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The Transatlantic Telegraphs and the *Class of 1866*¹ – the Formative Years of Transnational Networks in Telegraphic Space, 1858-1884/89

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Abstract: »Die transatlantischen Telegraphenverbindungen und die *Class of 1866* – zu den Anfängen transnationaler Netzwerke im telegraphischen Raum 1858-1884/89«. In 1866 the first lasting submarine cable was laid across the Atlantic. This project not only initiated the development of world-wide submarine telegraph networks, but also the formation of a cable community, the *Class of 1866*, and their subsequent networks, as for example the Society of Telegraph Engineers, that came to dominate the global cable market economically, politically and culturally. The Atlantic cable project of 1866 represented the central reflection point within the history of submarine telegraphy and the Atlantic cable pioneers used it to legitimate their status as exclusive cable elite. With banquets, soirées and other festivities as well as in their diaries, memoirs and official histories of the cabling of the Atlantic, the *Class of 1866* greatly influenced the historic perception of its contemporaries and until today.

Keywords: Class of 1866; Atlantic Cable; Submarine Telegraphy; Global History; History of Science and Technology.

The Nobel Prize 2009 in physics went to Charles Kuen Kao in honor for his developments regarding fiber optic cables and thus the development of the World Wide Web mirrors the public's perception of a strong interdependency between telecommunication and globalization. 150 years ago, the submarine telegraphs were what fiber optic cables and satellites represent today – the nerves of a global communicational network. In 1866, the first *lasting* Atlantic telegraph cable and thus the first long distance cable was laid² and its success set in motion a true submarine cable fever. Cable after cable was run and by the 1870s any place on globe, India, Asia, Australia or South Africa could be reached from Europe through telegraphic wires. With the success of 1866, the “civilized world of the west” stepped into a new era of international and global

¹ The term *class of 1866* is the result of the author's research and is explained throughout the paper.

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² The idea for a transatlantic cable was conceived in 1854, but it took until 1858 to lay a first cable. This cable, however, lasted only roughly three weeks before it went quiet for good. It took until 1866 for the Anglo-American Telegraph Company to lay two lasting Atlantic cables.

communication. Communicational exchanges between the Old World and the New that had taken weeks beforehand were now being sent as instantaneous messaging. Space was mastered and time annihilated. Within the shortest time period, an unprecedented level of informational densification had developed.³

Within the global communications network of the 19th and early 20th century the North Atlantic played a very distinct and important role. It not only represented one of the essential trading markets of its time, but also the spatial realm of a grown political, social and cultural North Atlantic community with – among others – American, British, French and German interests. By the turn of the century, 13 functioning telegraph cables were in operation. This constituted a higher communicational density through submarine cables, than anywhere else at that time. It was therefore of great importance who owned and controlled the transatlantic telegraphs. This also explains the great interest scholarly research has so far taken in the Atlantic cables. Yet as this paper shows, the North Atlantic is also important because it constituted the cradle of long distance submarine telegraphy and its networks, as its agents truly came to control the wiring of the world. Furthermore, these cable agents generated the “myth” of the heroic Atlantic cable invention, and thereby influence the historical narrative until today.

The literature has thoroughly researched the role of submarine telegraphs within a political and economic stage with a strong focus on their instrumentality regarding imperialistic power relations as the works of Daniel Headrick, most prominently *Tools of Empire*, Dwayne R. Winseck and Robert M. Pike with *Communication and Empire* or Robert Boyce’s essay “Submarine Cables as a Factor in Britain’s Ascendancy as a World Power, 1850-1914” show.⁴ Without any doubt, the telegraphs and the communicational “revolution” they brought about were essential for a political and economic densification of the world in the 19th century. Following the argumentation of Jorma Ahvenainen, world politics and global economic processes – two main characteristics of the idea of globalization – were only made possible through and with the submarine telegraphs.⁵

³ Jürgen Osterhammel, *Die Verwandlung der Welt: Eine Geschichte des 19. Jahrhunderts*, 3rd ed. (München: Beck, 2009), 1025.

⁴ Daniel C. Headrick, *The Tools of Empire: Technology and European Imperialism in the Nineteenth Century* (New York: Oxford University Press, 1981); Dwayne R. Winseck and Robert M. Pike, *Communication and Empire: Media, Markets, and Globalization, 1860-1930, American Encounters – Global Interactions* (Durham: Duke University Press, 2007); Robert Boyce, “Submarine Cables as a Factor in Britain’s Ascendancy as a World Power, 1850-1914,” in *Kommunikationsrevolutionen: Die neuen Medien des 16. und 19. Jahrhunderts*, ed. Michael North, 81-99, *Wirtschafts- und sozialhistorische Studien 3* (Köln: Böhlau, 1995).

⁵ Jorma Ahvenainen, “The Role of Telegraphs in the 19th Century Revolution of Communication,” in *Kommunikationsrevolutionen: Die neuen Medien des 16. und 19. Jahrhunderts*, ed. Michael North, *Wirtschafts- und sozialhistorische Studien 3* (Köln: Böhlau, 1995), 77.

Also the North Atlantic as a telegraphic stage with its main protagonist, the Great Atlantic Cable of 1866, has been the focus of scholarly research. Several works and movies⁶ deal with *The Cable* as Gillian Cookson titled her thoroughly contextualizing study.⁷ Even though this and other works, like Chester Hearn's *Circuits in the Sea* or John Gordon's *A Thread across the Ocean*,⁸ give meticulous insight into the story of the Great Atlantic Cable, they hardly go beyond the scope of 1866 and "solely" represent detailed narratives about how it happened. In contrast very little is known, aside from a study by Pascal Griset,⁹ on the French Atlantic cables or cable latecomer Germany.¹⁰

World trade, world politics and communication are strongly interrelated in their development as the above authors have shown. The process of globalization, however, contains more than solely "business and politics,"¹¹ which the geographical universality of *American* popular culture of today vividly shows. How are we to define globalization though and how does this definition impact our understanding of a history of telecommunication?

Most global and world history scholars agree that globalization can no longer be defined as an automatic and unstoppable process under the influence of Western capitalistic and democratic systems. In this case, the term globalization would only constitute an exchange for the terms modernization or Westernization. Instead, globalization must be seen in a wider context as a non-linear process of a global intensification, expansion and densification of international networks and spaces of transnational interaction. Furthermore, globalizing processes respond and are responded to very differently in various regions, which highlights the importance of area studies in global history approaches.

With this definition of globalization such aspects as space, translation, and agency gain momentum and they define new key issues in a history of telecommunication. Agents, as individuals, nation states, or institutions constitute and form these intensifying transnational networks which determine processes of a globalization and as such they must be closely examined. Moreover, such

⁶ E.g., PBS TV series "The Great Transatlantic Cable" (2004).

⁷ Gillian Cookson, *The Cable: The Wire that Changed the World* (Strout: Tempus publishing, 2003).

⁸ Chester G. Hearn, *Circuits in the Sea: The Men, the Ships, and the Atlantic Cable* (Westport, CT: Praeger, 2004); John S. Gordon, *A Thread across the Ocean: The Heroic Story of the Transatlantic Cable* (New York, NY: Walker, 2002).

⁹ Pascal Griset, *Entreprise, technologie et souveraineté: Les télécommunications transatlantiques de la France, XIXe-XXe siècles*, Histoire industrielle (Paris: Editions Rive droite, 1996).

¹⁰ Still one of the best studies on German submarine cables: A. Kunert, *Telegraphen-Seekabel*, Geschichte der deutschen Fernmeldekabel 2 (Köln-Mühlheim: Karl Glitscher, 1962).

¹¹ Pascal Griset and Daniel R. Headrick, "Submarine Telegraph Cables: Business and Politics, 1838-1939," *Business History Review* 75, no. 3 (2001).

an understanding of globalization spotlights cultural and social next to political and economic aspects, with regard to the agents. These highlights are vital to historical studies if the dynamics of global processes want to be truly understood. This is also and particularly true for the North Atlantic.

This article aims at the analysis of developing and intensifying transatlantic networks, and their agents. This cultural network analysis is based on biographical and historiographic material on the respective cable agents found in the major cable archives in Great Britain, the U.S.A., and Canada. Included in this prosopographical network analysis¹² are all agents responsibly engaged in the transatlantic telegraph projects between 1858 and 1914, that is, it focuses on the engineers, electricians, entrepreneurs and financiers just as well as the journalists, politicians and philanthropists involved.

By considering cultural and social next to economic and political facets, the study draws a multi-dimensional picture of submarine telegraphy and its relation to processes of a cultural globalization across the North Atlantic. Taking the aforesaid into account, the cables were not merely laid between or even less so by Great Britain and the United States of America, but rather by poly-dimensional and multinational cable networks within the North Atlantic realm. The analysis shows how a group of people, originating from and in their further development also strongly relating to the first Atlantic cable project, came to control submarine telegraphy globally in technical, economic as well as cultural and social regards.

In the following, the paper illustrates the development and formation of an Atlantic cable community and subsequent networks between 1858 and 1884/89. As the historic analysis showed, these years constitute the formative years of a relatively closed and very influential cable community, which I choose to introduce as the *class of 1866* to contemporary research. This period is followed by a phase of emancipation from the first Atlantic cable project, which was a decisive moment. The focus of this paper is, however, on the first period.

In the first period, which runs roughly to the mid 1880s, all cable networks draw their legitimacy and existence from the first Atlantic cable project, which successfully terminated with the Atlantic cable of 1866. As this paper illustrates, the event of the Great Atlantic Cable project of 1858/66 is central for all further developments of submarine telegraphy – the wiring of the world. It brought about the formation of a cable community and subsequent cable networks consisting of the submarine telegraph pioneers connected with the cable project. This *class of 1866* came to determine submarine telegraphy globally

¹² Prosopography or group biography is a multi-layered approach to the analysis of social groups in defined regions and times and investigates the common background characteristics of a group of actors. For detailed information see: Lawrence Stone, "Prosopography," *Daedalus* 100, no. 1 (1971): 46-79.

from 1866 onwards. Further on, the period is characterized by a constant commemorative return to and reflection on the events surrounding the first Atlantic cable thereby generating their legitimacy and the supremacy of the telegraph.

In the subsequent period, which can be traced from the late 1880s onwards, submarine telegraphy is more and more perceived as ‘everyday business’, and the laying of a submarine cable is no longer celebrated as a historic phenomenon. The Atlantic telegraphs therefore lose their generating power to constitute new networks and communities. The cables are no longer mirror images of the networks’ ties. Rather transatlantic telegraphy is constituted and used by already existing networks as a mere means of transnational communication.

The Formative Years of Transatlantic Telegraphic Networks, 1854-1884/89

It all began with “the largest vessel in the world,” the *Great Eastern*: A “white elephant” of gigantic premises leaving more than one of its owners bereft of wealth and sanity.¹³ In the summer of 1865, a group of adventurers (considering the likeliness of a positive outcome and more so the support they found for their project among the American and British public) embarked on the *Great Eastern* on their third attempt to lay an Atlantic telegraph cable.¹⁴

The group consisted of entrepreneurs, financiers, engineers, journalists, naval officers and mariners as well as political and social starlets who would make part or the whole of the journey. They were of British, Irish, American or Russian descent. Their ship, the *Great Eastern* resembled “a floating city” as the French novelist Jules Verne on a later voyage described her.¹⁵ Her sight intrigued the correspondent of the *London Times*, William Howard Russell, and led him to associate her with Noah’s arch as “10 bullocks, 1 milk cow, 114 sheep, 20 pigs, 29 geese, 14 turkeys and 500 other fowl all housed on the upper deck.”¹⁶

It was not to be this year, but the next, 1866, that the Atlantic cable project was ended successfully. Even before that, however, the cable community was already formed. There are several accounts remarking on the special atmos-

¹³ Telegraph Construction and Maintenance Company, *The Telcon Story 1850-1950* (London, 1950), 55.

¹⁴ A complete account of this voyage can be found in: William H. Russell and Robert Dudley, *The Atlantic Telegraph: Dedicated by Special Permission to His Royal Highness Albert Edward Prince of Wales* (London: Day, 1866); or in Sir Daniel Gooch’s Diaries. Daniel Gooch, *Memoirs and Diary*, ed. Roger B. Wilson (Newton Abbot: David & Charles, 1972); Transcribed from the Original Manuscript and edited with an Introduction and notes. Both Porthcurno, Cable & Wireless Archive.

¹⁵ Jules Verne, *A Floating City* (London: Sampson Low, Marston & Company, 1871); Translated from the French. Porthcurno Cable & Wireless Archive.

¹⁶ Gordon, *A Thread across the Ocean*, 177.

phere on board¹⁷, that created a “small world of its own”¹⁸ and nurtured the birth of a unique and for the further history of submarine telegraphy utmost important cable community. The publication of the first naval newspaper, the *Atlantic Telegraph* or the production of several plays, which were also staged on deck the *Great Eastern*, only support this notion of a cable microcosm of men united in their quest to lay the Atlantic cable.¹⁹

For most of the cable pioneers the success of the Atlantic telegraph marked the decisive turning point in their lives and their working careers. Six of them were knighted immediately after their 1866 success, some, like Charles Bright had received this decoration already after the first yet short-lived success of 1858, others, like John Pender, would receive it later in life. Submarine Telegraphy and the success of the Great Atlantic Cable defined and marked the life of the above described cable pioneers; from then on, they defined the economic, scientific and also cultural field of submarine telegraphy. It seemed as if starting in 1866, submarine telegraphy was all they could do. Even the ship, the *Great Eastern*, “proved herself [only] well equipped for one distinctive task – that of laying the transoceanic telegraph cables.”²⁰

John Pender, Charles Bright, Samuel Canning, James Anderson, Cyrus Field, Daniel Gooch or William Thompson, famously known as Lord Kelvin – these and several others were among the first cable pioneers and each and every one of these names rings a bell to those studying the history of submarine telegraphy in the 19th century. Even though this cable community was soon to break into two camps, the *class of 1866* remained normative until the turn of the century and considering the legacy of John Pender’s cable empire, even well beyond that.

There is one exception, or rather addition, to this cable community – the Siemens Brothers. The names of William, Werner, Karl and Alexander Siemens are so thoroughly connected with the establishment and further development of submarine telegraphy, in particular on the North Atlantic, that it is hardly noticeable that they were initially not part of this Great Atlantic Cable group. Werner Siemens, head of the German firm Siemens & Halske contributed essential prerequisites for the Atlantic cables: his invention of a *gutta percha press*²¹ and his contribution to the practical laying of a cable in the

¹⁷ Gooch, *Memoirs and Diary*.

¹⁸ Verne, *A Floating City*, 6.

¹⁹ One of the plays is “Contentina,” in *the Great Atlantic Haul*, (September 17, 1866), Box: Atlantic Telegraph 1866/67, Porthcurno Cable & Wireless Archive.

²⁰ R. Angus Buchanan, “Brunel, Isambard Kingdom (1806-1859),” *Oxford Dictionary of National Biography*, <http://www.oxforddnb.com/view/article/3773> (accessed September 15, 2008).

²¹ Gutta Percha is a rubbery substance from a tropical tree which served as insulating material for the submarine cables. Werner von Siemens’ gutta percha press (1846) was used to put the insulation on the cable.

Mediterranean in 1857, when for the first time submarine telegraphy reached really deep waters. His younger brothers William and Karl were also well versed in telegraphy, the former being the head of Siemens Brothers in London.²²

At first this group of cable pioneers appears to be relatively homogeneous, sharing a certain social middleclass standing and codex, and an Anglo-American background. Most of the engineers involved had made their first experiences in the railroad business before they turned to electricity and its application in telegraphy. They were jacks of all trades. Most of those financially involved were merchants like John Pender, Cyrus Field or Peter Cooper, who also had a direct and personal interest in the cable project. Parallels continue even in the 1866 afterlife, which is determined by their social and financial advancement combined with an, at least temporary, international heroic status. Most of them turned to politics at one point of their life, some as a short and rather unsuccessful interlude, for example Peter Cooper's candidacy for presidency as candidate for the United States Greenback party in 1876, others as Abram Hewitt, Peter Cooper's son in law and assistant, or Daniel Gooch, enjoyed a relatively successful political career.

All of them remained connected with submarine telegraphy whereby they expanded their geographical realm of action greatly beyond the North Atlantic sphere. John Pender, Captain James Anderson, Daniel Gooch or Samuel Canning, all associated with the Eastern Telegraph group and its global submarine telegraph network, are the most prominent examples of global outreach. Also Charles Tilston Bright, chief engineer on board the *Great Eastern*, who was involved in the laying of submarine cables in the Mediterranean, the Persian Gulf and the West Indies, may not be forgotten.²³ The North Atlantic cable project thus not only gained importance as the first long distance deep sea cable, but also because it brought about the formation of a cable community that came to span the entire globe.

The members of the *class of 1866* were united in their quest for an Atlantic cable, through which they developed strong normative and cognitive ties among them. This characterizes them as epistemic community – at least in the initial phase. As alluded to earlier, the described cable community was very heterogeneous particularly when it came to their specific set of interests concerning the Atlantic cable. Some agents were predominantly interested in the improvement of trading facilities, while others hoped for the generation of international goodwill or were mainly fascinated by the mastering of the technology. The strongest division ran between a rather scientific and a rather eco-

²² J. D. Scott, *Siemens Brothers 1858-1958: An Essay in the History of Industry* (London: Weidenfeld & Nicholson, 1958), 28.

²³ A. C. Lynch, "Bright, Sir Charles Tilston (1832-1888)," *Oxford Dictionary of National Biography*, <http://www.oxforddnb.com/view/article/3415> (accessed September 15, 2008).

nominally focused group. Soon after the Atlantic cable was laid, the *class of 1866* broke into two camps along this described line.

Another strain on the cable community was the technology itself. Earlier long distance submarine telegraphy had been considered a crazy and unreliable scheme, but now it was seen as a profitable business and most important of all – as a trustworthy technology. They had proved that long distance submarine telegraphy could be realized as they had done it. The conclusion the business community drew thereof was that no further technologic development seemed necessary. With the cable boom of the 1870s submarine telegraphy soon came to be ‘everyday business.’ Daniel Gooch, joining the *Great Eastern* to lay the 1874 Atlantic cable remarks in his diary:

The anxiety and excitement of starting on an Atlantic cable expedition is very different from what it was in 1865; all now is simply a matter of quiet business and there is no fuss and no reporters.²⁴

Cable Networks

With the expression “everyday business” the stress clearly has to be on “business” as submarine telegraphy came to be less and less connected with the scientific community, but rather grew to be practical science nurturing strong economic interests. Along this division of science and business, the “event” of the Great Atlantic Cable of 1866 initiated the formation of several cable networks which predominantly evolved from the above named cable pioneers of the *Great Eastern*.

One of the central networks that came into existence after 1866 is John Pender’s cable empire. The former cotton merchant from Manchester was behind almost every important submarine cable scheme within the British Empire and laid the corner stone of a world spanning cable network, later the Eastern and Associated Companies.²⁵ As Daniel Headrick points out,

[b]y World War I, the Eastern and Associated Companies had become one of the world’s most powerful multinational conglomerates. [...] Their over 180,000 kilometers of cables [...] represented two-thirds of all British cables, or two fifths of all cables in the world.²⁶

Even though John Pender is indissolubly connected with the above cable companies, he was not the sole central figure of the Eastern Company’s cable

²⁴ Gooch, *Memoirs and Diary*, 237.

²⁵ After 1866 Pender was mainly involved in the cabling of Britain and South (East) Asia, as for example the cable to India in 1870. By 1873 he controlled those regions through the Eastern Telegraph and the Eastern Extension Telegraph Company. G. R. M. Garratt, *One Hundred Years of Submarine Cables* (London, 1950), 28-29.

²⁶ Daniel C. Headrick, *The Tentacles of Progress: Technology Transfer in the Age of Imperialism, 1850-1940* (New York and Oxford: Oxford University Press, 1988), 105.

network. There is a high continuity of personnel and shareholders in Pender's cable companies recruiting themselves from the original *class of 1866* and others involved in the early submarine projects. Not only John Pender held several chairs on the boards of his various cable companies,²⁷ but so did Sir James Anderson, formally the Captain of the *Great Eastern* or Daniel Gooch, one of the first board members of the Anglo-American Telegraph Company as well as the Great Eastern Steamship Company. This policy that a handful of people controlled an entire group of cable companies continued well into the 20th century. In 1907 cable reformer Henniker Heaton full heartedly complained about the "Cable Kings [who] hold in their hands the powers of life and death, so to speak ... [by] controlling the cables of the world."²⁸

Another reason why the *class of 1866* remained so successful within the submarine telegraph business was their belonging to this original cable community. It appears that the membership to the *class of 1866*, or as in the case of the Siemens Brothers the association with it, was the necessary condition for success in the field of submarine telegraphy of the North Atlantic. In the aftermath of 1866 "a hundred busy brains [were] planning a dozen new Atlantic companies and new ocean cables" – et all unsuccessfully.²⁹ The National Archives in Kew still hold last proofs of the existence of numerous Atlantic Cable companies such as the Direct Atlantic Cable Company and the New Atlantic Cable Company both founded in 1872, which never got beyond the planning stage.³⁰

Concerning the various reasons for the failure of these post-1866 cable schemes, the financial aspect might not have been the most prevailing one, as money was, after the success of 1866, readily to be had. With reference to the French Atlantic cable of 1869, the *Daily News* dwelled on how willingly people now invested in submarine cables, as "[f]or no other reason but to establish a submarine telegraph company could a million of money have been found in

²⁷ John Pender, for example was chairman of all three companies involved in establishing telegraphic communication between Great Britain and India in 1870. Garratt, *One Hundred Years of Submarine Cables*, 28.

²⁸ Henniker Heaton, "The Cable Telegraph System of the World," *The ARENA* 38, no. 214, (Sept. 1907): 226-229, 228, Fleming Papers (MG 29 B1 – Vol. 125), Telegraphy and Submarine Cables – Folder 51, National Archives of Canada. As an example for such power combinations, Heaton refers to the board of directors of the "Eastern," the "Eastern Extension," the "Eastern and South African" and the "West African Telegraph Company," where the following persons are holding positions in several or all of the above named companies: Marquis of Tweeddale; J. Denison-Pender; Sir A. J. Leppoc Cappel, Lord Sachville Cecil, Chas. W. Earle; F. Alex. Johnston and Chas. W. Strong. *Ibid.* 228.

²⁹ "Private Correspondence," *Birmingham Daily Post*, October 29, 1866.

³⁰ See No. of Company: 6019, New Atlantic Telegraph Company Ltd., 1872; No. of Company: 5979; Direct Atlantic Telegraph Company Ltd., 1872, Board of Trade: Companies Registration Office: Files of Dissolved Companies, National Archives London.

such an incredible short space of time.”³¹ Such wealth, however, could not be obtained unconditionally, as the *Birmingham Daily Post* knew. It had to be a company “in whom the public had confidence.”³²

This kind of confidence, judging from all further stories of submarine telegraphy on the North Atlantic, could only be found in members of the *class of 1866* and its associates, the Siemens Brothers. All serious competitors on the North Atlantic cable market came until 1897 and an Atlantic cable that was entirely French in its manufacture and laying³³ from within the peer group of 1866. For the French Atlantic cable of 1869, for example, even “the very agencies [were] employed which brought the grand experiments of 1865 and 1866 to a successful issue”³⁴ thus setting any kind of rivalry into question. Until the late 1880s the Anglo-American Telegraph Company, mother to the Great Atlantic Cable, even led a monopoly on the North Atlantic cable market, forcing all further competitors into its pool.

The success of Pender & Co., which perpetuated and expanded their cable monopoly, relied heavily, as will be shown more explicitly, on their exclusive membership to the *class of 1866*. Further, it proves how successfully Pender managed to dominate all key industries central to submarine telegraphy. The Cable manufacture, cable contractors and the cable laying were all controlled by members of Pender’s network and had all come into existence because of the Great Cable enterprise. In 1865 Telcon, the soon to be biggest cable manufacturer started business through the merging of Glass, Elliot & Co. and the Gutta Percha Company. By the turn of the century 120,000 of the 165,000 nautical miles of submarine cables had been manufactured and laid by Telcon.³⁵

Cable Agents as Consulting Engineers

As alluded to earlier, Pender’s cable network was one formed by business interests. Apart from the exception of Samuel Canning, none of the original cable engineers held positions within his companies. Rather, science and business went separate ways and the engineers formed networks of their own. Many engineers of the first generation of submarine telegraphy took up positions as advisors or honorary electricians to various cable projects. For exam-

³¹ “The French Atlantic Telegraph,” *Daily News*, February 1, 1869.

³² “Private Correspondence,” *Birmingham Daily Post*, October 29, 1866.

³³ Kenneth R. Haigh and Edward Wilshaw, *Cables and Submarine Cables* (London: Coles, 1968), 321.

³⁴ “Another Atlantic Cable Projected,” *Penny Illustrated Paper and Illustrated Times*, August 15, 1868.

³⁵ Jill Hills, *The Struggle for Control of Global Communication: The Formative Century*, *The History of Communication* (Urbana, IL: University of Illinois Press, 2002) 23-24.

ple, as early as 1860 Sir Charles Bright and Mr. Latimer Clark, brother-in-law of Mr. William Preece, another eminent telegraph engineer, had entered into partnership together. Similarly Sir William Thomson and Mr. Cromwell Varley, both involved with the first Atlantic cable cooperated as consulting engineers. Later on, Fleeming Jenkin, connected with the French Cable Company and the Commercial Cable Company, joined them after having been formally associated with above mentioned Bright and Clark.³⁶

This engineering network that emerged out of the first Atlantic cable was strongly interconnected, highly dynamic, and was carried a long way by the friendship and respect these men had for each other. With time and the stagnation of submarine telegraphy as a progressing technology, as well as with the greater experience and efficiency of the contractors' staffs, the work of honorary electricians and engineers became more and more limited.³⁷ The group of engineers just depicted, however, remained the most honored, respected and successful of their time. Their influence on questions of telegraphy and electricity in general is beyond measurement. All of these engineers were British, while the geographical range of their activities spanned the entire globe.

The parting of ways between science and business almost immediately after the success of the 1866 Atlantic cable, nearly turned into a war between those two forces, fought on the North Atlantic telegraph market. Almost all Atlantic telegraph projects competing with Pender's Anglo-American Telegraph Company were connected with the Siemens Brothers. The first cable was intended to link the United States directly to Britain. It was laid in 1875 by the Siemens Brothers for its own Direct United States Cable Company and was thus "a direct response to Pender's Globe monopoly plans."³⁸ Reflecting the competition with Pender a clause in the articles of its association even stated that "no working agreement would ever be made with Anglo-American."³⁹

In a presidential address to the Society of Telegraph Engineers in January 1878, Wilhelm Siemens argued, that he saw science being threatened by monopolistic business advances, clearly targeting his speech against Pender.⁴⁰ The engineers "criticized Pender's company for its emphasis on profit, its failure to invest in research and development, and its attempts to become a world monopoly."⁴¹ Siemens was pinning it down to the question of what is the space for

³⁶ Charles Bright, *Submarine Telegraphs: Their History, Construction and Working* (London: C. Lockwood, 1898); Founded in part on Wünschendorff's *Traité de Télégraphie Sous-Marine* and Compiled from Authorative and Exclusive Sources, 155, Porthcurno Cable & Wireless Archive.

³⁷ Bright, *Submarine Telegraphs*, 156.

³⁸ Hills, *The Struggle for Control of Global Communication*, 34.

³⁹ *Ibid.*

⁴⁰ Siemens, William: Presidential Address to the Society of Telegraphic Engineers, January 1878, cited in Scott, *Siemens Brothers 1858-1958*, 56-57.

⁴¹ Hills, *The Struggle for Control of Global Communication*, 33.

or rather where is the place of engineering pioneers once big business takes over? As J.D. Scott points out, Pender was perfectly honest about his position: “Scientists, in his view, were all very well in their place, but their place was in the laboratory, or at any rate not in the directory of big business.”⁴² Shortly after its greatest success, submarine telegraphy had become a stagnant technology and was as such no longer part of the engineering space.⁴³

Society of Telegraph Engineers

The rapid development of a global submarine telegraphic network and with it the outpouring of great numbers of cable operators, cable contractors and electricians after 1866 soon produced a need for a platform for an academic and scientific exchange and the recognition of submarine telegraphy as an individual branch of engineering science.⁴⁴ Various magazines, such as *The Electrician* (1861), *Engineering* (1866) or the *Telegraphic Journal* (1872) came into existence for this reason. In 1871 the Society of Telegraph Engineers was established, mainly by members of the *class of 1866*, who were also predominant among its presidents – with William Siemens, William Thomson and Latimer Clark among the first four. Furthermore Latimer Clark, Samuel Canning, Cromwell Varley and Willoughby Smith, all members of the community of the *Great Eastern*, were on the society’s first council.⁴⁵ Its purpose was the general advancement of electrical and telegraphic science and the facilitation of the exchange of information and ideas among its members.⁴⁶

With the above described development in the business of submarine telegraphy and its parting from scientific telegraphy, the character of the Society also changed. As scientists moved on to other electric projects, such as electric lighting, the telephone or the distribution of electric power, the Society felt that it had to adapt by changing its name to Society of Telegraph Engineers and Electricians in 1884 and Institution of Electrical Engineers in 1889.⁴⁷ Mr.

⁴² Scott, *Siemens Brothers 1858-1958*, 57.

⁴³ On the stagnation of submarine telegraphy as technology see Bernard S. Finn, “Submarine Telegraphy: A Study in Technical Stagnation,” in *Communications under the Seas: The Evolving Cable Network and Its Implications*, eds. Bernard S. Finn and Daqing Yang, Dibner Institute Studies in the History of Science and Technology (Cambridge MA: MIT Press, 2009), 9-24.

⁴⁴ On the discussion about the necessity of the constitution of a society of telegraph engineers independent of its mother stem, the Society of Civil Engineers, see Siemens, William, “Inaugural Address: The Society of Telegraph Engineers,” in *The Journal of Telegraph Engineers* 1 (1872/83): 19-23. IET Archives London.

⁴⁵ William J. Reader, *A History of the Institution of Electrical Engineers, 1981-1971* (London: P. Peregrinus on behalf of the Institution of Electrical Engineers, 1987), 20.

⁴⁶ Siemens, “Inaugural Address,” 19-20.

⁴⁷ Archives Research Guide, “IET History,” IET, <<http://www.theiet.org/about/libarc/archives/research/guides-iet.cfm>>, (accessed September 19, 2009).

Sprat, operator at the telegraph station in Porthcurno, Cornwall, saw this last change of name as one “which the catholicity [i.e., the diversity] of its programme [sic] seems to justify.”⁴⁸

It will probably remain unclear, whether Pender’s policy of keeping scientists out of his business boards, the general stagnation in further telegraphic development, or the vast possibilities for further research and new inventions electricity offered caused the above. In all probability it was a combination of all three. Yet, the change in the society’s name mirrors an emancipation of the engineers from submarine telegraphy in general and from the Great Atlantic Cable in particular. Even though Latimer Clark, Fleeming Jenkin, William Thompson and others were still on the guest list of commemorative banquets for the Great Atlantic Cable, it no longer served as a binding element.

The year 1889 therefore marks a clear turning point in the structure and construction of transatlantic telegraphic networks, whose reference was no longer the Great Atlantic Cable. Not only was there a clear programmatic shift on the side of the ‘telegraph engineers’ towards a broader understanding of the application of electricity, there was also a redeployment within Pender’s cable empire due to the retirement or death of members of the first cable generation. Long time member of the *class of 1866*, Daniel Gooch, died in October 1889; George W. Campbell, director of Telcon since 1873 and chairman of the Great Eastern Steamship Company, died in the early 1890s and Willoughby Smith, former chief electrician of Telcon, retired from his management post in 1888.⁴⁹

Atlantic Cable Networks and Center and Periphery

The development, densification and intensification of such transnational networks spanning continents not only characterize processes of globalization, but also mark, as Jürgen Osterhammel points out, the history of the late 19th century. Yet, the net between the agents consists of a two sided metaphor which can be descriptive just as well as deceptive. As nets constitute only two-dimensional connections they may lead to an underestimation, or even neglect, of the third dimension, which is constituted by hierarchies. In network analysis therefore one must always consider that some knots are thicker than others and that a net has one or even several centers as well as peripheries. Further, there are also those that are not connected and so far have constituted the ‘dark spots’ of historical writing.⁵⁰

For the further description of the cable networks which evolved from the *class of 1866* those power dimensions have to be taken into consideration. The

⁴⁸ Diary of Mr. George Spratt, February 9, 1888, Porthcurno Cable & Wireless Archive.

⁴⁹ Telegraph Construction and Maintenance Company, *The Telcon Story 1850-1950*, 79.

⁵⁰ Osterhammel, *Die Verwandlung der Welt*, 1010-1011.

telegraph men of the *Great Eastern* were no equals and so names are not exchangeable. The terminology used for the respective networks rather mirrors its internal power relation, for example, Pender's cable empire. In the following the paper shows that the networks had clear structures of center and periphery, and also caused disadvantages for those not connected. Networks consist of relationships which follow a certain regularity of continuous or repeated interaction. They are not equal to institutions, but as is the case with the Society of Telegraph Engineers, institutions may develop from them.⁵¹

Both networks, Pender's cable empire as well as the Society of Telegraph Engineers, had clear structures of center and periphery with London, or in Pender's case specifically Old Broad Street 66,⁵² being its power gravitation. Even though both had global outreach, in particular Pender's network rather represented a one way street. Cables were being laid from Europe or rather from London *to* a certain place without reciprocity. This came to be felt even stronger in discussions of imperialistic strategies and submarine cables as means of long-distance governance.⁵³ It also remained clear that London was constructed as the cable network's sole centre. The Canadians had been fighting for over two decades for their Pacific cable against an opposition who objected any direct communication between the Empire's colonies without first being transmitted through London.⁵⁴

Similarly the Society of Telegraph Engineers revolved around its geographical center London, where meetings and discussions were held, its journal was printed and a library for telegraph engineers was established. Even though the society was accommodated by other societies for a long time, such as its mother association the Civil Engineers, the impressive building at Savoy place, where it moved into in 1909 and where it can still be found today, mirrors its grown importance, membership and also its geographical stronghold onto London. The city of London, as William Siemens argued early on, was unquestionable the proper seat for the society, as it was "the principle centre of Tele-

⁵¹ Ibid., 1010.

⁵² Most submarine telegraph companies and all of Pender's telegraph companies were situated on Old Broad Street London: Anglo-American Telegraph Co. (OBS 26); Anglo-Mediterranean Tel. Co (OBS 66); British-Australian Tel. Co. (OBS 66), British-India Extension Tel. Co. (OBS 66), British Indian Submarine Tel. Co. (OBS 66), China Submarine Tel. Co. (OBS 66), Cuba Submarine Tel. Co (OBS 50), Falmouth, Gibraltar and Malta Tel. Co. (OBS 66), Marseilles, Algiers and Malta Tel. Co. (OBS 66), Société du Câble Transatlantique Française (OBS 66), Submarine Cable Trust (OBS 65) and West India and Panama Telegraph Co. (OBS 50).

⁵³ P. M. Kennedy, "Imperial Cable Communications and Strategy, 1870-1914," *The English Historical Review* 86, no. 341 (1971): 728-752.

⁵⁴ Robert Boyce, "Submarine Cables as a Factor in Britain's Ascendancy as a World Power, 1850-1914," 39. For a thorough analysis of London as telegraphic center see Roland Wenzlhuemer, "London in the Global Telecommunication Network of the Nineteenth Century," *New Global Studies* 3, no. 1 (2009): Art. 2.

graphic enterprise of the world, and musters consequently the greatest number of Telegraph Engineers.”⁵⁵

Early membership lists of the society, however, show that it had a wide international outreach with a large number of so called foreign members despite operating solely from London. Following the argumentation of the society’s first president it was even

necessary for a Society of Telegraph Engineers to be a cosmopolitan institution [considering that the] great network of international telegraphy extend[ed] already to every portion of the civilized and semi-civilized world.⁵⁶

In subsequent years, foreign local branches were established, which were meant to connect a ‘local’ expertise at the respective place and also to serve the needs of mostly British engineering expatriates. The majority of the foreign members were British engineers serving abroad. In the statutes of the society it had remained relatively unclear whether the adjective “foreign” referred to the place or the nationality of the applicant for membership, so the society could boost itself with a lot larger number of “foreign” members in the sense of nationality than was actually the case.⁵⁷

Yet, next to somebody like a James Dakers, Manager and Secretary of the Montreal Telegraph Co, or a Charles Burton, Director & Inspector General of Telegraphs of the Argentinean Republic, one could find such “exotic” names as Tadasuke Ishie, Director General of the Japanese Telegraph Administration in Tokyo. The relatively high numbers of Japanese members of the IET mirrors a general political trend, which recognized Japan as a member of a still very small circle of industrial nations.⁵⁸

Social Aspects to the Cable Networks

As shown before, only Pender’s cable business community had retained their focus on submarine telegraphy, while the engineering community shifted its focus onto a broader application of electricity.⁵⁹ The North Atlantic telegraph

⁵⁵ Reader, *A History of the Institution of Electrical Engineers, 1981-1971*, 24.

⁵⁶ Ibid.

⁵⁷ An almost complete run of membership lists and forms can be found at the IET Archives in London.

⁵⁸ Reader, *A History of the Institution of Electrical Engineers, 1981-1971*, 4.

⁵⁹ This also leads to the conclusion that submarine telegraphy on the North Atlantic was in its formative years and well beyond foremost run by business interests and little by political, technical or social ideas. Pender and the other Atlantic telegraph companies rather reinforced, mainly through exorbitantly high tariffs, the development of an elitist telegraphic space for commerce and trade on the North Atlantic. On cable tariffs: in 1866 it cost £20 to send a 20 word telegram. The average income of a Newfoundland fisherman, the anchor place of the Atlantic cable, varied from £70 to £90 a year. Despite continuous reduction of tariffs, sending telegrams remained out of reach for most. In 1909, Henniker Heaton, Brit-

networks did, however, not solely consist of mere business relations. Quite the contrary, its members were oftentimes connected by mutual sympathy and formed long lasting friendships, such as the one between John Pender and the American Abram Hewitt, son in law to the entrepreneur and Great Atlantic Cable promoter Peter Cooper. They exchanged Christmas greetings just as well as stock market tips and even went on a cruise together with their families.⁶⁰

However, also in times of personal crisis, the cable network proved to be a reliable source. In late September 1873, George Saward, the long-time secretary to the Anglo-American Telegraph Company, died and left behind a wife and family unsupported.⁶¹ Sir James Anderson, famous captain of the *Great Eastern* and since 1872 managing director of the Eastern Telegraph Co. set up the Saward Memorial Fund and asked for “showing a grateful acknowledgement of service” to a man

who had devoted the best years of his life [...] in keeping up the Atlantic Telegraph Company during the long and dreary period when its shareholders and the public generally despaired of the success of the great object for which the Company was formed.

Among the first to give were Captain Hamilton, chairman of the Anglo-American Telegraph Company, and Daniel Gooch.⁶²

The *Class of 1866* and the Memory of the Great Atlantic Cable

In a last sequence of this text, it is necessary to return to the original cable community, the *class of 1866*, to analyze their extraordinary fascination and historical longevity, which can be seen in the way they are and were remembered. The transatlantic telegraphs and the stories of John Pender, Cyrus Field and Charles Bright, to name only a few, have inspired time and again writers of all facets. In the literature the Great Atlantic Cable of 1858/66 is oftentimes

ish M.P., journalist and one of the most ardent supporters of a penny-post system for the telegraphs, stated that the cable rate of one word still ranged from one day's to six day's wages of a farm laborer. Letter by Mr. Brassey to the Editor of the *Hastings News* on his trip to Newfoundland, September 2, 1872, Cyrus Field Papers, Box 3/2 Mr. Brassey's letters, writings, New York Public Library, Manuscript Division; Henniker Heaton J., “The Cable Telegraph System of the World,” *The ARENA* 38, no. 214 (September 1907): 226-229, 228, Fleming Papers – Telegraphy and Submarine Cables, Folder 51, National Archives Canada.

⁶⁰ Stock market tips: “Western Union stock sold below eighty yesterday. If it were not for the reasons which I have explained to you, I should certainly buy a large amount of it for investment, but who can tell what the man who controls the property will do next.” Hewitt to Sir John Pender November 27, 1872, Hewitt Papers, Cooper Union Archives.

⁶¹ “Reuters Telegrams,” *The Pall Mall Gazette*, September 30, 1873.

⁶² George Saward Memorial Fund, James Anderson Papers, Box 1, Porthcurno Cable & Wireless Archive.

depicted as the turning point for global communication. Among other things, it is labeled “[t]he Wire that changed the world.”⁶³ In analogy to modern communication, it is called “the Victorian Internet” and its historiography truly reads like a “heroic story of the transatlantic cable.”⁶⁴

There is no doubt as to the importance of the first Atlantic telegraph and it being a milestone for submarine telegraphy as well as for the beginnings of globalized communication. However, it is also very much due to the bearings of the *class of 1866* and their shaping of our memory that we continuously return to the North Atlantic cables as a historical focal point. The *class of 1866* did a great deal to keep their idea of the history of submarine telegraphy, the story of the Atlantic telegraphs and their own roles within that narration alive. There are numerous books and memoirs authored by the cable pioneers, commemorative acts such as various “cable banquets” or “telegraph soirees” throughout the remaining 19th century, and monumentalized memory such as the cable ship the “John Pender.” Historians and storytellers of today turn to these acts of memory as primary sources; these, however, need to be looked at critically.

In the aftermath of the euphoria of 1866 it came quite naturally for those who had taken part in the Great Atlantic Cable project to relate “their” share of the story. In particular those new social starlets, who owed their rise in social status to the success of the Atlantic cable, felt an urge to report how they, as “self-made men,” had attained “their high position in the world.”⁶⁵ They gave talks, lectures and presented papers on submarine telegraphy in general and their own contribution to it in particular.⁶⁶ Some clearly aimed to be scientific enlightening others seem to have been driven by mere vanity. Daniel Gooch, for example, kindly bestowing upon the students of the New Swindon Mechanics Institute in “exceedingly simple[...]utterances [...], like all really great man [...], how *he* came to contribute so much light to this poor dark world” met a rather ironic journalistic answer in the *Pall Mall Gazette*.⁶⁷

The process of re-telling and sharing the experience of laying the Great Atlantic Cable, however, was central to the entire expedition. Even more so as the whole enterprise had been set up as a media event; William Howard Russell, a well known journalist of the London *Times* and Mr. Robert Dudley, a famous

⁶³ Cookson, *The Cable*.

⁶⁴ Gordon, *A Thread across the Ocean*; Hearn, *Circuits in the Sea*; Vary T. Coates and Bernard S. Finn, *A Retrospective Technology Assessment: Submarine Telegraphy - the Transatlantic Cable of 1866*, ed. Program of Policy Studies in Science and Technology (San Francisco: San Francisco Press, 1979).

⁶⁵ “Occasional Notes,” *The Pall Mall Gazette*, October 27, 1866.

⁶⁶ E.g., Thomson, William, *Atlantic Telegraph Cable. Address of Professor William Thomson, Delivered before the Royal Society of Edinburgh*, December 18, 1865 (Edinburgh 1865). Porthurno Cable & Wireless Archive.

⁶⁷ “Occasional Notes,” *The Pall Mall Gazette*, October 27, 1866.

artist of his time, were on board the 1865 enterprise to document the entire expenditure.⁶⁸ Yet, aside from their task to be right “on the scene” and in the middle of events in order to be able to relate everything to the readers “as it happened”, Russell also asserted the claim, as had the American John Mullaly in 1858 when narrating the laying of the cable across the Gulf of St. Lawrence and the first Atlantic Cable expeditions of 1857/8, to be the “historian of the enterprise.”⁶⁹

Without any doubt, the Atlantic telegraphs made history, while its agents documented history. Not only through the above described kind of embedded journalism, but also through a series of published first-hand experiences of the agents, the heroic picture of the first great cable enterprise which holds true until today was created and foremost perpetuated.⁷⁰ George Saward, secretary of the Anglo-American Telegraph Company, Henry Martin Field, nephew of Cyrus W. Field, Willoughby Smith, Telegraph Engineer on the Great Eastern, or Charles Bright Jr., son of Sir Charles Tilston Bright, were the most noteworthy of cable historians of or connected with the *class of 1866*.⁷¹ It is curious that until well into the 20th century no independent historiography of the submarine cables existed. And Willoughby Smith even stated in his preface of 1891 that his motivation to write also lay in the fact that “[t]he correct history of submarine telegraphy has never yet been written.”⁷²

There seem to be two main reasons for writing. One being a genuine interest in passing on the story before “time has thinned the ranks of those who took a prominent part” coupled with a serious educational approach. So, Willoughby Smith addressed through his work on *The Rise and Extension of Submarine Telegraphy* the “serious enquirer” who may find much “reliable information” in it.⁷³ Henry Martin Field, nephew of Cyrus W. Field, furthermore bestowed some educational illumination upon all mankind by tracing the very beginnings of human achievement and success: they teach us that “it is only out of heroic patience and perseverance that anything truly great is born.”⁷⁴

⁶⁸ Bright, *Submarine Telegraphs*, 89.

⁶⁹ John Mullaly, *The Laying of the Cable, or the Ocean Telegraph* (New York: D. Appleton and company, 1858); Bright, *Submarine Telegraphs*, 89.

⁷⁰ An example for a modern perpetuation of the heroic wiring of the Atlantic is the corresponding PBS TV series “The Great Transatlantic Cable” (2004) starring the American Cyrus Field as main protagonist and hero.

⁷¹ George Saward, *The Transatlantic Submarine Telegraph: A Brief Narrative of the Principal Incidents in the History of the Atlantic Telegraph Company* (London, 1878); Willoughby Smith, *The Rise and Extension of Submarine Telegraphy, Telecommunications* (New York: Arno Press, 1974); Henry M. Field, *History of the Atlantic Telegraph* (New York: C. Scribner & Co, 1866). Edward B. Bright and Charles Bright, *The Life Story of the Late Charles Tilston Bright Civil Engineer 2* (Westminster: A. Constable & Co., 1898).

⁷² Smith, *The Rise and Extension of Submarine Telegraphy*, vi.

⁷³ Smith, *The Rise and Extension of Submarine Telegraphy*, vi.

⁷⁴ Field, *History of the Atlantic Telegraph*, iii.

The other reason for writing surely was some sort of vanity. All accounts were not only written from one person's perspective but also always include a description of the authors' own role in the cable project. They were thus joining in on a discussion that had been led since 1858 on who was the originator of the Atlantic cable scheme.⁷⁵ Even though Charles Bright Jr. assured that "submarine telegraphy, like everything else, is the work of many hands,"⁷⁶ he intertwines his father's life story indissolubly with the story of the Atlantic Telegraphs. It seems probable that Clift Denison in his synopsis for a talking picture on the Atlantic Cable in 1936 relied heavily on Bright's story, when he centers his movie script on the young engineer Charles Bright and contributes all initiative to him. The author seems to be oblivious to the fact that he not only omits important events and players, such as Cyrus Field, but that he also reports a falsified account of the cable's history.⁷⁷

Another instrument for shaping memory were the frequent cable banquets, mostly organized and held by the American Cyrus W. Field. Over the years, their guest lists remained almost entirely the same and the banquets greatly resembled class reunions. Further, the celebration itself seemed to be more important than the celebrated event, as the later was rather randomly picked, Field choosing various historic reference points as incentives. In 1868, a banquet was held to celebrate Cyrus W. Field being in London; in 1872 the same lot came together for a traditional American Thanks Giving and in 1873 Field called for a "commemoration of the signature of the agreement on the 10th of March 1854, for the establishment of a Telegraph across the Atlantic."⁷⁸ Similarly in 1879, Field invited to celebrate the 25th anniversary of the first company ever formed to lay an Ocean Cable and in 1885 the reason was the 27th anniversary of the first Atlantic cable of 1858.

In books, banquets and monuments, the *class of 1866* returned to their formative enterprise of the North Atlantic telegraphs of 1858/66 thus creating their own master narrative as well as perpetuating their image as (sole) telegraph experts. Business as well as science oriented networks, which institutionalized themselves in Pender's Eastern and Eastern Extension Telegraph Company and the Society of Telegraph Engineers, feed off the original cable group. Subsequent Atlantic as well as other telegraph cables never again served as

⁷⁵ *On the Origin & Progress of Brett's Submarine and Subterranean Electric Telegraph. With a Few Brief Facts, and Opinions of the Press, 1858*, Box: The Atlantic Telegraph, 1858-1859, Porthcurno Cable & Wireless Archive.

⁷⁶ Bright, *Submarine Telegraphs*, x-xi.

⁷⁷ Denison Clift, *Atlantic Cable. Being a Synopsis of a Story for a Talking Picture*, (London, 1936).

⁷⁸ Report of the Proceedings at an Anniversary Banquet given by Mr. Cyrus Field of New York, at Buckingham Palace Hotel London, March 10th 1873, in commemoration of the signature of the agreement on the 10th of March, for the establishment of a Telegraph across the Atlantic. James Anderson Papers, Box 1, Porthcurno Cable & Wireless Archive.

such an initial spark to further establishments of “cable-networks,” but only were means of upholding already existing networks, which had been formed outside the telegraphic field. The cables were thus reduced to mere instruments of communication, and the exceptionality of the Great Atlantic Cable was underlined even more. After 1884/89, both, networks and especially the engineering fraction emancipated themselves from the Great Atlantic Cable enterprise, as it was no longer needed to legitimate it.

The *Class of 1866* and the Atlantic World

Before closing, it is necessary to elaborate on the question of a network’s setting and background. Structural and normative practices and institutions define and limit the array of an agent’s action. Focusing on the agents’ social embedding and their decision making, does not imply a negligence of macrostructures such as the nation state or the transatlantic trade. The above described networks and their agents were bound and defined by the setting of a rising nationalism, imperialistic strivings and an American expansionism as well as Victorian culture and lifestyle. The history of the “wiring of the world” can therefore not be written without these concepts and the above described networks would not have come into existence outside such defining premises as the Atlantic world.

As A.W. Holland argued in his abstract on the Atlantic cable in 1914, the true cable is a common Anglo-American heritage, with a language, culture and history both Europe and North America shared. He continues that a cable between Greenland and South America would have just been as feasible, yet absolutely worthless:

The Eskimos in Greenland would not want to know anything about the tall and strange and copper-coloured inhabitants of Tierra del Fuego, and even if they did, they would not be able to understand each other’s signs.⁷⁹

Thus the prerequisite for the Atlantic cable’s success was the already existing connection and the interest that the communities on both sides of the Atlantic had in each other. The roots of globalizing processes thus well predate the late 19th century.

⁷⁹ A.W. Holland, *The Real Atlantic Cable*, (London: Bell & Sons, 1914), 6-10.

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