social Sciences (Mohsenian Rad, 2012, p. 37-74). Four years later, the theory was completed in a four-year-long joint project with Dr. Babak Rahimi, associate professor at the University of California, Saint Deigo. The title was modified and pursued as 'the three-dimensional share of social networks in different world communities'.
- (3) One could trace back the origin of the second generation of social networks in the development of post stamps, which in turn emerged in the West following an American act ratified in September 1789 on a road building project which led to the creation of a nationwide mailing system. In 1913, it had already connected the entire nation's towns and villages through a wide-ranging, overarching web.

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