

Globalization and the rise of telecommunication networks

Globalization means the ongoing process of increasing the mobility of goods, services, labour, capital, technology, and information. This process fundamentally depends on advanced technologies in telecommunications and in transportation. One effect of installing efficient networks of communication are decreasing cost for all forms of economic transactions, another one is the increasing connectivity and interdependence of the world's markets.

Although globalization is a term that describes in his proper sense the accelerated economic transformations in the last two decades, this development is due to the information revolution in the 19th century, which saw a rapid expansion of national and international networks of communication. The rise of international telegraph networks helping to overcome national and geographic barriers in telecommunications can be interpreted as the material and cultural basis for globalization.

This paper will explore the interrelation between the development of information technology and the process of globalization and their mutual dependencies. Starting with the first international arrangements and contracts in the second half of the 19th century, which regulated the technical and financial aspects of border-crossing telecommunication, it will also describe the role of monopolistic networks like the imperial telegraph system connecting the European states with their colonies as an example for closed systems being contrary to our today vision of open and democratic sharing of information in a globalized economy. Are these closed information infrastructures dinosaurs of the past or can we see them as the backbones of modern telecommunication? The international networks of information always produced winners and losers – the connected and not connected -, so globalization is also a process of gaining or losing economic and political power both resting on efficient information technology.

1)

The construction of the first telegraph systems in the 1840s was closely interconnected with another technological network, the railway system. The growing of the railway system with all his effects on national market integration was the prime mover of long distance telegraphy. The USA and Britain were the only states with a private financed telegraph system. Normally the telegraph was controlled and managed by the states administrations, so modern communication (that means electrical networks) was often integrated in the old communication networks of the postal services. With the widening of the user groups (the business companies, the press, and of course the military) the telegraph system was more and more seen as a private good and a communication system for national and governmental needs, a discussion that leads to the nationalization of the telegraph in Britain in 1868.

But the national orientation of designing telegraph networks was the bottleneck of further international growth. That was an ongoing problem in the fragmented political landscape in Germany but it was also a European problem. Because each country used different technical standards and tariff systems, messages had to be transcribed, decoded and translated at the border telegraph stations and was then handed out to the foreign telegraph station. This was a very complicated process, which increased the cost of transactions and delayed the whole international telegraph communication. After a period of national telegraph expansion international agreements and contracts became necessary. But first, every telegraph connection that crossed national borders led to different regional and state-by-state agreements; there was no unified European telegraph network. The founding of the International Telegraph Union in 1865 was the break-through in establishing international rules for telegraphy in Europe. 20 countries came to agree on standardized technical equipment, unified operation processes, and common tariff agreements.

Following the technological progress in telecommunications the International telegraph Union got responsibility and competence for unifying the international telephone system (1885), for international regulation of the wireless radiotelegraph (1906), for coordinating the allocation of frequency band for radio services (1927), for regulations concerning the use of satellites (1963) and so on and so on...But the International Telegraph Union was not only an international institution of unifying technical standard, but also an organisation which coordinates technical studies, testing, and measurement in different fields of telecommunications. Both functions – international standardization and research – led to a

growing group of technical experts and international networks, which shared their knowledge about new technical developments and organizational innovations. Sharing technical information and the transfer of technology were important functions of the International Telegraph Union.

With the International Telegraph Union technical and organizational paradigms on a national level were transformed in international standards for regulating the ongoing exchange of information between different nations and cultures. With delegating national rights to an international Institution, by the way today a part of the United Nations known as International Telecommunication Union and representing 135 countries, we can say without any doubt that the International Telegraph Union was one of the first global acting International Governmental Organisation (we call this in German sociology INGO) with a long lasting function for designing global telecommunications.

There is an ongoing shift from national technology to international and global constructed networks of technology; and telecommunication is only one example for these processes. But national political and ethical values never disappeared completely. Countries differ in terms of their economic structure, political organisation, and technological potentials concerning the sphere of production and consumption, and thus we have a core of different national regimes regulating the network systems. In the USA, for example, the problem of international standardization was not a main problem because with only two neighbours, Canada in the north and Mexico in the south, there was a quite different situation on the fragmented European continent and the amount of transatlantic telegraphy and telephony compared with the inner US-transmission of information was not very high. The latter still changed with the establishing of satellite telecommunication in the 1960s. The main challenge of the US-telecommunication system was to unify the national telephone system, which was split into two nonconnected networks (the Bell networks and the networks of the independent companies). So it doesn't wonder that in the progressive era before World War I a discussion about governmental regulating started and in the end state regulatory commissions supported the AT&T in becoming a monopoly telephone carrier. But regulatory commissions limited the power of the AT&T and by denying the use of telegraph lines for telephone companies they pushed AT&T to the scientific front of

designing a long distance telephone system and made the company the worldwide leading inventor in telecommunications for decades.¹

Although having their own national based history, we cannot understand these national technical styles without looking at the international institutions and technical experts, which influence the broader frame of the national cores of technology. So the lesson of the International Telegraph Union is, that a national history of information networks is incomplete without taking notice of the international and global trends in telecommunications.

2)

Although the International Telegraph Union guaranteed the standardization and sharing of technology in telecommunications, it was a project of the industrialized societies. There was a tremendous lack of information technology in the colonized societies and today it is in the Third World. Imperial networks of information technology were built up in the 19th century for the needs of the European colonial powers and were embedded in their geopolitical, military and economic aims.² Efficient imperial government was based on fast transportation technologies and on communication networks that exceeds the limits of these transportation technologies. With constructing the Indo-European Telegraph overland line in the 1860s London was connected with his Indian colony. But this line had some technical and political disadvantages. First of all it was expensive and very slow. By the terms of its agreements with the countries through which it ran, the Indo-European had to give local governments priority. The English government was also concerned about the part of the line passing through Russia, a potential military rival. The next logical step was the construction of an all-British submarine cable network, which gave the colonial power a secure connection.³ Financed by private investors the ongoing expansion of the British submarine cables led to a British dominance in worldwide telecommunication until World

¹ Starr, Paul: *The Creation of the Media. Political Origins of Modern Communications*, New York 2004, S. 205 ff.

² Hugill, Peter J.: *Global Communications since 1844. Geopolitics and Technology*, Baltimore 1999.
Headrick, Daniel R.: *The Invisible Weapon. Telecommunications and International Politics 1851-1945*, New York/Oxford 1991.

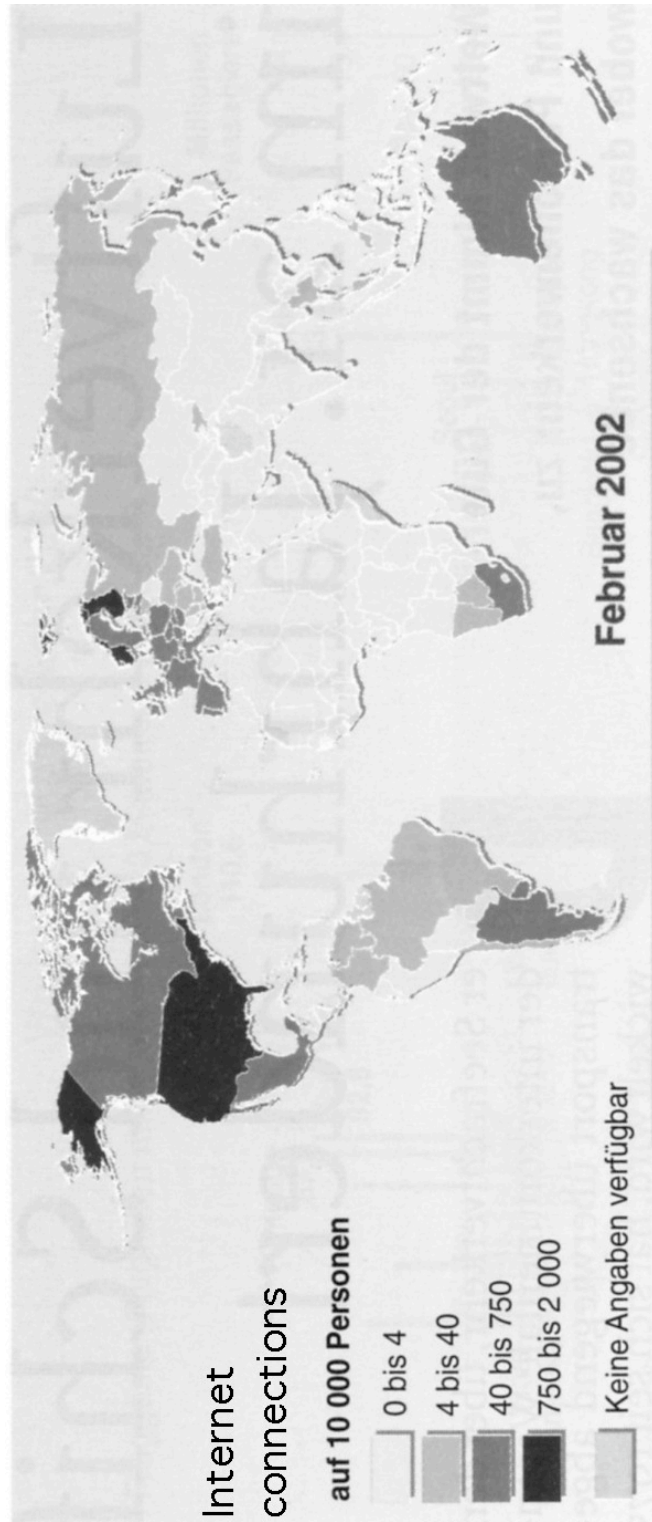
³ Finn, Bernard S.: *Submarine Telegraphy. The Grand Victorian Technology*, London 1973. Garratt, G.R.M.: *One Hundred Years of Submarine Cables*, London 1950.

War II. The imperial competition and struggle between the nations was a strong impulse to copy the British system and to develop wireless alternatives for reaching independence of the global British network. Although the networks were pursued by private business and could be used by civil users (trade firms and news agencies) in peacetime, the national governments restricted the access to their systems and erected a system of censorship in wartime. And, I have to mention this point, the of colonized societies had normally no access to the closed imperial networks.

With the break down of the colonial empires after World War II another problem for the new nations became obvious: This is the economic problem of market integration. We know that the transportation innovations in the era of industrialisation (railway, steamships) started a process of global market integration so that international and intercontinental trade flourished.⁴ One main effect of decreasing transportation costs in the 19th century was the convergence of commodity prices, first on a regional level and later on national and global levels. In combination with a switch to free trade, states like China and Japan were integrated in the European and Atlantic economy in the middle of the 19th century. The loser of this process was Africa with a very weak density in infrastructure. I will not deny that there are many other reasons for the economic and technical underdevelopment of many African states. Comparing the African situation in the 19th century with the 20th century we can see a strange continuity between the lack of market integration in the colonial era and in the post colonial era that rests on missing infrastructure. An efficient transport system for commodities and decreasing transportation costs are one side of the medal; the other side is the access to global information networks.

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⁴ O'Rourke, Kevin H.(Williamson, Jeffrey G.: Globalization and History. The Evolution of a Nineteenth-Century Atlantic Economy, Cambridge/London, ???



Le Monde diplomatique (Hg.): Atlas der Globalisierung, Berlin 2003, S. 11.

In the year 2002 the internet was used worldwide by 97 persons per thousand habitants, and with 532 users per thousand North America is still on the top.⁵ In the developing countries the average use was 39 persons per thousand, and in Africa 10 users per thousand. Only South Africa with a rate of 68 users per thousand was a significant exception.

Perhaps the lack of information technology is not the main problem of the Third world, but missing information technology prevents integration in the modern systems of financial transactions. So we can say, missing communication structures are an effect and a cause of the Third World-lack of market integration. Today many European and US companies are interested in transferring their information technology (especially mobile phones) to the African market. So we have another continuity in the dominance of western information business and technology, which will dominate the Third World infrastructure but, and this is a fundamental difference to imperial networking, this market expansion defines the African people as consumers, which ironically have to solve the problems of western market saturation in some fields of telecommunications.

3)

I will now point on another aspect of the history of telecommunications: this is the cultural vision, which accompanied the rise of information technology.

Culture is defined as a set of various beliefs and habits of thinking which includes values and ethical codes. These cultural values influence the technology practice of producing and consuming technologies and have much to do with belief in social progress or resistance against social and technological change.⁶ In modern societies discourses of technology are closely connected with social visions of public welfare, health, peace and political participation. Today western societies are discussing their social, cultural and political future in terms of "information society" "globalization" and "knowledge society", which depends partly on technological changes depending on the rise of computers, world wide telecommunication and the deindustrialization of the western economics.

⁵ Kübler, Hans-Dieter: Mythos Wissensgesellschaft. Gesellschaftlicher Wandel zwischen Information, Medien und Wissen. Eine Einführung, Wiesbaden 2005, S. 54 [Global Information Technology Report].

⁶ Pacey, Arnold: The Culture of Technology, 3. Aufl., Cambridge 1986.

Some aspects of today discussions started with the establishing of telegraphy in the 1840s. I will start my historical investigation with a quotation of a report of the first world fair in London 1851:

"Electricity (...) from which men still retreat in terror, has, by the force of human intelligence, directed in a philosophic spirit, been subdued to perform the most important tasks for man. Through space it passes, without note of time, to convey the expression of our thoughts and feelings. (...) and the merchant in London may instantaneously communicate with his agent in Calcutta, or the lover with his mistress. Thus, breaking through the barriers of distance, remote lands will be united together. The march of civilisation is in unison with the advance of science; (...)." ⁷

This is a typical example for the telegraph discourse of the 19th century with some characteristics that were repeated again and again. First of all it represents a highly positive attitude to technological progress and the telegraph was interpreted as a cultural feat. The telegraph was situated in a simple dualistic scheme: On the one side the dangerous nature and on the other side the technical products of human intelligence and genius, which were symbolic representations for civilisation and the successful human fight against nature. Technology and especially the telegraph was embedded in the discursive field of progress, enlightenment and rational science. It was seen as the technological carrier of western values and civilization that would bring the ideas of modern culture to the underdeveloped natives all over the world. So it doesn't wonder that the telegraph discourse was part of the imperial discourse to legitimate colonization as a process of civilisation. Uniting the world with the telegraph means not the free exchange of thoughts in both directions but the worldwide expansion of western values. Although connected with the imperial discourse the Victorian telegraph vision of a unified world stressed the peaceful character of global communication. Global trade and global exchange of thoughts and not war were seen as the agents of a new era of peace. As historians we know that this was a very naive faith.

Today discussions about globalization have their own socio-technological visions and rhetoric's to draw a picture of the future. Sociological experts predict that the end of powerful territorial states is near and a new decentralized world order will take place that rest on free access to human knowledge via internet and other communication networks.

⁷ The Great Exhibition, London 1851 (Reprint Newton Abbot 1970), S. XI.

The internet as a network without central control is the new wizard for imaging future and progress. This vision of a new information paradise is just the same superficial thinking like the Victorian telegraph discourse. Censorship, economic concentration, cartels of meaning, governmental surveillance, military use, restricted access, misinformation, and global imbalance are the old and new problems of telecommunications.⁸

But future is not a job for historians.

Thank you very much for your attention!

⁸ Becker, Konrad u.a.(Hg.): Die Politik der Infosphäre. Worl-Information.Org, Bonn 2002. Lovink, Geert: Dark Fiber. Auf den Spuren einer kritischen Internetkultur, Bonn 2003.