Chapter 2
Telegraphy and the "New Woman" in Late-Nineteenth-Century Europe

Simone M. Müller

Abstract This article explores the history of telegraphy in the late nineteenth century at the intersection of class and gender. It brings together approaches from social history and the history of finance with communication studies. The article demonstrates that our understanding of telegraphy as a *masculine* undertaking in terms of science, technology, and technology-in-use needs to be expanded. Contemporary discourses of telegraphy included practices of exclusion for the woman engineer and the female telegraph user based on constructions of *femininity* as "the other." Yet, telegraphy also afforded women new avenues of independence, which resulted in an expansion of the domestic sphere. Middle-class women in particular used the opportunities telegraphy offered as a means for employment as a female telegraph clerk or investment in telegraph shares. At the end of the nineteenth century, telegraphy thus helped the "new woman" carve out a new social geography for herself.

In 1877, a story of a British lieutenant in India and his "telegraphic wedding" was making the rounds in newspapers across the British Empire. Mocking both the new technology of the telegraph and women's inability to deal with it, the story was "too good to be lost," according to the *Belfast News-Letter*.[1] The young lieutenant was on sick leave and had taken up residence at a hotel not far from Poonah where he was stationed. There he was "immediately smitten" by a young lady to whom he proposed within merely a couple of days after first meeting. The lieutenant's colonel, who also happened to be a friend of the young man's father, was eager to halt the imminent marriage. He sent a telegram with the wording "join at once." While the young soldier was devastated upon the receipt of the telegram, as he understood it to mean that he was to return at once to his regiment and halt his wedding plans, his young fiancée interpreted the telegraphic message differently. "With a blush of maiden simplicity and virgin innocence," she saw the telegram as a sign of the

[1] The Lady and the Telegraph, *Belfast News-Letter*, November 30, 1877.

S.M. Müller (✉)
Department of History, University of Freiburg, Freiburg, Germany

Albert-Ludwigs-University, Rempartstraße 15, KG IV, 79085 Freiburg, Germany
e-mail: simone.mueller@geschichte.uni-freiburg.de

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colonel's approval of their match. According to the young lady, the colonel's telegram could only mean that they should get married immediately. Joyfully, also the lieutenant jumped upon this interpretation of the telegraphic conundrum. Within 48 h, the colonel received the reply: "Your orders are obeyed. We were joined at once" (The Lady and the Telegraph, *Belfast News-Letter*, November 30, 1877).

This anecdote, which newspapers passed on to each other from India to England to Ireland in late 1877, perfectly illustrates contemporaries' gendered view on telegraphy. Not only did this story invoke the well-known warning of women luring suitable young men into marriage for the newspaper's primarily male readers. It also entailed a story of successful male and dysfunctional female conversation via telegraph. While both male protagonists in this story immediately understand the telegram's phrasing, it is the female in the story that distorts its content. Moreover, it is her intellectual ineptitude, her mental "simplicity" and female "innocence" which lead her to misunderstand the telegraphic message typical for short, instructional, and *masculine* modes of conversation.[2] Within the dichotomy of feminine nature and masculine science, the article's author not only aligned successful telegraphic conversation with inalienable masculine traits but also applied biological determinism to this communications technology. By mere existence as woman, the lady in the story could simply not relate to telegraphy in any other, *understanding* or *mastering* or *knowledgeable* way.

Contemporaries viewed – and scholars today still view – telegraphy, and in particular submarine telegraphy, as an inherently masculine communications technology: invention, technology, and technology-in-use were primarily shaped by and through men. Men, such as Charles Bright, Cyrus Field, and John Pender, feature as the "heroic" inventor or telegraph entrepreneur, and primarily male characters populate the narratives on telegraph engineering as well as telegraph cable management.[3] Throughout telegraphic history, women, in turn, are more often than not merely objectified. They are cast as the muse and inspiration in an entangled story between invention and inventor, as in the case of Samuel Morse and the telegraph or Alexander Graham Bell and the telephone.[4] Alternatively, they are the objects of ridicule in contemporary male narratives of telegraphy as technology-in-use when women fail to master masculine modes of business conversation, as illustrated by the above anecdote.

Such constructions of telegraphy as a primarily masculine technology did, however, not necessarily reflect reality – in particular when we look at telegraphic history through an intersectional lens of gender *and class*.[5] In fact, the relationship

[2] Idem.

[3] Latham, Jean L., and Victor Mays. 1958. *Young man in a hurry: the story of Cyrus W. Field*. New York: Harper; Bright, Charles. 1908. *The life story of sir Charles Tilston Bright civil engineer: with which is incorporated the story of the Atlantic cable, and the first telegraph to India and the colonies*. London: Archibald Constable; Cookson, Gillian. 2003. *The cable: the wire that changed the world*. Strout: Tempus publishing; Appleyard, Rollo. 1939. *The history of the institution of electrical engineers (1871–1931)*. London: The Institution of Electrical Engineers.

[4] Staiti, Paul J., and S.F.B. Morse. 1989. *Samuel F.B. Morse*. Cambridge, NY: Cambridge University Press; Mackay, James A. 1997. *Alexander Graham Bell: a life*. New York: J. Wiley.

[5] On intersectionality, see Berger, Michelle T., and Kathleen Guidroz. 2010. *The intersectional approach: transforming the academy through race, class, and gender*. Chapel Hill: University of North Carolina Press and Chow, E.N., M.T. Segal, T. Lin, and V.P. Demos. 2011. *Analyzing gender, intersectionality, and multiple inequalities: global, transnational and local contexts*. Bingley: Emerald.

between telegraphy and gender was performed differently in various sections of the nineteenth-century Victorian society.[6] The female in the introductory story, for instance, is identified as "a lady" enjoying the company of a "lieutenant." Hereby, contemporary readers could place her – despite the fact that the colonel deemed her not quite suitable – in a particular Victorian social setting of at least upper-middle class. Gendered dimensions of telegraphy, and with it the narrative of female estrangement, change, however, if we expand our view further into the middle class. For educated middle-class women, in particular, telegraphy offered new venues of emancipatory selfhood as it was put forward by the "new woman" of the late nineteenth century. At the *fin de siècle*, women, such as George Eliot, sought to break with traditional gender stereotypes restricting them solely to inhabit the domestic sphere. Feminists of the early twentieth century later considered the new woman as a form of proto-feminism.[7] Seeking female independence from their male counterparts in economic matters, telegraphy represented a means of employment as a female telegraph clerk as well as of investment in the form of telegraph shares for women. Both secured them with a reliable income of their own. As Thomas Jepsen points out for the USA, women played an important role in the telegraph industry from the 1840s onward.[8] In contrast to their male counterparts, however, there exist few corresponding stories about women. Although women telegraphers were commonplace in the nineteenth century, there is little history to them. Rather, they were consequently written out of telegraphic history.[9]

The strictly gender-separated narrative further changes when we look at telegraphy as a means of finance and investment within the emerging modern capitalist economy. Only recently, scholars have increasingly recognized women's economic influence and in particular their investment activities during the first age of globalization. Female capital played an important role in financing global capitalism, and women were active as investors in utility and transport companies such as gasworks, waterworks, railroads, and tramways.[10] The analysis of telegraph companies' shareholder lists reveals that almost half of the companies' stocks were typically owned by women. Since stocks were considered a risky investment, this gives lie to the widespread assumption that female investors were generally risk averse. For middle-class women who chose to or had to support themselves, telegraphy provided an avenue for financial independence and was therefore part of their living experience.

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[6] On gender as performance, see Jagger, Gill. 2008. *Judith Butler: sexual politics, social change and the power of the performative*. London: Routledge.

[7] Ledger, Sally. 1997. *The new woman: fiction and feminism at the fin de siècle*. Manchester: Manchester University Press; Richardson, Angelique, and Chris Willis. 2002. *The new woman in fiction and fact: Fin-de-siècle feminisms*. Basingstoke/Hampshire/New York: Palgrave.

[8] Jepsen, Thomas C. 2000. *My sisters telegraphic: women in the telegraph office, 1846–1950*. Athens: Ohio University Press.

[9] Jepsen 2000: 2.

[10] Beachy, Robert, Béatrice Craig, and Alastair Owens (eds.). 2006. *Women, business, and finance in nineteenth-century Europe: rethinking separate spheres*. Oxford: Berg Publishers; Deere, Carmen D., and Cheryl R. Doss. 2006. A special issue on women and wealth. *Feminist Economics* 12: 1–2.

This chapter aims at restoring female agency to the history of telegraphy by bringing together social history and economic history with a history of communications. By applying the concept of intersectionality in terms of gender and class, this article will shed light on the engagement of primarily educated middle-class women with telegraphy as a means of investment as well as employment. In terms of a social history of telegraphy, this paper will show differences in discourse and lived experience with telegraphy regarding the social status of women in the late nineteenth century. With respect to a financial history of telegraphy, this article builds on recent economic scholarship, which challenges the separate spheres model, that is the ideology dictating a separation of a female domestic and a male public sphere based on "natural" gender roles. This paper further adds to the emerging picture of the active female investor, who was, moreover, not necessarily risk averse.[11]

In the first part, this paper looks at gendered views on telegraphy and contemporaries' construction of telegraphy as a masculine undertaking in terms of science, technology, and technology-in-use. It shows how in contemporary discourse women are merely objectified as the inventor's muse or object of male ridicule in terms of ill-functioning telegraphic communication. In the second part, the paper moves on to analyze telegraphy at the intersection of gender and class, focusing first on the female telegraph clerk and second on the female investor. Contrasting as well as coalescing existing biological deterministic constructions of telegraphy as distinctly *masculine*, this section adds another layer, namely, class, to this highly gendered narrative. It reveals that as the new (middle-class) women were carving out spaces of their own in the late nineteenth century, telegraphy played an important role in that process.

2.1 From the Telegrapher's Muse to Female Telegraphic "Bow Wow"

The emergence of telegraphy, submarine as well as terrestrial, as a means of communication brought about pervasive changes in the mid-nineteenth century. This new possibility to converse at "telegraphic speed" throughout a network with worldwide reach allowed for the development of globalization processes which scholars generally subsume under the emergence of world commerce, world politics, and a "global" public.[12] After Samuel Morse in the USA and Charles Wheatstone and William Cooke in Great Britain conducted successful experiments with transmitting

[11] Doe, Helen. 2010. Waiting for her ship to come in? The female investor in nineteenth-century sailing vessels. *The Economic History Review* 63(1): 85–106.

[12] North, Michael (ed.). 1995. *Kommunikationsrevolutionen: Die neuen Medien des 16. und 19. Jahrhunderts*. Köln: Böhlau; Osterhammel, Jürgen, and Niels P. Petersson. 2007. *Geschichte der Globalisierung: Dimensionen, Prozesse, Epochen*. München: C. H. Beck Wissen; Müller-Pohl, Simone. 2010. 'By Atlantic Telegraph': a study on Weltcommunication in the 19th century. *Medien & Zeit* 4: 40–54.

electrical signals over wire in the 1830s, the first terrestrial telegraph lines were laid throughout the world in the 1840s and 1850s. While in many countries, these cables were initially linked to facilitate primarily military and political communication, soon after their installation, they were opened to the public for communications. In 1849 in Austria, 1850 in Prussia, and 1851 in France, telegraphic communication was available for a paying, primarily commercial public.[13] In 1866, the successful completion of a durable transatlantic submarine cable inaugurated a new era by offering "instantaneous communication" across the ocean. In the following years, cables were laid from Europe to India, Southeast Asia, Australia, Latin America, and Africa. Simultaneously, landline systems became denser and stretched into tiny towns in places as disparate as the Habsburg Empire, British India, and the Western USA. By the late 1870s, almost any commercial center could be reached from Europe via telegraph through a network spanning between 70,000 and 100,000 miles of ocean cables.[14] In the 1880s and 1890s, popular connections were duplicated and even triplicated. The ocean network became ever more densely linked with landline connections that were themselves also expanding. In addition, technological developments, such as duplex telegraphy, enabled the passage of two or even four messages from both ends of the wire simultaneously. By 1903, roughly 400,000 miles of submarine cables spanned the world's oceans. The highly important North Atlantic connection alone processed about 10,000 messages daily.[15] By 1900, the world had become a connected place, with the telegraph providing the essential tool for these connections.[16]

While the emergence of the telegraph in combination with a network of railways and ships set in motion globalization processes allowing for world commerce, world politics, and a "global" public, it also cocreated a particular social geography of the modern world. Actors within these new global settings based on worldwide communication were predominantly white, male, and Euro-American, as the setup of the telegraph facilitated the exclusion of vast groups of the globe's population. Based on the communications system's tariff structure and operational setup in addition to Euro-American contemporaries' supremacist approach to technological progress, telegraphy disadvantaged many people based on conceptualizations of race, class, and gender. In the context of gender, the underlying narratives usually placed women at the margins of the development of global communications and

[13] Winseck, Dwayne R., and Robert M. Pike. 2007. *Communication and empire: media, markets, and globalization, 1860–1930*. Durham: Duke University Press; Telegraph Construction and Maintenance Company. 1950. *The Telcon story 1850–1950*. London.

[14] Field, Cyrus W. 1879. Ocean telegraphy: the twenty-fifth anniversary of the organization of the first company ever formed to lay an ocean cable. See http://searchworks.stanford.edu/view/617519

[15] Bright, Charles. 1898. *Submarine telegraphs: their history, construction and working*. London: C. Lockwood; Wenzlhuemer, Roland. 2013. *Connecting the nineteenth-century world: the telegraph and globalization*. Cambridge: Cambridge University Press.

[16] Rosenberg, E.S. (ed.). 2012. *A world connecting: 1870–1945*. Cambridge, MA: Belknap Press of Harvard University Press.

processes of globalization, which were understood to be "a fundamentally masculine activity".[17]

The general absence of women as subjects in the history of telegraphy is strongly connected to the long tradition of a focus on inventions within the history of science. Moreover, following the narratives of telegraphic invention, women are not necessarily willfully written out of history, rather they are almost nonexistent in contemporary contexts based on discrimination against women in scientific contexts. Contemporary accounts as well as today's scholarship focus on Samuel Morse, William Cooke, and Charles Wheatstone. Several books center on a great men thesis of scientific inventions.[18] In these narratives, women occur only at the side of their male partners, who appear as the ingenious investors, entrepreneurs, or inventors. Narratives place women as beautiful adjuncts to the male undertaking, there only to fill out representative roles. No story on the invention of the telegraph, for instance, is complete, so it seems, without the famous episode when Morse's "muse" and object of attraction, "Annie" Ellsworth, chooses the first words to be sent via telegraph from Washington, DC, to Baltimore. Many stories conceal that Anne Ellsworth was not only the object of Morse' courtship but also the daughter of his friend and US patent commissioner Henry L. Ellsworth, who helped Morse get his telegraph patented.[19] Rather she is portrayed as the inspiration for Morse as the inventor. According to legend, it was Anne Ellsworth who brought Morse news on the passage of his patent bill for the telegraph in March 1843. On this occasion, Morse supposedly told Anne, "You have been the first to bring me this happy news. Accordingly you shall have the honor of composing the first message to be transmitted over the new line." Anne chose "What hath God wrought?" from the bible.[20] Similarly, the female influence in the background of a famous inventor's story is also tangible in the narratives of the telephone only some decades later. Alexander Graham Bell's mother and wife were both deaf. This supposedly influenced his work on the telephone in profound ways. In fact, according to historian Richard John, it was primarily to achieve favor with his future father-in-law, Gardiner Greene Hubbard, that Alexander Bell accepted Hubbard's offer to research multiplex telegraphy, which in the end led to his invention of the telephone. Along the same lines, the Italian inventor of the telephone, Antonio Meucci, is also claimed to have "invented" the telephone to communicate with his wife across the two floors of his house – she was an invalid and so confined to the domestic sphere of one of the two

[17] Bright 1898: 144; Wenzlhuemer 2013: 119.

[18] Coe, Lewis. 1993. *The telegraph: a history of Morse's invention and its predecessors in the United States*. Jefferson: McFarland; Bunch, Bryan H., and Alexander Hellemans. 2004. *The history of science and technology: a browser's guide to the great discoveries, inventions, and the people who made them, from the dawn of time to today*. Boston: Houghton Mifflin; or contemporary see Cooke, William F. 1857. *The electric telegraph: was it invented by professor Wheatstone? or by William Fothergill Cooke*. London: W.H. Smith and Son.

[19] Silverman, K. 2003. *Lightning man, the accursed life of Samuel F.B. Morse*. New York: Knopf; John, Richard R. 2010. *Network nation: inventing American telecommunications*. Cambridge, MA: Belknap Press of Harvard University Press.

[20] John 2010: 59; Coe 1993: 32.

floors.[21] In all three cases, women have an important personal influence on the inventor. They are objects of desire and sources of inspiration. While patent commissioner Henry Ellsworth may or may not have considered Morse's telegraph patent rights as a dowry for his daughter Anne in a potential match with his old friend Morse, Hubbard "unquestionably conceived of Bell's telephone patent rights as a wedding gift for his daughter Mabel".[22] Both women were social capital in a story of economic capital connected to patent rights and inventions. Similar to the plot of ancient fairy tales, the princely inventor first had to conquer the dragon of science before he was eligible to marry the princess. In an inventor-focused framing of the history of the telegraph, women had little individual subjectivity in their relationship with science or technology.

Positioning women solely as the muse of the inventor is not necessarily ill will on the side of the authors of such narratives. Rather, the absence of female subjects in the field of electrical science is based on the fact that there were no women engineers in electrical science at the time of telegraphic inventions. At that time, the field of electric science and technology was entirely male dominated. This had three reasons. First, science generally became highly gendered in the nineteenth century, making it "unattractive" or even "inappropriate" for a woman to do science. Constructing and performing gender in oppositions, contemporaries saw nature as "feminine" and science as "masculine".[23] In such a setting, engineering was "part of a larger system attributing essential characteristics to men and women alike".[24] Although constructions of masculinity and femininity were not simple or uncontested, in such a system, women had to be essentially different as there was no other way of knowing for men "that they were, in fact, manly".[25] A female engineer in consequence had to be and has been "almost by definition, a non-conformist, an iconoclast, *the other*".[26] Few women chose that path. Second, women's engagement in science was strongly dependent upon their personal and familial situations. Almost exclusively as daughters or wives of amateur scientists, could women engage with science in the domestic sphere throughout the eighteenth and early nineteenth centuries.[27] When in the nineteenth century, science increasingly moved out of the domestic, amateur sphere and became institutionalized, this affected

[21] Meucci, S. 2010. *Antonio and the electric scream: the man who invented the telephone*. Wellesley: Branden Books.

[22] John 2010: 164.

[23] Abir-Am, Pnina G., and Dorinda Outram. 1987. *Uneasy careers and intimate lives: women in science, 1789–1979*. New Brunswick: Rutgers University Press; Schwartz Cowan, R. 2005. Foreword: musings about the woman engineer as muse. In *Crossing boundaries, building bridges. Comparing the history of women engineers 1870s–1990s*, ed. Annie Canel, Ruth Oldenziel, and Karin Zachmann, xii–xv. London: Routledge.

[24] Pursell, C.W. 2005. 'Am I a Lady or an engineer?': the origins of the women's engineering society in Britain, 1918–1940. In *Crossing boundaries, building bridges*, ed. Annie Canel, Ruth Oldenziel, and Karin Zachmann, 51–73. London: Routledge.

[25] Pursell 2005: 51.

[26] Schwartz Cowan 2005: xv.

[27] Abir-Am and Outram 1987: 3.

women's positions in science far more than men's. With the move of science away from the domestic realm, women were increasingly excluded from scientific discourse.[28] Finally, in the institutionalizing setting of nineteenth-century science, three institutions further blocked women's access to careers in engineering: universities, industries, and professional societies (on the history of women engineers see Canel, Oldenziel, Zachmann 2005). Paying tribute to the stellar rise of (submarine) telegraphy, the Society of Telegraph Engineers, for instance, was set up in 1872. Women, however, were exempt from membership and despite a relatively large number of female telegraph operators, this did not change until the turn of the century. Although among the engineering societies in Great Britain, the Society of Telegraph Engineers was the first to consider admitting women to its meetings as early as the 1880s, it followed the strict gender directives of its mother institution, the Society of Civil Engineers. The Civils had deemed it inappropriate to consider admitting women to their meetings. Only in 1899 did the Society of Telegraph Engineers, now renamed as Institute of Electrical Engineers, admit its first female member, Hertha Ayrton.[29] Scientific institutions, universities, and industry consequently participated in gender constructions that powerfully supported male privilege in British society.[30] In the context of telegraphic science, this resulted in a noticeable absence of women for today's historians to report upon.

The second dominant strand of the telegraphs' masculinity narrative follows contemporaries' gendering of the style and purpose of telegraphic communication; the result of which was the strengthening of a separation between a female domestic and a male economic sphere of action. Soon after the adoption of the short and abbreviated telegram style for communications via telegraph for economic reasons, contemporaries also identified this form of communication as genuinely male.[31] They thus set telegraphic communication apart from the supposedly chitchatty and lengthy nature of female conversation. Most prominently, newspapers all over Great Britain mocked Countess of Mayo's conversation via telegraph in June 1870 when the Eastern and Associated Telegraph Companies had just opened a submarine cable connection to India. To entertain guests during the celebration of the opening of the cable to India, a telegraph station was put up at the location. Everybody present could telegraph all around the world free of charge. Lady Mayo made use of the opportunity and sent an extensive, letter-like telegram to her husband in India.[32] As, according to Lady Mayo, the telegraph was not only fulfilling its purpose of "serving political interests" but also assisting "domestic relations," she used the cable connection to India to send "almost instantaneously an affectionate greeting" to her

[28] Abir-Am and Outram 1987: 3.

[29] Buchanan, Robert A. 1989. *The engineers: a history of the engineering profession in Britain, 1750–1914*. London: Kingsley; Institute of Electrical Science, "Hertha Ayrton. Online Biographies," http://www.theiet.org/resources/library/archives/biographies/ayrtonh.cfm (last accessed March 11, 2015).

[30] Pursell 2005: 51.

[31] Occasional notes, *Pall Mall Gazette*, June 25, 1870.

[32] A telegraphic evening party, *Illustrated London News*, July 2, 1870.

husband and two sons. The *Pall Mall Gazette* further jeered that had Lady Mayo had "the wires all to herself for five minutes she would have forgotten 'the obligation science owes to the world' and applied them to *purely* domestic purposes."[33] Lord Mayo's telegraphic answer in turn was in absolute obedience with the law of brevity, containing only a couple of words in the sense of "all well."[34] Certainly, so the *Pall Mall Gazette*, Lord Mayo's reply "must have been refreshing to the wires after all they had endured in the shape of what is called 'bow wow'," senseless female chatter.[35] The international submarine cables were too precious, so the media consensus went, to be abused for domestic, and that meant female, conversation.

Contemporaries based Lady Mayo's inability to master the telegraphic style of communication on the fact that telegraphs were not made for the domestic sphere and its conversations. Following the separate spheres model, that is, the distinct ideology which dictated that according to "natural" gender roles, men inhabited the "public sphere" of politics, economy, commerce, and law and women the private realm of domestic life, child-rearing, housekeeping, and religious education, contemporaries prescribed telegraphy a distinct, *masculine* space of action in Victorian life. The decision to keep the telegraph out of the *feminine* domestic sphere seems also to have been made to "save" men from such "bursts" of the "natural feeling of the wife and mother," as the one prominently displayed by Lady Mayo in June 1870.[36] As early as 1859, however, the British satire magazine*Punch* discusses the proposal to lay telegraph wires within 100 yards of "every man's door." While the author accepts the benefits of being "within five minutes" of pleasant invitations and news, he also deplores the consequences "of being within five minutes of every noodle who wants to ask a question." *Punch* rather favored the then present arrangement of a telegraph office which would spare any men "Mrs. P's anxieties and other questions." A house telegraph would only bring him in a "perpetual *tête-a-tête* with her" – and that was a state to be avoided at any cost.[37]

But it was not only men who saw the telegraph squarely located within the masculine sphere of action, women did, too. This shows the wide acceptance, which the idea of separate spheres had found in some sections of Victorian society. In 1860, for instance, an unidentified "lady" complained in a letter to *Punch* that men were "only studying and scheming to promote [their] *creature* comforts." To her, the invention of the London District Telegraph Company was consequently only a means for "sending messages to *[themselves]*." Men's promises that the wires would be open to the ladies were only a "paltry excuse." By its mere location, the London district telegraph was clearly not "meant for women." Its stations were located where men congregated, not in places where they were accessible to women.[38]

[33] Occasional notes, *Pall Mall Gazette*, June 25, 1870.

[34] A telegraphic evening party, *Illustrated London News*, July 2, 1870.

[35] Occasional notes, *Pall Mall Gazette*, June 25, 1870.

[36] Idem.

[37] *Punch* 35, 1858: 244.

[38] *Punch* 38, 1860: 181; on electricity and the domestic sphere, see Gooday, Graeme. 2008. *Domesticating electricity: technology, uncertainty and gender, 1880–1914*. London: Pickering & Chatto.

Following the social geography of separate gender spheres in Victorian society, telegraph companies located the nodes to their worldwide network in distinctly masculine spaces of political and economic interaction, purposely excluding the female sphere of interaction. Telegraph offices were set up in financial institutions rather than in shops.

Combining contemporaries' exclusion of women from telegraphic science as well as telegraphic communication, we receive a highly gendered perspective of a predominantly masculine sphere of telegraphic interaction, which is duly reproduced in telegraph history. On the one hand, women are feminized – in the sense that they are reduced to their bodily and biological markers. Their emotions, or their beauty, serve as adornment and inspiration for the male inventor. A female engineer, on the other hand, represents the unwanted, non-conventional *other*. Women were also geographically separated from the telegraph – in the sense that their sphere of action, the domestic realm, remained unconnected to the global telegraphic network. Women are ill represented in telegraph history not because they were deliberately written out of it, but because they were kept out of its (narrative) space in the first place.

2.2 Telegraphic History at the Intersection of Gender and Class: The Female Clerk

This masculine narrative changes when we combine aspects of gender with aspects of class, enlarging the established perspective with that of a social history from "below" or rather a lower social spectrum than high-class Victorian Britain. For middle-class women in particular, the new technology of telegraphy offered not only new means of employment but also investment. Not only in the USA, as Jepsen points out, but all over Europe, the female telegraph clerk was no uncommon phenomenon. For educated unmarried women, it was a respectable and prudent way to support oneself. Additionally, as my analysis of the telegraph company's shareholder lists show, women were keen investors in ocean cable companies. As the "new women" were carving out spaces of their own in the fields of politics and economy, middle-class women in particular were also populating the *masculine* telegraphic sphere. Paralleling the intersectional hybridity of gender and class, telegraphic space in the late nineteenth century also became a hybrid of masculine *and* feminine spaces of action and interaction.

While female engineers were absent from the highly gendered realm of electrical telegraphic *science*, female clerks became a common sight in telegraph offices. In fact, the young and initially relatively "gender-neutral" field of telegraph *technology* offered new venues for women to seek employment outside of their domestic sphere. Unlike many of the occupations women entered for the first time in the mid-nineteenth century, landline telegraphy admitted women to its ranks before its gender roles had solidified. Throughout much of the nineteenth century, men and

women performed the same tasks using the same equipment, working cooperatively and often anonymously at either end of the wire.[39] According to the *Pall Mall Gazette* (June 23, 1883), in Europe, the "experiment" of employing women as telegraph clerks was begun in Finland in the early days of the telegraph before the practice then spread to other European countries. Starting in the 1850s in Europe (and the 1840s in the USA), telegraph companies employed female operators on the domestic lines. In 1859, the chairman of the London District Telegraph Company announced that its telegraph offices were staffed entirely by women (*Punch* 37, 1859: 100). In 1860, the Telegraph School for Women was established in London and in 1862 the Queen's Institute for the Training and Employment of Educated Women began running classes in telegraphy in Dublin.[40] In 1870, British telegraph companies employed about 2030 men and roughly 470 women, the number going up to around 700 in 1883.[41] Generally, newspapers agreed that the services of women as telegraphers were "of great value" and that women were "not excelled by men in the swiftness and accuracy of their manipulation of the type-writer."[42] It was women's very feminine qualities that made the job of telegraph operator seemingly perfect for them. As the London District Telegraph Company's chairman pointed out, women in telegraphy were particularly apt, since "young ladies [were] noted for their readiness in always giving a quick and happy answer [and were] much more expert and industrious than a man […] in working the *needle*" (*Punch* 37, 1859: 100). By *feminizing* the job of telegraphist in such a way, however, contemporaries also made the separate spheres model fit changes in the job market. The domestic sphere was expanded to now also cover work outside the home.[43]

Still, at a time when the labor market was generally widening for single women, telegraphy offered yet another opportunity for middle-class women to achieve independence and financial security. Over the course of the second half of the nineteenth century, employment rates of unmarried (not counting widowed) women rose extensively as well as did the types of employment available to them. In 1851 almost the only work available to single women was as a teacher or dressmaker. This range expanded in the last quarter of the century, when jobs as shop assistants or in clerical positions started featuring prominently. Skilled positions, such as telegraphist, telephonist, and typist,[44] became more and more common among women who worked. Middle-class spinsters were "no longer restricted to needlework or

[39] Jepsen 2000: 3.

[40] Porthcurno Telegraph Museum, "Women telegraphers in the First World War," 19. August 2012.

[41] Reader, William J. 1987. *A history of the institution of electrical engineers, 1981–1971*. London: P. Peregrinus.

[42] *Trewman's Exeter Flying Post or Plymouth and Cornish Advertiser*, December 11, 1889.

[43] Scott, Alison M. (ed.). 1994. *Gender segregation and social change: men and women in changing labour markets*. Oxford: Oxford University Press.

[44] Gardey, D. 1999. The standardization of a technical practice: typing (1883–1930). *History and Technology* 364(15): 313–343.

governessing."[45] Moreover, employment as a telegraph clerk represented a respectable position for single middle-class women who either chose to or were forced to work to support themselves. Characterized as the period's "whizz kids," telegraph operators were among the first technological elites of the nineteenth century and illustrative of the new upward mobility of the "middle classes." Their role was similar to that of today's softwareprogrammer. A rapidly growing industry had a sudden need for people with technical skills. A good telegraph clerk had to be extremely literate and a good speller, capable of learning Morse code, and to have some knowledge of electricity and telegraphy.[46] Telegraphy created opportunities for ambitious men *as well as* women.

Yet even the initially gender-neutral telegraphic technology grew increasingly "gendered" over time, hierarchizing male clerks over female. As early as 1879, a writer for the London paper *The Graphic* lamented that the British government was gradually shaping the telegraphic staff "into a purely masculine mould" (*The Graphic*, May 24, 1879). Simultaneously, the labor-specific discourse increasingly centered on biological determinism, rendering women less fit for telegraphic work in the eyes of their would-be employers. According to *The Graphic*, the masculinization of the telegraph happened because the Central Telegraph Office found women "not equal to the strain of the work." An 8-hour day may not have seemed long to many contemporaries, but as the nervous system of a woman was "more delicately strung than that of a man," 8 hours of "continuous bustle and noise" were "enough to try the strength of the strongest" (*The Graphic*, May 24, 1879). Some publications even claimed that despite the advantages of fine female bodily features, i.e., their small hands which made them particularly well suited to work the key switch, it was women's brains that proved ill suited for the job. The technical magazine*The Telegraphist*, for example, argued that "the majority of the text-books [were] too technical" for women and that "the very sight of a page of mathematical formulae [was] enough to strike terror into the heart of any inquisitive young lady who opens a manual of electricity of telegraphy."[47]

It remains unclear whether such discourse caused or reflected an increasing gendering of the telegraphtechnology in favor of the male. In any case, in 1874, the British Government decided to limit the number of female clerks working its domestic lines to 30 percent (*Pall Mall Gazette*, June 23, 1883); by that time, France and Russia, for instance, had already dismissed women all together.[48] The wages for female telegraphists had also gone down considerably, probably due to the "run" of

[45] Freeman, Ruth, and Patricia Klaus. 1984. 'Blessed or Not?': the new spinster in England and the United States in the late nineteenth century and early twentieth centuries. *Journal of Family History* 9: 394–414. On the railway, see Dorré, Gina M. 2006. *Victorian fiction and the cult of the horse*. Aldershot: Ashgate. On the telephone, see Martin, Michèle. 1991. *"Hello, Central?": gender, technology, and culture in the formation of telephone systems*. Montreal: McGill Queen's University Press.

[46] Jepsen 2000: 2.

[47] Electron, telegraph instruments, and how to understand them, in *The Telegraphist. A Monthly Journal for Postal, Telephone, and Railway Telegraph Clerks*, December 1, 1883: 3.

[48] Women who work, *Liverpool Mercury,* June 23, 1868; *The Examiner*, June 21, 1873.

women on these jobs. When telegraph companies had first been formed in the 1840s and 1850s, a female clerk's pay was 8 shillings a week, to be increased by 1 shilling a year until it reached 14 shillings. By 1868, female competition had allowed companies to lower payment to 5 shillings a week – a sum on which women could "scarcely live unassisted."[49] Even greater gender distinctions were found on the submarine cable lines. In contrast to the landlines, the telegraph girl remained an unknown phenomenon on the more "complex" and better paid ocean lines. Only during the First World War, when companies faced a shortage of labor as young men rather wanted (and had) to join the "real" war effort than the telegraphers' office, women also started to be employed on the ocean lines.[50]

2.3 Telegraphic History at the Intersectionality of Gender and Class: The Woman Investor

Telegraphy not only provided middle-class women with a new source of employment but also of investment. The last quarter of the nineteenth century generally witnessed profound changes in the financial structure of Great Britain. Contemporaries increasingly measured "income in dividends and wealth in the quotation of the Stock Exchange".[51] The telegraphs with their provision for swift communication were largely responsible for enabling a new form of capitalist economy with the stock exchange at its heart.[52] In particular, toward the end of the nineteenth century, striking changes took place in Britain's shareholding population. A growing number of individuals from a widening social spectrum, including those less affluent, began to own stocks.[53] Recent scholarship on gender and investment in the nineteenth century has put a spotlight on the female investor, thereby further contesting the separate spheres model. Women were not restricted to the domestic sphere and its typically noneconomic activities. Rather, women's capital made up a substantial part of the financial resources backing the capitalist industrial economy of the nineteenth century.[54]

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[49] Idem.

[50] Tarrant, Donald R. 1999. *Atlantic sentinel: Newfoundland's role in transatlantic cable communications*. St. John's Nfld: Flanker Press.

[51] Rutterford, J., G. David, M. Josephine, and O. Alastar. 2011. Who comprised the nation of shareholders? Gender and investment in Great Britain, c. 1870–1935. *The Economic History Review* 64(1): 157–187.

[52] Müller, Simone M., and Heidi Tworek. 2015. 'The telegraph and the bank': on the interdependence of global communications and capitalism, 1866–1914. J. Glob. Hist. **2**: forthcoming.

[53] Rutterford et al. 2011: 157.

[54] On the Victorian shareholder, see Maltby, A., and J. Rutterford (eds.). 2006. She possessed her own fortune: women investors from the late nineteenth century to the early twentieth century. *Business History* 48(2):220–253 or Davis, Lance E., and Robert A. Huttenback. 2010. *Mammon and the pursuit of Empire: the political economy of British imperialism, 1860–1912*. Cambridge: Cambridge University Press.

Within investment portfolios owned by women, telegraph companies also played an important role. An article from 1886, commenting on the visitors to the Atlantic cable stations, remarked, for instance, that "[e]lderly ladies" who came to visit not only "display[ed] an evident degree of common sense" concerning the working of the telegraph but were also "frequently […] pecuniarily interested."[55] Drawing from the Direct United States Cable Company (DUSC) shareholder lists, we find that women constituted a significant number of shareholders invested in the generally risky business of submarine telegraphy.[56] Together with a small group of primarily continental European investors, the Siemens brothers had set up DUSC in London in 1873. Its purpose was to break the established monopoly on the Atlantic submarine cable market by means of an independent cable provider.[57] Ownership lists of DUSC shares show that women were almost as active in the financial market as their male counterparts, paralleling the general emergence of a broader and less affluent shareholding base toward the turn of the century.

Upon its establishment in 1873, DUSC shares started out with only seven entries marked as female: three widows, three spinsters, and one married woman. These seven made up 3.7 percent of all shareholders and represent 1852 shares or about 2.8 percent of the total capital. Thereafter, female investment grew quickly; until by the beginning of the twentieth century, women made up almost half of the company's shareholders. In 1887, for instance, we find that 443 out of 1795 shareholders total were women. In total, roughly 25 percent of all shareholders that year were women; 227 of them marked as spinsters, 114 as widows, 100 as married women, in addition to one lady and one princess. They represented 10,748 stocks with a nominal value of £20 each, which was about 16 percent of the company's capital. Shares from 1909 underline this steady increase. By the beginning of the twentieth century, 784 shareholders were female, or 44 percent of the total. Yet they only represented 17,264 shares at £20, worth £345,280 in total, which translated to about 26 percent of the company's capital.[58]

Female shareholders' relatively modest capital investment made them the typical small investor that became increasingly common for Britain as a nation of investors at the turn of the century. In 1887, for instance, only 68 women owned more than 30 DUSC shares; more than half of those women owned ten shares or less. Still, over the years, there were some exceptions – usually wealthy widows – such as Elise Louise Adlegonde Cromlery from Belgium or Isidora Collier de la Martiere from Paris, who held exceptionally large numbers of shares. In 1909, only 164 women

[55] "Visitors by Old Electric," *The telegraphist. A monthly journal for postal,telephoneand railway-telegraphclerks*, January (1886), 14.

[56] Direct United States Cable Company Ltd., *Annual list of members and summary of capital and shares of the Direct United States Cable Company Limited*, Public Record Office, National Archives Kew. The analysis is based on samples from the years 1873, 1877, 1887, and 1909.

[57] Müller, Simone M. 2015. *Wiring the world: the social and cultural creation of global telegraph networks*. New York: Columbia University Press.

[58] Of those 784 female shareholders, we find 395 spinsters = 50.4 %, 225 married women = 28.7 %, 158 widows = 20.2 %, 4 ladies, and 2 misses = 0.7 %.

held 30 shares or more and only 24 held 100 shares or more. Yet Comtesse Isabelle Gontran de la Baume-Pluvinel, who came from an old noble family, represented the largest individual shareholder, man or woman. The analysis of DUSC shares shows that nineteenth-century women were not necessarily forced into the restricted roles of wives, mothers, or helpmeets and thus excluded from active participation in economic and social life. Rather, they could also take on roles of active financial agents providing for the financial and communication infrastructure of the modern world.

Telegraphy, as well as other stock market companies, allowed women who had to or chose to support themselves an important outlet for individual economic freedom. Originally, bourgeois respectability required that women live in a state of social and economic dependence on men – either by marriage or through the protection of a male relative, containing them "within the safe haven of a family unit".[59] This setting was increasingly challenged over the course of the late nineteenth century, most importantly by the legal changes concerning female property ownership. The considerable rise of female investment between 1873 and 1887 was closely connected with the Women's Property Act of 1882. The English Married Women's Property Act of 1870 had already recognized a woman's right to maintain property separate from her husband's control. In 1882 these rights were considerably expanded.[60] These changes manifested themselves in the cable company's shareholder lists, as we see in the case of Isidora Collier de la Martiere. Among the seven women visibly investing in cable shares in 1873, Isidora Collier de la Martiere alone held 1763 shares – making her one of the leading investors in the company. Yet, following British law, this widow is listed together with a Sigismond Picard, her financial warden. This practice of listing female investors together with a male warden changed with the passage of the women's property acts. Until the 1880s, married women's shares usually had to be listed under their husband's name. Thereafter, they appeared as fully independent entities in the shareholder lists. Only an insignificant number of women among the DUSC's members are listed together with their husbands or some sort of male guardian.

Women flocked to investment in telegraphy for a variety of reasons. Stock brokerage represented a new means for female freedom as secured in the Women's Property Acts. Stock investments had a special appeal for middle-class women, who were generally denied access to the professions and excluded from entrepreneurial activities, but who still needed to make money. This was the case in particular when they were unmarried.[61] Throughout the years, the group classified as "spinsters" generally made up the majority among women investors. In 1909, for example, of those 784 female shareholders, 395 or roughly 50 percent were spinsters as compared to 29 percent married women and 20 percent widows.

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[59] Gordon, E., and G. Nair. 2003. *Public lives: women, family, and society in Victorian Britain*. New Haven: Yale University Press.

[60] Robb, G. 2009. Ladies of the ticker: women, investment, and fraud in England and America 1850–1930. In *Victorian investments: new perspectives on finance and culture*, ed. Nancy Henry and Cannon Schmitt, 120–142. Bloomington: Indiana University Press.

[61] Robb 2009.

Typical female investments seem to have been safe and low risk, such as government bonds, banks, railways, utilities, or debentures. Similar to Helen Doe's findings on investment in shipping, DUSC shares expand and challenge this picture of women as the risk-averse investor. The ocean cables with their likelihood to break, fierce competition, and ultimately great ups and downs on the stock market should not have ranked high among female investors.[62] Still, female investment in ocean cables was as high as 25 percent in 1887 and 44 percent in 1909. Women might have been attracted to submarine telegraphy by the relatively high revenues, the fact that the cables were not as risky as thus far perceived, and the accessibility of the companies' product. From the very beginning, ocean cables had been a very public project, highly visible in the media. Women were usually kept out of traditional circles and places of information, such as clubs or fraternal lodges, where relevant business and stock market information was being traded.[63] Also, investment manuals excluded women from financial debates, "on the explicit grounds that [women could not] understand investment".[64] In contrast to such male secrecy about stock market information, the progress as well as failures of the cables could be easily followed in the daily papers. In 1876, a charge was even filed against DUSC when it had allegedly not immediately reported on its cable's breakage.[65] Women could gather relevant stock market information from home. Thus, they could act relatively independently without having to leave "their sphere." There are hardly any primary accounts of women discussing their financial strategies to allow a conclusive statement on female investment strategies. Nevertheless, DUSC shareholder lists underline how stock investment in general, and telegraph stocks in particular, offered women opportunities to expand and cross existing gender stereotypes. Femininity could exercise an alternative performance mode targeted at women's economic independence from male patronage.

2.4 Conclusion

Telegraphy was a highly gendered communications technology. At first glance, telegraphy appears to serve in the forms of invention, technology, and technology-in-use for a primarily male sphere of global electric communication agency. Within stories of male entrepreneurship displaying genius, women appear as objects that are purposely brought into the male public sphere: either as electricity's muse or electricity's ridicule, that is, women's misunderstanding of proper telegraphic

[62] Robb 2009: 122.

[63] Robb 2009: 121.

[64] Preda, Alex. 2001. The rise of the popular investor: financial knowledge and investing in England and France, 1840–1880. *The Sociological Quarterly* 42(2): 205–232.

[65] Summary of this morning's news, *Pall Mall Gazette*, January 27, 1876.

usage. By conceptualizing male and female in opposition, contemporaries did not allow women to perform telegraphy successfully, based solely on the fact that they were women.

This interpretation broadens the picture when we look at telegraphy through the lenses of a combined approach of social history, economic history, and communications studies. Intersecting gender and class, for instance, reveals a complex assemblage of telegraphic femininities. In particular for middle-class women, telegraphy offered new spaces for performing their gender. They could find respectable employment as telegraph clerks and make use of telegraph stocks as a means of securing further income. Both offered tools to achieve the freedoms, which the new women strove for at the end of the nineteenth century. In fact, telegraphy played an important role in providing these new freedoms. While women were excluded from a predominantly male sphere of global communication, they regained agency by entering another male sphere of agency – labor, finance, and stock investment – by means of telegraphy.

Variant constructions of female gender, finally, were not only based on class but also saw change over time. Starting out as a relatively gender-neutral form of employment, the position of telegraph clerk became gendered or rather hierarchized over the course of the late nineteenth century. The number of female clerks became limited to 30 percent and wages decreased. Male clerks received priority treatment on the landlines and exclusivity on the submarine lines. The gendering of clerical positions changed yet again with the First World War and a shortage of male labor and over the course of the twentieth century when the position of the telephonist, for instance, became entirely female dominated.

In fact, telegraphy was a highly gendered communications technology – but one that allowed for fluent gender constructions, as well as hybrid gender spaces of performing masculinity and femininity "by telegraph" alongside each other. Additionally, telegraphy offered variants of femininity dependent on women's social status. Indeed, the relationship between telegraphy and gender cannot be understood without the relationship between telegraphy and class. It remains to point out that all femininities in this article were those of white European women. Telegraphy's constructions of social geographies within the modern world can also not be fully understood without taking into account its intersection with race. In the end, this article set forth to not only overcome telegraphic histories' biological determinism but also its technical determinism. Just as the colonel's telegram "join at once" had allowed several interpretations, telegraphy allowed for myriad performances of gender as well.

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