Access for all: Telegraph Reformers and Visions of Use, 1865–1914

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ABSTRACT

Der Telegraph entwickelte sich nie zu einem weltweit verbreiteten sozialen Instrument der Kommunikation zwischen Privatpersonen. Dieser Aufsatz porträtiert drei Reformer - Ernest Ayscoghe Floyer, John Henniker Heaton und Heinrich von Stephan - die diese Situation zu ändern antraten und argumentierten, dass der gesellschaftliche Gebrauch des Telegraphen erweitert werden sollte. Sie trafen auf der Konferenz der Internationalen Telegraphenunion in Berlin 1885 zusammen. Das Ereignis hatte deutlich niedrigere Preise im europäischen Netz zur Folge, die auf einen Vorschlag von Stephans zurückgingen, der die Asymmetrien im Gebrauch des Telegraphen abbauen wollte. Dies scheint symptomatisch für ein allgemeineres Muster in der Entwicklung von Infrastrukturen, demzufolge europäische Arrangements als Zwischenschritt auf dem Weg zu globalen Lösungen angesehen wurden.

1. A game of chess

It seemed the ultimate symbol celebrating the Anglo-Saxon Transatlantic bond. It involved two venerable institutions: the British House of Commons and the American House of Representatives. Their joint activity was an amicable game of cable chess. Where Columbus' 1492 journey had produced two worlds, one new one old, submarine cables had joined them into Atlantic unity. First a feeble connection was established in 1858 for about a month. A more durable link operated from 1866 onwards.¹ Some three decades

1 J. Gordon, A thread across the ocean: The heroic story of the transatlantic cable, New York 2002. For a contemporary account, see C. Bright, Submarine telegraphs: Their history, construction, and working, New York 1974, reprint of an 1898 original.

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later the Transatlantic copper wires transmitted the chess moves as they were being made. The draw in which the chess match ended symbolically highlighted that the game was not about winning or losing. All stood to gain from the Transatlantic ties uniting States and Kingdom. Thus, its organizers intended that the parliamentary pastime would not only match the stature of the institutions it brought together, but that it would above all embody the intercontinental possibilities the telegraph had to offer.²

John Henniker Heaton, British representative for Canterbury, had initiated the event. The enthusiastic chess player gladly served as umpire in another transatlantic cable chess match in the spring of 1899, in which students from American Ivy League universities competed against their Oxbridge counterparts. Just prior to their game, the students received a cordial telegram from the New York state capital Albany in which Theodore Roosevelt, the sitting governor, a Harvard graduate and soon thereafter president of the United States, expressed his hope the best team would win. Isaac L. Rice served as the second umpire. The former Columbia University professor specialising in railway law was a wealthy man. He would make a fortune with the Electric Boat Company, which he had only just founded in February 1899. Magnanimously he offered the winning team a trophy worth \$ 1,200 dollars that was "one of the most elaborate and costly emblems of victory ever presented for chess matches." It consisted of a silver shield showing the North Atlantic with the United Kingdom and the United States joined by cable. Columbia and Britannia stood on both sides of the globe, flags flying above their heads, and a panel underneath displayed the two of them playing chess. The wingspan of an eagle supported the globe, while seals, emblems and olive tree branches further embellished the magnificent prize.3

While parliamentarians and well-educated students on both sides of the Atlantic thus reaped the benefits of international telegraphy, it remained by and large beyond the reach of the masses. Heaton was an ardent supporter of rebalancing this unevenness in the use of the telegraph. In addition to his role in cable chess, Heaton above all acquired fame as the 'apostle' or 'prophet of cheap communications'.⁴ With a group of like-minded reformers, such as Charles Bright, Sir Sanford Flemming, and Edward Sassoon, Heaton believed the prohibitive tariffs cable companies charged prevented telegraphy from living up to its potential of bringing people closer together the world wide over. They decried the fact that the world's poorer classes remained deprived from using the telegraph to stay in touch with family and friends further afield.⁵

- 2 "Chess in Congress," editorial, 4 April 1897; "International chess game," 22 April 1897; editorial, "Chess in Congress"; no title, 2 May 1897; "Trophy for the chess players," 8 May 1897; "With the English players," 1 June 1897; "Shafroth makes a tie," 2 June 1897; "Chess match ends even," 2 June 1897; "The chess match," 3 June 1897, New York Times.
- 3 "The university cable chess match," 10 April 1899; "The cable chess tourney," 22 April 1899; "International chess trophy," 30 July 1899, New York Times.
- 4 "Cable rate abuses: A proposed reform," 29 November 1908; "International communications," 13 June 1912, New York Times.
- 5 Some good recent work has given a face to this global media reform movement, see R. Pike and D. Winseck, "Monopoly's first moment in global electronic communication: From private monopoly toglobal media reform,

When given the proper regulations, Heaton argued, the international use of the telegraph would increase twelve-fold from 25 to 300 million telegrams a year.⁶ This increase would consist mainly of so-called 'social communications' by middle and lower class customers, including the many migrants who would like to remain in touch with home. Such 'social telegrams' did not constitute a large portion of cablegrams sent, nor did they form an important consideration in the business strategy of the cable entrepreneurs.⁷ The proposed tariff reform thus spotlighted a critical asymmetry in use that had become an inherent part of the telegraph in its early days. On the one hand stood an elite able to pay for telegrams, on the other the vast mass of the disconnected remained sidelined and continued to rely on alternative communicative strategies.

Rules and regulations steer the use of infrastructures and determine in part whether they can live up to their connective promise. National borders in particular stand out as potential hurdles that can easily break such promise. At multiple international gatherings telegraph specialists, diplomats, and cable entrepreneurs sought to agree on how to prevent that extra charges overly penalized telegrams for crossing borders. In short, the central theme running through this paper is the relation between transnational governance structures on the one hand, as reflected in international telegraph tariffs, and telegraph use on the other, as reflected in flows of cross-border telegrams. This formed part and parcel of a much wider challenge to find ways to regulate infrastructures adequately.⁸

What has thus far escaped attention is that the proposed route to lower worldwide cable tariffs and global mass use went through Europe. It was there that Heaton thought penny-a-word telegrams should first be adopted as the middle stage in a hop-step-and-jump against excessive tariffs.⁹ He had tackled imperial postal tariffs first by establishing the imperial penny postage on Christmas day 1898. Penny postage was further extended to Anglo-American post from June 1908.¹⁰ In between the 'hop' of the penny postage and the 'jump' of the penny-a-word Transatlantic cablegram, there was a crucial intermediary 'step' of more affordable European communications.¹¹

circa 1860–1920, in: Journal of the Canadian Historical Association 10 (1999) 1, 149-183; R. Pike/D. Winseck, The Politics of Global Media Reform, 1907-23, in: Media Culture and Society 26 (2004) 5, 643-675; D. Winseck/R. Pike, Communication and empire: Media, markets, and globalization, 1860–1930, Durham 2007; D. Winseck/R. Pike, The global media and the empire of liberal internationalism, circa 1910-30, in: Media History 15 (2009) 1, 31-54.

⁶ Heaton now for 2-cent cable rate," 14 June 1908; "20-year compact to keep cable rates," 30 November 1908; "Action again urged for cheaper cables," 19 September 1910, New York Times; Pike/Winseck, The Politics of Global Media Reform, 1907-23, 659.

⁷ S. Müller-Pohl, The Class of 1866 and the wiring of the world: Telegraphic networks in maritime space, 1858– 1914, Berlin 2011, p. 221.

⁸ F. Schipper / J. Schot, Infastructural Europeanism or the project of building Europe on infrastructures: An introduction, in: History and Technology 27 (2011) 3, 245-264.

⁹ The term 'crusade' is used in "Heaton Attacks Cable Monopoly," New York Times, 11 November 1908, "4-cent cable soon to cross Atlantic," 12 December 1908.

^{10 &}quot;Imperial penny postage – Reduction of rates on letters to colonies pleases Queen Victoria", New York Times, 1 January 1899; "Cheap ocean postage," editorial, New York Times, 5 June 1908.

¹¹ J. Heaton, "Penny-a-word telegrams for Europe," reprint from Financial Review of Reviews (June, 1908).

The idea of creating European arrangements prior to global governance is a recurrent pattern in infrastructure history.¹² As a continent with high densities of both infrastructure networks and national borders, European states had a long legacy of seeking appropriate ways to prevent borders from turning into stumbling blocks for the use of transnational infrastructures. For the telegraph, Heaton could build on a towering predecessor in this respect. The German imperial Postmaster-General Heinrich von Stephan had earlier strived to realize a vision for a European transcommunicative space, which translated into hard-fought battles on international tariffs at conferences of the International Telegraph Union (ITU), especially in Berlin in 1885.¹³

The history of late nineteenth century transnational telegraphy thus reveals the crossconnections between global and European infrastructure regimes, as well as the links between infrastructure governance and the cross-border flows these structures seek to support. This paper investigates these two elements by drawing on sources from the general press and more specialised magazines.¹⁴ The paper proceeds as follows. The next section discusses the role of infrastructures in internationalist debates in the nineteenth century. It subsequently sketches the 'crusade' of Henniker Heaton in the early twentieth century, and after that the deliberations at the ITU Conference in Bismarckian Berlin in the late summer of 1885, where a protracted discussion on European tariffs formed the main bone of contention. The concluding section returns to the central theme of the relation between the rules and regulations governing the cross-border use of the telegraph, and the number of telegrams being sent, of which 'social communication' constituted only a limited part.

2. Internationalism and infrastructures

In the nineteenth century a network had emerged of continuous international intercourse and interests affecting the everyday life of many. Infrastructures could render even the most remote regions more accessible than they had hitherto been. Observing these trends, liberal internationalists felt global unity was becoming real through a web woven

- 12 F. Schipper/V. Lagendijk/I. Anastasiadou, New connections for an old continent: Rail, road and electricity in the League of Nations Organisation for Communications and Transit, in: Materializing Europe: Transnational infrastructures and the project of Europe, ed. A. Badenoch and A. Fickers, London 2010, 113-143.
- 13 Winseck/Pike, Communication and empire, 100–103. On the general links between communications and Europe, see L. Laborie, L'Europe mise en réseaux: La France et la coopération internationale dans les postes et les télécommunications (années 1850-années 1950), Brussels 2010. The International Telegraph Union was founded in 1865 to provide an institutional setting for negotiating international telegraphy at conferences, organized at regular intervals with support of the permanent Bureau in Bern. As Heaton prepared the Transatlantic chess match word spread of the death of Von Stephan on 8 April 1897, a further anecdotal, symbolic connection between the lives of these two reformers, "Merits of Dr. Stephan," New York Times, 25 April 1897.
- 14 Including, for example, the ITU's Journal Télégraphique. ITU-based sources, both secondary and archival, have thus far remained strangely absent from many contributions to telegraph history, and even from the ITU's own institutional histories. For the a recent example, see J. Ahvenainen, The International Telegraph Union: The cable companies and the governments, in: Communications Under the Seas: The Evolving Cable Network and Its Implications, ed. B. Finn and D. Yang, Cambridge 2009, pp. 61-79.

by transport and communications technologies, "over the whole face of the earth."¹⁵ In the view of contemporary internationalists, the institutional structures governing these developments, however, had been unable to keep pace with more robust technological developments. This so-called 'cultural lag thesis' was popular among liberal internationalist thinkers from the late nineteenth century onwards.¹⁶

The focus on infrastructure development and global production chains made science and technology central to the liberal internationalist line of reasoning. Yet transport and communications had connected the globe up to a point where existing institutions could no longer facilitate flows adequately. Infrastructure dynamics and the steadily growing traffic they supported had in a way overtaken the legal structures governing infrastructure use across borders; 'culture' lagged behind.¹⁷ The Norwegian theorist and practitioner of internationalism Christian Lange spoke of this mismatch in the speech with which he accepted the Nobel Peace Prize in 1921, while the French economist Francis Delaisi identified it as a main manifestation of Les contradictions du monde moderne (1925).¹⁸ The vision that political structures trailed technological development also infused the European movement. It formed a cornerstone of Count Richard Coudenhove-Kalergi's Paneuropa, a grand vision for a European federation able to compete in a world dominated by the emerging giants of the outer world, the Soviet Union and the United States.¹⁹ In short, feelings of increased global interconnectedness made new types and sets of rules accompanying transnational infrastructures and the flows they supported seem a necessity.

These assertions did not equally apply to all infrastructures. By the time liberal internationalists started to tackle infrastructures, several new governance structures had in fact already emerged. 'International government', as Leonard Woolf called it, in its diverse manifestations had been virtually non-existent in the eighteenth century (without it being perceived as problem precisely because of the low extensity of global networks and low intensity of global interconnectedness),²⁰ but had developed firmly by the early

¹⁵ L. Woolf, International government: Two reports by L.S. Woolf prepared for the Fabian Research Department with an introduction by B. Shaw, London 1916, p. 155; P. Reinsch, Public international unions: Their work and organization, Boston 1911, pp. 3, 8.

¹⁶ Andrew Barry has advanced a similar thesis for the European Union. He distinguishes 'technological zones', or spaces supported by all sorts of technologies, from 'political zones', referring more to the institutional sphere. While 'technological zones' have dramatically expanded, they have not become quite global yet. The European Union is thus an in-between answer to the challenges posed by the mismatch between technological and political zones, A. Barry, Political machines: Governing a technological society, London 2001.

¹⁷ S. Zaidi, Technology and the reconstruction of international relations: Liberal internationalist proposals for the internationalisation of aviation and the international control of atomic energy in Britain, USA and France, 1920– 1950, London 2008, particularly pp. 31-36.

¹⁸ C. Lange, Internationalism: Nobel lecture, December 13, 1921, in: Nobel lectures, including presentation speeches and laureates' biographies: Peace, vol. 1, 1901–1925, Amsterdam 1972, pp. 336-346; F. Delaisi, Les contradictions du monde moderne, Paris 1925.

¹⁹ The cultural lag thesis figures prominently in R. Coudenhove-Kalergi, Apologie der Technik, Leipzig 1922; R. Coudenhove-Kalergi, Revolution durch Technik, Vienna 1932. See also F. Delaisi, Les deux Europes, Paris 1929. On the notion of the 'dwarfing of Europe', see A. Toynbee, Survey of international affairs, London 1930, 132.

²⁰ These are two of the four key spatio-temporal dimensions Held et al. distinguish among historical forms of

twentieth. Woolf underlined this development had emerged spontaneously in the nineteenth century in response to international needs resulting from what he characterised as 'a revolution in communications'. The fruits of that revolution were important indeed, up to the point that "Our civilization rests ultimately upon the Post, the Telegraph, the Telephone, the Railway, the Steamship, the Motor Car, and the Aeroplane. If you cut the communications of Europe we should fall back plumb the 20th century to the 10th. But these communications are international; they cease to exist unless they are made independent of the frontiers of States. They are the greatest of all international interests, and they cannot perform their functions without international administration."²¹ In short, it was believed there was a need for a particular set of institutions with the task to draw up sets of rules ensuring smooth infrastructure-supported flows across borders. In the end, the continuing growth in the number and scope of international organizations became a central feature of the nineteenth century, and the infrastructural realm was singularly important in furthering this development.²²

The telegraph seemed to fit these developments perfectly, and many International Relations scholars have taken the year 1865 (foundation of the International Telegraph Union) as an explicit or implicit starting point for a new era in conducting international relations.²³ The worldwide telegraph network acquired a remarkable extension within a few decades after its start in 1837.²⁴ As a result the ITU emerged as the first 'public international union' in 1865.²⁵ The cultural lag thesis was already gaining ground at that time. In the year of the ITU's foundation, Charles Lavollée noted in the leading French political and literary *Revue des Deux Mondes* that the "unité qui existait dans l'instrument matériel devait pénétrer en même temps dans le code international. De là les négociations qui se sont multipliés depuis quelques années dans l'intérêt des transports, notamment en ce qui concerne les communications postales et télégraphiques."²⁶

globalization. The other two are the velocity of global flows and their impact propensity. Additionally, they distinguish four organizational dimensions, see David Held et al., Global transformations: Politics, economics and culture, Cambridge 1999, p. 21, box I.1.

- 22 Iriye, Global community; Lyons, Internationalism in Europe; Craig Murphy, International organization and industrial change: global governance since 1850, Cambridge 1994.
- 23 See, for example, Held et al., Global transformations, p. 43. It seems that contemporary authors were somewhat more sensitive developments prior to 1865. Woolf, for example, picks 1855 as the starting year for 'international telegraphy', highlighting the 'first' International Telegraph Convention adopted in that year. He also brings forward the Conseil Supérieur de la Santé (Istanbul, 1839) as an earlier instance of a similar institution. The emergence of the Rhine regime under guidance of the Central Commission for the Navigation of the Rhine, though more limited in geographical scope, has also been taken as a reference point, making the Napoleonic era the main threshold, see A. Iriye, Global community: The role of international organizations in the making of the contemporary world, Berkeley 2002, pp. 10–11; F. Lyons, Internationalism in Europe 1815–1914, Leiden 1963, p. 13.
- 24 The telegraph has been likened to the internet to capture its global implications, T. Standage, The Victorian internet: The remarkable story of the telegraph and the nineteenth century's online pioneers London 1998.
- 25 Reinsch, Public international unions. The ITU was re-baptised in 1932 as the International Telecommunication Union.

²¹ Woolf, International government, p. 184.

²⁶ C. Lavollée, La nouvelle diplomatie commerciale de la France, in: La Revue des Deux Mondes 57 (1865), 192.

A brief glimpse of the past reveals what great strides had been made as the nineteenth century proceeded. In the early days of the telegraph, networks of neighbouring states were not always physically connected. On the way from sender to receiver, cross-border telegrams had to be put in writing and handed over to the telegraphist in the office right across the border before being recoded and resent. Recoding was necessary as there were several code alphabets in use at the time.²⁷

The *Deutsch-Österreichische Telegraphenverein* (DÖTV) eliminated the necessity of handling telegrams at the border in October 1851 by stipulating that international lines should not be interrupted at the border.²⁸ The network itself developed apace; in fact European telegraphy represented a well interconnected system from an early stage.²⁹ According to an early twentieth century observer, the technology enabled communications from the Pyrenees to the Carpathians and from the Adriatic to the North and East Sea just fifteen years after its inception. A decade later wires covered Europe from the Tagus to the Volga and the Strait of Messina to 'inhospitable' Lapland.³⁰ With the serious advent of submarine cables from 1866, the network expanded across the oceans.³¹ The speed and capacity of the burgeoning network increased as well. Transmission jumped from 60-80 words-per-minute around 1870 to 400-600 in 1900.³² Contemporaries considered the girdle around the earth completed by 1902 with the opening of a link across the Pacific, global telegraphy's final frontier.³³

3. The prophet of cheap communications

With technological development proceeding satisfactorily apace, and an institutional setting often hailed as the very start of modern international organization, conditions

- 27 M. Wobring, Die Integration der europäischen Telegraphie in der zweiten Hälfte des 19. Jahrhunderts, in: Internationalismus und europäische Integration im Vergleich, ed. C. Henrich-Franke, C. Neutsch, and G. Thiemeyer, Baden-Baden 2007, p. 93.
- 28 It also established Morse code as the official standard on international lines. G. Codding, The International Telecommunication Union: An experiment in international cooperation, Leiden 1952, p. 14. The move by the DÖTV was important in elevating Morse's telegraphy apparatuses to achieve the status of the international standard, A. van der Woud, Een nieuwe wereld: Het ontstaan van het moderne Nederland, Amsterdam 2006, p. 352.
- 29 D. Nickles, Under the wire: How the telegraph changed diplomacy, Cambridge 2003, p. 4; Winseck and Pike, Communication and empire, 17.
- 30 A Heringa, Electrisch wereldverkeer: Economische beschouwingen over telegrafie en telefonie, Haarlem 1914, pp. 27, 31.
- 31 D. Nickles, Telegraph diplomats: The United States' relations with France in 1848 and 1870, in: Technology and Culture 40 (1999) 1, p. 8; D. Headrick, The tools of empire: Technology and European imperialism in the nine-teenth century, New York, 1981, p. 102; van der Woud, Een nieuwe wereld; W. Kaschuba, Die Überwindung der Distanz: Zeit und Raum in der europäischen Moderne, Frankfurt am Main 2004, p. 129. The proliferation of submarine networks required cutting edge technologies to solve cable insulation problems, and advanced shipping technology to deal with the cable-laying challenges involved.
- 32 K. Beauchamp, History of telegraphy, London 2001, pp. 82–83; P. Strange, "Duplex telegraphy and the artificial line: The beginnings of system modeling," Physical Science, Measurement and Instrumentation, Management and Education, Reviews, IEE Proceedings A 132, no. 8 (1985): 543-552.
- 33 Heringa, Electrisch wereldverkeer: Economische beschouwingen over telegrafie en telefonie, 98; T. Lenschau, Das Weltkabelnetz, Halle a. S. 1903, p. 7.

seemed excellent for putting in place governance structures that would allow telegraphy to thrive, and in a way it did. From the mid-nineteenth century to the First World War, telegraphy lived its golden age.³⁴ But did international flows of telegrams grow to the extent that they might? Certainly not in the view of Sir John Henniker Heaton, who deplored the fact that the telegraph had failed to become a clearly social means of communication, remaining largely confined to business and the media. Despite the continuous rise in speed and capacity, and despite the completion of the institutional edifice to keep oversight of its burgeoning cross-border development, he claimed available telegraph lines were significantly underused and certainly remained beyond the reach of the common man.

He primarily blamed tariffs. They formed a major brake on the democratization of the use of the telegraph. High rates bred creativity among users of the technology. A 'telegram style' had spontaneously developed. Dropping traditional rules of courtesy became a way of saving time – and money.³⁵ Certain individuals and particularly companies started using code language to condense the information contained in a single telegram, an additional advantage being the secrecy that was guaranteed through the use of a language that did not mean anything to those unfamiliar with the code in which it had been written. For example, 'Arrectus' was code for transferring Christmas greetings, while 'SCORN', contrary to its common meaning, wished the addressees a Happy New Year.³⁶

The telegraph administrations resisted the use of code language. They saw themselves deprived of income they would have otherwise generated, and the spelling of incomprehensible coded messages needed meticulous cross-checking to prevent the wrong code from being sent – something that happened quite frequently. Seemingly endless sessions were dedicated to code language at consecutive ITU-sponsored conferences. Opinions were divided and hard to bridge, the various states taking antagonistic positions. The United Kingdom sided with the International Chamber of Commerce in opposing limiting the use of code words to those contained in an obligatory official vocabulary. All discussion on the topic ceased thereupon, also because it was unlikely to enhance the chances of getting the United States to become a member of the ITU, something the ITU and its members eagerly wished for at that point in time.³⁷

Yet the most straightforward way to solve the problem caused by high tariffs was to lower them. In fact, tariff discussions formed a recurrent theme throughout telegraph history, being a major point of debate at the Paris conference founding the ITU in 1865.³⁸ In

38 n. a., Documents diplomatiques de la conference télégraphique international de Paris, Paris 1865, p. 113.

³⁴ Nickles, Under the wire.

³⁵ In response to the surge in telegraph traffic, the postal system came up with the post card, a cheap, concise alternative to lengthier letters, which equally did not allow for the traditional pump-and-circumstance type of elaborate, formalized formulas characterizing courteous letter writing, van der Woud, Een nieuwe wereld, pp. 351–352; P. Blom, The vertigo years: Change and culture in the West, 1900–1914, London 2008, p. 296.

³⁶ n.a., "Unicode": The universal telegraphic phrase-book, 1897; E. Hausmann, Telegraph engineering: A manual for practicing telegraph engineers and engineering students, London 1915, p. 151.

³⁷ Codding, The ITU, pp. 69-70.

a heated discussion the Vicomte de Vougy, director-general of the French pointed out that some states had entered myriad international agreements with neighbouring states to the effect of mutually lowering their telegraph tariffs. France was a good example, and as a result it typically charged two thirds of the internationally agreed maximum tariff. Meanwhile, a state like Austria had not lowered its tariffs accordingly. The French organizing authorities were keen on encasing all states in an encompassing framework embodying a middle road between these two positions. On the condition of reciprocity, the French delegates therefore proposed to set all tariffs for telegrams remaining within the European regime at six francs.

Thus a discussion on rates also became a discussion on Europe. The same holds for John Henniker Heaton's activities forty years later. The first step to his overall aim was to call a conference of postmasters-general to order a penny-a-word rate throughout Europe. The initiative would fall on fertile ground, as parliamentary committees investigating cable rates had already been set up in Berlin, Brussels, The Hague, Paris, St. Petersburg, Rome and Vienna. If European agreement would be achieved initially, Heaton's subsequent aim was to involve the United States. Only then would it be possible to abolish borders for telegraphic purposes on a global scale and decree universal cheap rates.³⁹ Heaton hoped a fruitful outcome might result from linking the telegraph rates to his proposal for equally lowering the costs for customers in the postal system, for which he prepared a tour with hundred prominent personalities from different countries.⁴⁰

Heaton's calls for lowering telegraph tariffs and thus allow a larger number of people to use the telegraph could count on broad support. In November 1908 *The Times* published a page full of letters supporting him. "Was electricity given to the world for the benefit of a small body of shareholders in cable companies only or for the benefit of humanity at large?" There was no doubt as to how Heaton would answer the question. In line with his earlier successes in slashing costs for Transatlantic postal service, he now propagated penny-a-word telegrams.

His aim was to turn the technology from one for millionaires into one for the millions. He accused the telegraph business of having failed its high mission, preferring easy profits over allowing the communication technology to benefit all. In his opinion, the telegraph sector had had its chance: the time had come for governments to take action.⁴¹ Heaton directed his wrath to the fact that many submarine cables lay idle for substantial periods of time. He called upon the governments of the 'civilised world' to jointly take over the global cable net and exploit it at a fairer price so as to bring actual use closer to capacity. The associated drop in tariffs would result in exponential growth in telegraph use, he argued.

^{39 &}quot;For joint national control of cables," 12 May 1908; "Heaton Attacks Cable Monopoly," 11 November 1908; "Action again urged for cheaper cables," 19 September 1910, New York Times; J. Henniker Heaton, "Penny-a-word telegrams for Europe," reprint from Financial Review of Reviews (June, 1908).

^{40 &}quot;For two-cent world post," New York Times, 15 September 1912.

^{41 &}quot;Two cent cables find powerful advocate," New York Times, 10 November 1908.

The many years that Heaton had lived in Australia provide the key to understanding his position in the debate. Down-under he had been a large landowner and co-owner of several newspapers. The press was one of the sectors that stood most to gain from fast, cheap communications over long distances. If there was one place where the need for cheap communications was most urgently felt, it was in the antipodean corners of the global telegraph system. Heaton had experienced the costs of long-distance telegrams as few others at the international telegraph conferences had.⁴²

The response from telegraph business circles was tepid, to put it mildly. The cable companies first chose to ignore Henniker Heaton's calls. The large public opinion consensus supporting Heaton's crusade,⁴³ however, eventually compelled them to respond and attempt to stop the agitation.⁴⁴ Some called his proposals 'chimerical', others contested his calculation of running costs of submarine cables. To be sure, Heaton's extrapolations of the effects to be expected from lowering tariffs were overly optimistic.⁴⁵ Nevertheless, the companies had some explaining to do. Rates had been set in stone for a quarter century since the end of the so-called 'cable war', basically a scam discovered in the late 1880s bringing the cartelisation of the global cable market out in the open and leading to substantially lower tariffs in its wake.⁴⁶ The experience back then was now cautioning the cable companies, as back then the amount of traffic had grown 10%, while their revenues had gone down 45%.

This shifts our gaze to Bismarckian Berlin, 1885. In the late summer the German authorities organized an ITU gathering that resulted in a substantial decrease of European tariffs. At the conference Henniker Heaton himself had represented the Australian state of Tasmania and had strongly advocated, in vain, tariff reductions to levels putting an end to rates allowing only the wealthiest merchants to pay the costs of a telegram to or from Australia.⁴⁷ Seldom had a battle concerning telegraph tariffs been so outspokenly European in character as the ITU conference in Berlin, which opened on 10 August 1885.

4. Berlin, 1885

In 1885, the roughly quinquennial conference of the ITU settled down in Berlin. Berlin in the mid-1880s was the confident capital of a proud nation that would soon turn itself

^{42 &}quot;Henniker Heaton dies in Geneva," New York Times, 9 September 1914; D. Cryle, The Empire Press Union and Antipodean communications: Australian-New Zealand involvement 1909–1950,, in: Media History 8 (2002) 1, 49-62; R. Harvey, Bringing the news to New Zealand: The supply and control of overseas news in the nineteenth century, in: Media History 8 (2002) 1, 21-34. See also K. Livingston, The wired nation continent: The communication revolution and federating Australia, Melbourne 1996.

⁴³ The term 'crusade' is used in "Heaton Attacks Cable Monopoly," New York Times, 11 November 1908.

^{44 &}quot;Cable ring is alarmed," New York Times, 20 June 1909.

⁴⁵ Pike and Winseck, "Monopoly's first moment," 178, 182, note 6.

^{46 &}quot;Cable rate abuses: A proposed reform," 29 November 1908; "20-year compact to keep cable rates," 30 November 1908; "Cable monopoly fears a real rival," 3 December 1908, New York Times.

^{47 &}quot;The Telegraph Conference", The Times 17 September 1885.

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into the industrial powerhouse of continental Europe.⁴⁸ The gathering did not stand on its own: as the British press observed "the harvest of European congresses [grew] richer ever autumn."⁴⁹ The telegraph was a subject that several of the mushrooming expert settings took up. For example, international law professionals had started dealing with international telegraphy particularly after the proliferation of intercontinental submarine cables from 1866 onwards. In the 1880s a concerted effort of European legal expert in association with the Institute of International Law managed to sketch the contours of what resembled an "initial governance regime for world communications".⁵⁰

Against the background of these broader developments, the delegates at the ITU conference by acclamation chose Dr. Heinrich von Stephan, the German imperial minister of posts and telegraphs, as president of the gathering in the summer of 1885. The first banquet to which Von Stephan treated his guests was a garden-party on one of the first evenings of the conference. A large telegraph map of the world adorned the hall where the delegates met, reminding them of the noble aims of their work. In between the busts and evergreens, a military band played music to entertain the dignitaries.⁵¹ The banquet was the first in a series of sumptuous suppers, leaving the delegates little to wish for in gastronomic terms. Offered by the United German Telegraph Company, the Siemens brothers, the North German Lloyd Company, the Electro-Technical Society or various municipal authorities, taking place in the Berlin zoo or aboard an Atlantic steam liner, all made an attempt to lure the conference participants with tasty treats in enchanting venues.⁵²

The excursion program matched the culinary highlights in splendour. The most extensive trip on the program was a mid-week roundtrip to the Hanseatic cities Bremen, Hamburg and Kiel.⁵³ Fireworks, leisurely boat rides, or servings of the 250 years old renowned Rosa wine, all the stops were pulled out to impress the participants.⁵⁴ The conference even included *Electra*, a tailor-made theatrical performance written by the German dramatist Ernst von Wildenbruch. The *dramatis personae* of the allegory apart from Electra were Mother Nature, *Der Mensch*, the Demon of Gunpowder, and Peace, a white-robed, palm-branch bearing youth crowned with a coronet of electric lamps. The performers were well-known Berlinese theatrical stars. They enacted the play in a hall

- 48 The more famous conference that ended in 1885 was the one organized on the partition of Africa (Nov. 1884-Feb. 1885).
- 49 F.O. Adams/J.H.G. Bergne, editorial, The Observer, 23 August 1883. Adams and Bergne were respectively Her Majesty's Envoy Extraordinary and Minister Plenipotentiary in Berne, and Superintendent of the Treaty Department of the Foreign Office.
- 50 Winseck and Pike, Communication and empire, 46-48. The adequate protection and neutralisation of submarine cables during peace and war, a particular concern for the American government, became part of this debate, P. Kennedy, Imperial cable communications and strategy, 1870–1914, in: English Historical Review 86 (1971), 732.
- 51 "The telegraph conference", The Times 12 August 1885; "The telegraph conference", The Times 13 August 1885.
- 52 "The telegraph conference," The Observer, 6 September 1885; "The telegraph conference," The Times 15, 20, 22, 25, 26 August, and 4 September.
- 53 "The telegraph conference," The Times, 21 August, 1885.
- 54 "The telegraph conference," The Times, 26 August, 10 September 1885; "The telegraph conference," Manchester Guardian, 21 August 1885.

adorned by Anton von Werner's colossal painting of the Congress of Berlin, a monthlong meeting in the wake of the Russo-Turkish War (1877-1878). Berlin had served as the stage for settling a peace then, at a time when the united Germany had acquired supreme status in continental Europe.⁵⁵ Now the spectators enthusiastically toasted to the emperor as "Protector of the Peace of Europe", ⁵⁶ underlining the peaceful image that working on infrastructure governance had by then already acquired.⁵⁷

The numerous pleasantries on the program almost seemed to render the actual conference an affair of secondary importance. Yet in between the lustre of the social events, the delegates steadily worked on the proposals the German postmaster had presented to them. The conference had instituted two committees to prepare the work, one to deal with technicalities affecting the working of the telegraph, the other to deal with tariffs. The latter faced the tougher challenge. Von Stephan had drafted a proposal that, if accepted, would turn European telegraphy on its head. His plans had the full support of Otto von Bismarck, the Chancellor of the German Empire and an avid user of the telegraph himself.⁵⁸

The new system that Von Stephan proposed simplified and unified existing international telegraph regulations. The cornerstone was a uniform tariff of 4 or 5 cents. Voting on the proposal had been predicted to turn out to be very close, and the Eastern Telegraph Company, a globally operating British telegraph colossus headed by John Pender, had agitated against it even prior to the conference.⁵⁹ The aim of Von Stephan's boldness was to extend the use of the telegraph beyond the exclusive clique that by the late nineteenth century already enjoyed access to the telegraph.⁶⁰ He perhaps best formulated the gist of his proposal in his closing remarks on September 18th, echoing the words of his opening statement.⁶¹ He expressed the hope the fruits of the conference would help push international telegraphy in the direction of "placing the telegraph more and more at the service of the masses, and facilitating access to it even for the least fortunate classes of the population, by a great reform of the system of tariffs."⁶²

Von Stephan's bold proposals did not come out of the blue. At the time of the Berlin conference, he had already acquired a solid reputation as a postal reformer, and he was widely credited for his role in the establishment of the Universal Postal Union, the ITU's

- 55 N. Davies, Europe: A history, London 1997, p. 870.
- 56 "The telegraph conference," The Times, 8 September 1885.
- 57 J. Schot /V. Lagendijk, Technocratic internationalism in the Interwar years: Building Europe on motorways and electricity networks, in: Journal of Modern European History 6 (2008) 2,196-217. Of course such assertions should not be taken at face value. As Armand Mattelart has rightfully noted, there was often a striking contrast between utopian discourse, and the struggle for hegemony over communication networks and their governance, A. Mattelart, Networking the world, 1794–2000, Minneapolis 2000.

⁵⁸ Davies, Europe, 870.

^{59 &}quot;The telegraph conference," New York Times, 11 August 1885.

⁶⁰ See the report on the opening of the 1885 conference, Journal Télégraphique 9 (1885) 8, 145-146, and the expost facto reflection on the conference, Journal Télégraphique 10 (1886) 2, 25-27.

⁶¹ ITU, Documents de la Conférence Internationale de Berlin (Bern: Bureau International des Administrations Télégraphiques, 1886), 277-279.

^{62 &}quot;The telegraph conference," The Times 18 September 1885.

counterpart for the postal sector.⁶³ The German postmaster had made an earlier attempt to arrive at a European rate reform at the 1879 conference in London. The British capital, the heart of 'the Empire of Cable',⁶⁴ was the centre of the telegraphic world and an obligatory transit point for many long-distance telegrams.⁶⁵ The private companies owning the global submarine cable network ruled the roost, the Eastern Telegraph Company above all. Von Stephan's 1879 attempt did not stand a chance in the lion's den. The courtesies Pender and the post-master general exchanged six years later in Berlin at a banquet offered by the chief of the Eastern Telegraph Company on behalf of all British cable companies did not do away with the deep-seated conflict that continued to divide them.⁶⁶

Von Stephan, however, was a man who "once having put his hand to the plough, has never yet been known to take it away without in the long run guiding it to the end of the furrow."⁶⁷ Undeterred by prior defeat, he made a comprehensive, coherent European tariff system the centrepiece of the conference. As the playmaker in Berlin he reiterated his conviction that telegraphy should not remain for the happy few, but instead should be made available to a wider clientele. International telegraphy not only remained out of reach for the masses, tenacious tariff agreements among the cable companies continued to hamper its use in professional circles as well.

As a result of the "many glaring inconsistencies and inequalities," the tariff for sending a telegram from Rome to Paris amounted to 18-20 cents, while the domestic rates were about five cents each. Crossing the border almost doubled the rates.⁶⁸ Consequently Italian newspapers had agents in Modane to receive dispatches from Paris, quickly cross the border and then forward them to Rome.⁶⁹ The press also continued to rely substantially on the services of the postal system in what was otherwise known as the 'age of the telegraph'.⁷⁰ Similar practices reigned diplomacy, involving comparable cost-cutting considerations. Letters provided the large bulk of communication between embassies and the Foreign Office, also because the more elaborate types of messages did not lend themselves to be telegraphed at all.⁷¹

64 A. Mattelart, The invention of communication, Minneapolis 1996, p. 165.

65 R. Wenzlhuemer, London in the global telecommunication network of the nineteenth century, in: New Global Studies 3, no. 1, Article 2.

- 66 "The telegraph conference," The Times, 15 August 1885.
- 67 "The telegraph conference," The Times 18 August 1885.

68 This potential 'bizarrerie injustifiable' was also pointed out nearly a decade earlier by the eminent connoisseur of international law Renault, and contrasted with less costly postal arrangements, L. Renault, Études sur les rapports internationaux: la poste et le télégraphe, Paris, 1877, p. 75.

69 "The telegraph conference," The Times, 18 August 1885.

70 R. Kielbowicz, News gathering by mail in the age of the telegraph: Adapting to a new technology, in: Technology and Culture 28 (1987) 1, 26-41.

71 Nickles, "Telegraph diplomats: The United States' relations with France in 1848 and 1870"; Id., Under the wire.

⁶³ On Von Stephan, see J. Geerke, Dr. von Stephan, Haarlem 1897; E. Krickeberg, Heinrich von Stephan: Ein Lebensbild, Dresden 1897; K. Techentin, Heinrich von Stephan: General-Postmeister, Leipzig 1899; Heinrich von Stephan, Weltpost und Luftschifffahrt: Ein Vortrag im wissenschaftlichen Verein zu Berlin gehalten, Berlin 1874.

Von Stephan's proposal could initially count on the support of a majority, despite vociferous opposition from the delegates of Russia, where a large decline in revenues for the Czar's imperial telegraph services was expected, and the United Kingdom, where the government backed its submarine cable businesses, and objected to interference with private enterprise.⁷² The supportive mood crumbled, however, in a matter of days.⁷³ Still, in the end the conference did accept Von Stephan's proposals, but in a watered down version. The lowered tariffs that were the result for the European system had considerable impact on the cross-border flows of international telegrams within the European system.⁷⁴

The proposed tariffs went into force in the summer of 1886. The reduction that had been achieved should in all likelihood be held responsible for appreciable increase in cross-border telegrams that can be discerned in the available data on European telegram flows from the mid-1880s. Growth accelerated substantially in the wake of the Berlin conference to peaks of 9% in France (1888), 11% in Germany (1887), 12% in Sweden (1887), 15% in Belgium (1888) and a whopping 23% in Norway (1888) (Table 1). The effects tempered in the early 1890s, which might relate to the general economic slump in that period.⁷⁵

Alternative explanations, such as population growth or growth of the telegraph network, fail to provide a plausible explanation for these substantial increases. Both of these factors show linear growth at low levels in the time period concerned. Telegram traffic may also be expected to increase in response to economic growth. Here too the statistical patterns suggest that the growth figures for telegram traffic were considerably higher than economic growth in general. Given the timing of the developments, it seems likely that the tariff reform of the Berlin conference should be held responsible for the observed increases.

After the mid-1880s the tariffs remained essentially stable until the turn of the century (Table 2). The situation gave occasion to the later reproaches by Heaton *cum suis* in the early twentieth century based on arguments that were remarkably similar to those brought forward by Von Stephan in Berlin. Heaton decried the fact that of one hundred messages sent from the United Kingdom to the colonies, only one was of a non-commercial nature.⁷⁶

The bickering on tariffs got a surprising turn when the Egyptian representative Ernest Ayscoghe Floyer threatened to unilaterally join the European regime.⁷⁷ Floyer was a British colonial administrator of the sturdy type. He had joined the Indian Telegraph Service at the young age of seventeen. While still in his twenties he had endured icy cold winds and burning deserts in an exploratory expedition of the interior of Baluchistan,

^{72 &}quot;The telegraph conference," Manchester Guardian, 21 August 1885.

^{73 &}quot;The telegraph conference," The Times, 14, 17 August 1885.

⁷⁴ Telegrams thus became one of the factors contributing to what Bayly has identified as 'the great acceleration', C. Bayly, The birth of the modern world 1780–1914: Global connections and comparisons, Malden 2004.

⁷⁵ See for example C. Kindleberger, Manias, panics, and crashes: A history of financial crises, New York 1989.

⁷⁶ J. Heaton, The world's cables and the cable rings, 1908, p. 9.

⁷⁷ Manchester Guardian, 14 September 1885.

consisting largely of *terra incognita* at the time.⁷⁸ After a brief return to England he was appointed as Inspector General of Egyptian Telegraphs in January 1878, a position he would continue to occupy until his death in 1903.

Until Floyer's arrival the Egyptian telegraph suffered heavy annual losses. The situation aggravated Egypt's precarious public finances, which had been ruined by its spendthrift khedives. The fiscal burden hunted the British colonial authorities at the time of the Berlin conference. Telegraph receipts had been designated as one of the sources of revenue to be used for repaying the tremendous debts.⁷⁹ In an ironic twist, the construction of telegraph lines had in fact contributed to the debt problems, for the infrastructure construction frenzy should be held in part responsible for Egypt's dire financial situation.⁸⁰ Given this 'race against bankruptcy', Flover was keen on increasing telegraph revenues by using existing lines much more fully. He expected lower tariffs to deliver the desired result. When he rose to plead that tariffs from Cairo to London should be cut in half, the Austrian representative remarked that if Egypt were to enter the European telegraph regime, it could achieve more substantial reductions because overall tariffs were lower in the European regime than in the extra-European regime. Floyer declared that in that case, given the reluctance of other member states to adhere to his proposal, he would enter the European regime. Floyer's statement created a pause of profoundly silent astonishment. When the representative of the Eastern had recovered his breath "he was still sufficiently under the emotion to blurt out in its naked simplicity the painful truth that £ 70,000 of the company's annual receipts [depended] upon the failure of Egypt to look after her own interests," in the words of the correspondent of The Times. Basically the Egyptian authorities had turned their telegraph system into "merely a humble department" of the powerful Eastern by granting the company very generous rights with regard to both international and domestic traffic. As a result, sending a telegram to or from Egypt had become "something like a misdemeanor to be repressed with fines."81

Floyer had earlier demonstrated not to shy away from action. He had pushed through vigorous reforms in Egypt after his arrival. When the concession on Alexandria-Cairo telegraph traffic expired, he made sure that state revenues trebled under equal operation costs in only five years. His simple demand at the Berlin Conference was therefore to recover the right enjoyed by any other state to charge reasonable transit rates for telegrams passing over the lines on its territory. The developments were important enough for Pender, who had already travelled back to England, to return "in hot haste" to Berlin "as fast

⁷⁸ E. Floyer, Unexplored Baluchistan: A survey of a route through Mekran, Bashkurd, Persia, Kurdistan and Turkey London 1882.

⁷⁹ R. Tignor, Modernization and British colonial rule in Egypt, 1882–1914, Princeton 1966, pp. 73–82.

⁸⁰ The precise structure of Egypt's financial crisis is beyond the scope of this paper. The same goes for the ways in which it was responsible for the British takeover of Egypt, making it a part of the British Empire. For a brief description, in which khedive Ismael plays a major part, and discussion of the scramble for Africa in the wake of the takeover of Egypt, see D. Green, Three empires on the Nile: The Victorian jihad, 1869–1899, New York 2007; T. Pakenham, The Scramble for Africa: White Man's Conquest of the Dark Continent from 1876–1912, New York 1992.

⁸¹ Editorial, The Times, 19 September 1885.

as express trains could carry him.³² Floyer was able to strike a deal with Pender breaking Egypt's irksome feeling of dependence, while leaving it a part of the extra-European regime.⁸³ The 'Egyptian incident' clearly unmasks the European and the non-European regime as constructs, of which the precise content was open to negotiation.

5. Conclusion

As the ITU conference in Berlin in 1885 was drawing to a close, Dr. von Stephan and his administrative staff grasped the opportunity to make sure their guests would keep fond memories of the event. They organized a farewell dinner in the dining hall at the private residence in the Ministry of Posts and Telegraphs, which possibly surpassed all the previous ones in glamour. Von Stephan's numerous hunting trophies testified of his fierce prowess in shooting elk, red deer, wild boar, and eagle alike. The engraving decorating the menu showed an eagle scattering lightning from its beak while hovering over a group of the chief architectural edifices in the countries represented at the Conference, such as London's iconic St. Paul's cathedral. The mighty bird of prey supported the Genius of Telegraphy representing the high hopes surrounding the conference.⁸⁴ Had those hopes been dashed, or had the delegates indeed achieved what they had set out to do?

For their technical and the institutional aspects European governance structures left little to be wished for. Von Stephan thus chose to focus on tariffs, in his view the main hurdle still preventing the telegraph from becoming a medium for the masses. Although his proposals were not accepted in their original form, they did inspire European tariff reductions. The available ITU statistics suggest that this real achievement impacted growth rates in the volumes of telegrams crossing national borders within the European system. The link between the two seems plausible. It is not possible to establish in which segments of the telegraph market these increases occurred. Did they deliver the mass use Von Stephan was striving for? It seems doubtful. Still, the impact was real enough. It was also momentous, because the available evidence suggests tariffs in the European regime remained more or less at the level where Von Stephan had managed to put them for some decades until the telephone and radio became serious contenders of the telegraph, especially after the First World War.

^{82 &}quot;The telegraph conference," The Times, 12 September 1885;

⁸³ The Times thought it was a pity that Floyer did not stick to his original plan and joined the European system, no title, The Times, 14 September 1885. To repair some of the damage to his image Pender publicly declared that the Eastern had offered very good service and had not exacted a 'pound of flesh' from Egypt. With slight indignity he further remarked that Floyer owed the Eastern some graitude for accepting the compromise (that it would also have accepted if it had been put on the table courteously), while Egypt's proposal to join the European régime would not have stood a chance at the conference. "The Telegraph Conference," The Times, 12, 15 September 1885; No title, "London, Monday, September 14, 1885," The Times, 14 September 1885; No title, The Times, 17 September 1885.

^{84 &}quot;The telegraph conference," The Times, 17 September 1885. In return, and as a token of their satisfaction Von Stephan's chairmanship, the delegates offered him "a handsome and costly punchbowl made of silver and crystal,""The Telegraph Conference," New York Times, 18 September 1885.

What is clear though is that if reform was going to take place, even if the end goal was to realize it at a global level, the proposed order was to achieve such reform among European states prior to taking global action. Lowering tariffs in the European telegraph regime constituted a more feasible step to take, which could be catapulted to a worldwide level at a later stage. The attractiveness of the route has received further reinforcement from the 'Egyptian incident' described in this paper. The reformer attitude received a further boost from the fact that both John Henniker Heaton and Heinrich von Stephan had first dealt with international postal tariffs before tackling telegram rates. Reformers like Floyer, Henniker Heaton, or Von Stephan tirelessly attempted to turn the telegraph into a social means of communication, to the image of letter-writing. In the words of Henniker Heaton, "All I want is to secure for my countrymen the priceless service of the beneficent Genius of Electricity."

It reminds us of the ultimate goal of the reformers, namely to reduce the asymmetry in use. In order to arrive at reduction of this asymmetry, the reformers were willing to accept an asymmetry of a different kind, if only temporarily. Von Stephan focused his initiatives to lower tariffs on the European realm. Far from being an essentialist entity, the 'Egyptian incident' at the conference in Berlin, 1885, demonstrated the flexible interpretation of what 'Europe' meant in this context. As a distant echo of this situation, Henniker Heaton's later campaign was equally willing to take an initial European agreement as the point of departure for lower tariffs worldwide in a slightly later stage.

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		1883	1884	1885	1886	1887	1888	1889	1890	1891	1892	1893
Belgium	European traffic	6,9	-4,4	3,5	4,8	6,1	15,0	8,3	1,7	2,3	-4,9	0,9
		1.5	0.9	1.2	1.2	3.8	0,7	4.8	2.2	0.2	2,5	1.5
France	European traffic	-1,6	1,2	13,1	7,4	5,1	9,3	7,7	-0,7	2,0	2,2	-0,8
	GDP	0.3	-1.1	-1,8	1.6	0,6	1.0	2.6	2,3	2,3	2,5	1.7
Germany	European traffic	-5,5	1,5	3,2	5,5	11,7	9,0	7,2	4,9	5,4	3,3	4,7
Norway C	GDP European traffic GDP	-0,3 -0,4	2,5 5,6 2,0	2,4 -5,9 1,2	0,7 -1,6 0,6	4,0 3,0 1,1	4,1 23,6 4,4	2,8 6,4 3,5	3,2 3,6 2,7	-0,2 4,7 0,9	4,1 6,6 2,2	4,9 5,2 2,7
Sweden	European traffic GDP	3,8 1,0	-6,8 2,7	0,6	6,3 -0,4	12,0	10,5	2,5	3,5	8,0	1,2	7,1

Table 1: European telegram traffic and GDP growth, France & Germany (1883–1898) Belgium, Norway & Sweden (1883–1898)⁸⁶

85 Heaton, The world's cables and the cable rings, p. 1.

86 The source for Table 1 consisted of statistical compilations by the Bureau International des Administrations Télégraphiques of the ITU, and originally appeared in the Journal Télégraphique.

	1875	1880	1885	1890	1895	1900
Athens	5,00	4,25	3,10	2,85	2,85	2,85
Belgrade	2,75	2,75	1,80	1,45	1,45	1,45
Berlin	1,20	0,85	0,85	0,65	0,65	0,65
Berne	2,00	2,00	1,65	1,05	1,05	1,05
Brussels	1,00	0,50	0,50	0,50	0,50	0,50
Bucarest	2,75	2,75	1,80	1,45	1,45	1,45
Budapest	2,25	2,25	1,75	1,25	1,25	1,15
Cettinje	2,50	2,50	1,80	1,45	1,45	1,45
Copenhagen	2,00	2,00	1,50	1,05	1,05	1,05
Gibraltar	4,25	4,25	2,70	1,65	1,65	1,65
Istanbul	4,75	4,25	2,95	2,85	2,85	2,85
La Valetta	5,00	5,00	3,60	2,45	2,45	2,45
Lisbon	4,25	4,25	2,70	1,65	1,65	1,65
London	2,20	1,50	1,50	1,00	1,00	1,00
Luxembourg	1,25	1,25	0,90	0,85	0,65	0,65
Madrid	3,75	3,75	2,50	1,45	1,45	1,45
Oslo	3,00	3,00	2,20	1,65	1,65	1,30
Paris	2,00	2,00	1,00	1,05	0,80	0,80
Rome	2,50	2,50	2,05	1,45	1,45	1,45
Sarajevo	2,50	2,50	1,80	1,45	1,45	1,45
Sofia	2,50	4,25	2,10	1,65	1,65	1,60
St. Petersburg	4,50	4,50	3,15	2,25	2,25	1,85
Stockholm	2,75	2,75	2,05	1,25	1,25	1,25
Vienna	2,25	2,25	1,45	1,25	1,25	1,15

Table 2. Tariffs for a normal, 10-word international telegram from the Netherlands to selected destinations, 1875–1900

Adapted from Ringnalda, De rijkstelegraaf in Nederland: Hare opkomst en ontwikkeling (1852–1902), Amsterdam, 1902, p. 90.