‘Right from the cradle, our efforts are aimed at enabling us to communicate, to receive from others, to impart to others; these efforts, both great and small, presuppose a mutual exchange of the means of satisfying human needs. Like an instinct, it dominates Man’s actions . . . Exchange is the bearer of all wellbeing, the vehicle of all progress.’¹ For the economist Karl Knies, writing in 1857, this elemental desire for human interaction was at the heart of modern developments in transport and communication. Praising recent technological advances, he looked with confidence to the future: ‘the facilitation of communication is for our time not only a monument to what has been achieved, but also a magnet for our endeavours’.²

As Knies understood, by launching the construction of public telegraph networks in the wake of the 1848 revolutions, German governments had implicitly undertaken to satisfy a potentially insatiable appetite for communication across society. The circulation of information, Knies asserted, ‘not only fulfils a felt need . . . but also evokes it in many places’, and by implementing the very first telegraph lines, states had initiated a self-generating cycle of supply and demand.³ Internal pressures, moreover, were compounded by the agreements which increasingly regulated the relations between state networks across Europe. ‘Telegraph unions’, Knies wrote, ‘…cannot stop at extending a friendly neighbourly hand . . . but must bring about a true commonality in the management and advancement of everything which concerns two countries simultaneously.’⁴ In this domain, too, expansion was inevitable: ‘[E]ven the system of associations between groups of states cannot be the ultimate objective. The telegraph unions within our continent will become a telegraph union of all states on our continent. The seeds have not only been sown, their shoots can be seen above the ground.’⁵

This combination of internal and external pressures constituted a major challenge for German governments during the 1850s. The revolutions of 1848 had revealed the potential dangers of ignoring certain forces within society, from disenfranchised tradesmen to dissatisfied businessmen, and the limits of suppressing public opinion. Social and economic change, governments realized, was inevitable, and its consequences could only be managed by guiding, not resisting, the forces behind it. Constructing networks of telegraphic communication and

¹ K. Knies, Der Telegraph als Verkehrsmittel (Tübingen, 1857), p. 1. ² Ibid., p. 2. ³ Ibid., p. 64. ⁴ Ibid., p. 205. ⁵ Ibid., p. 205.
placing them at the disposal of the public was part of their efforts to adapt to a post-revolutionary world, therefore; to structure and accompany the process of industrialization that was to characterize the second half of the nineteenth century in Germany; but it also tied them into an increasingly dense web of domestic and foreign relations.

What has traditionally been referred to as a decade of ‘reaction’, therefore, was in fact a period of dynamic change, accompanied by a ‘revolution in government’. In Prussia, Minister-President Otto von Manteuffel attempted to steer a middle course between the demands of ultraconservatives surrounding the king and liberal forces in parliament, while August von der Heydt, as minister of trade, heightened state involvement in the construction of railways and telegraphs. In Bavaria, a new course was signalled with the abdication of Ludwig I in 1848 and the accession to the throne of his son, Maximilian II, in 1848. Surrounding himself with intellectuals ranging from Leopold von Ranke to Wilhelm Heinrich Riehl, the new king sought advice on the ‘tendencies of the times’ and recognized that the forces of industrialization and capitalism must be managed so as to avoid dramatic upheavals. Across the German Mittelstaaten, governments actively promoted the building of railway, telegraph, and postal networks, developed new educational policies, and replaced press censorship with an active propaganda strategy designed to strengthen citizens’ loyalties to the state. Even in notoriously unconstitutional Austria, Emperor Franz Joseph I undertook a programme of social and economic development.

The telegraph lines built by German governments fuelled the circulation of information across networks which extended well beyond the borders of their own territory. They provided a new tool to administrators, diplomats, and police forces, but they also generated a nexus of finance, trade, and communication which helped fuel Germany’s industrial ‘take-off’. They transformed the pace and extent of news reporting across Europe, strengthened existing networks of private banking, fuelled the emergence of the securities market, and introduced more rapid fluctuations in commodity prices which came to affect the fortunes of

---

6 C. Clark, ‘After 1848: The European Revolution in Government’, Transactions of the Royal Historical Society, vol. 22 (Dec. 2012), pp. 171–97; on the characterization of the 1850s as a period of ‘reaction’, see T. S. Hamerow, Restoration, Revolution, Reaction: Economics and Politics in Germany, 1815–1871 (Princeton, N.J., 1958), pp. 219–37.

7 A. Ross, Beyond the Barricades: Government and State-Building in Post-Revolutionary Prussia, 1848–58 (Oxford, 2019).

8 N. Mayr, ‘Particularism in Bavaria: State Policy and Public Sentiment, 1806–1906’ (PhD Thesis, University of North Carolina, 1988).

9 M. Hanisch, Für Fürst und Vaterland: Legitimitätsstiftung in Bayern zwischen Revolution 1848 und deutscher Einheit (Munich, 1991), pp. 94–148.

10 A. Green, Fatherlands: State-Building and Nationhood in Nineteenth-Century Germany (Cambridge, 2001), esp. pp. 223–66.

11 P. Judson, The Habsburg Empire: A New History (Cambridge, Mass., 2016).

12 H.-U. Wehler, Deutsche Gesellschaftsgeschichte (5 vols., Munich, 1987–2008), iii, pp. 66–97.
manufacturers and agriculturalists.¹³ They became the material support for the ‘networks of means’ underpinning the rise of a pan-European middle class.¹⁴

The technology thereby engendered a reconfiguration of the relations between state and society. It was in the very nature of the technology that it established a binary distinction between those included in and those excluded from the network, and throughout the period the hopes raised by the promise of instantaneous, long-distance communication were matched by anxieties at being deprived of access to the service. As the technology was diffused, it allowed certain groups and regions to communicate more rapidly than others, threatening to desynchronize society. Governments were therefore faced with the challenge of meeting demands for a reliable service from the public and neighbouring administrations while ensuring their own capacity to keep up with the growing pace of communication across society.

The culture which emerged during the period reflected this combination of expectations and frustrations. While telegraphs, like the railways, became a symbol of material progress, their deficiencies and limitations also became apparent. The ‘annihilation of space’ so often associated with the technology was only, if at all, perceptible where it was available and efficient. The very speed of communication, meanwhile, seemed to oversensitize users, businessmen in particular, to the fluctuations of telegraphic news, and to impinge upon the reliability of information in times of crisis. Acknowledging and responding to these changes, state and society made their first tentative efforts to come to terms with the reality of a networked modernity.

4.1 Establishing Priorities

By the early 1850s, the pressure exerted by the Austrian government upon its south German neighbours, and the opening of Prussia’s main lines linking Berlin to Frankfurt and Aachen, had set in motion the construction of state telegraph lines across Germany. In Bavaria, the Munich–Salzburg line was already open to the public, providing a link to Vienna, and construction was underway on the Munich–Augsburg–Nuremberg–Hof line, which was to connect the capital, through Saxony, to Berlin.¹⁵ A patchwork of connections was emerging throughout Central Europe, and the need soon arose to establish more formalized

¹³ R. Michie, The Global Securities Market: A History (Oxford, 2006), pp. 83–118; cf. also Y. Cassis, Capitals of Capital: The Rise and Fall of International Financial Centres, 1750–2009, trans. J. Collier (Cambridge, 2010), pp. 41–73.

¹⁴ J. Seigel, Modernity and Bourgeois Life: Society, Politics and Culture in England, France, and Germany since 1750 (Cambridge, 2012), pp. 1–37.

¹⁵ BHStA, MH 16802, Pfordten to Max II, 2 Dec. 1849; BHStA, MH 16799, Pfordten to Max II, 5 Feb. 1850.
blueprints for the future development of structured networks of communication. The new Bavarian minister-president, Ludwig von der Pfordten, twice brought the matter to the attention of the king, and his addresses summarized the issues facing most governments across Germany.

The ‘indispensability’ of the technology to the state, Pfordten believed, ‘no longer need[ed] further elaboration’. The urgency of constructing new telegraph lines, he added, became ‘all the more apparent the further those lines extend which other states have at their disposal, and which can be used for private as well as government purposes’. At this stage, smaller states such as Baden, Württemberg, and Hanover were struggling to meet the costs of building their own networks, but in light of Pfordten’s emerging ‘Triaspolitik’ (triad policy), which sought to establish Bavaria as the third leading power in Germany, it was crucial that they not fall behind. Added to these external pressures was the recognition that domestic demand for the service would inevitably grow, and that ‘[t]he necessity of a wider expansion of the telegraph network will later without doubt come into play’.

From the outset, governments understood that much of this growth would come from the general public’s use of the technology, a testament to the influence of liberal economic principles. The Bavarian king Maximilian II’s advisors included Wilhelm Joseph Behr, Friedrich von Hermann, and Carl Joseph Kleinschrod, who adhered to an emerging German blend of Smithian ideas and diluted cameralism. Each from their own perspective, these advisors believed that the state’s duty was to actively structure an otherwise independently functioning economy. The king himself had recognized that large-scale construction works might also stimulate employment and address the ‘social question’ which had surfaced during the recent disturbances.

When Pfordten prepared a bill to present to the Staatsrat (State Council) and Landtag (Parliament), therefore, he described the government’s objective as to ‘envisage the entire telegraph network as it should be established for Bavaria’, based on its recognized utility for private, commercial, as well as policing, strategic, and political purposes. ‘The more the telegraphic means of communication now comes into use in other states,’ he once again emphasized, ‘the more urgently our own country’s interests require its introduction,’ a fact recognized in both chambers of parliament. Action had to be taken, Graf von Rechberg warned the Kammer der Reichsräte (Upper Chamber), ‘as Bavaria could otherwise

---

16 BHStA, MH 16799, Pfordten to Max II, 5 Feb. 1850.  
17 Ibid.  
18 BHStA, MH 16802, Pfordten to Max II, 2 Dec. 1849.  
19 I. Burkhardt, Das Verhältnis von Wirtschaft und Verwaltung in Bayern während der Anfänge der Industrialisierung (1834–1868) (Berlin, 2001), pp. 121–67.  
20 BHStA, Staatsrat 953, ‘Gesetz-Entwurf, Herstellung eines Telegraphen-Netzes für Bayern betr.’, 26 Mar. 1850.  
21 Ibid.
be impacted negatively in matters of trade and communication by neighbouring countries where this installation is already in place.²²

In Prussia, the minister of trade, August von der Heydt, had been behind the decision to open the telegraph network to the general public. Heydt’s defence of government involvement in the construction of communications networks, including railways, reflected a similar recognition that support for the forces of trade and industry would generate benefits for the state as a whole. It was better to work with society than against it and, in response to the police president of Cologne’s suggestion that all private telegrams be subject to censorship, Heydt emphasized that doing so would undermine the public’s trust in the government. Austria, he explained, would soon be giving the public access to the telegraph, and there would be negative consequences for Prussian subjects if the network was open to commercial correspondence in other states but not their own. In this matter it was ‘better to lead than to follow’.²³

The salient problem for governments, however, was how to plan a network whose expansion would depend upon the whims of its users. As the case-handler for the matter in the Bavarian parliament explained, the telegraph was an object ‘whose high importance for the development of the internal life of the state, as well as for the intercourse of states and peoples is not completely recognized nor fully comprehended’. He did have faith in the technology’s potential, but it was based upon ‘wonderful expectations’ rather than any firm evidence.²⁴ Pfordten himself admitted that ‘the real demand cannot yet be ascertained precisely’, and it was therefore ‘all the wiser only progressively to bring the telegraph network to completion, as further experience and new improvements are brought into use’.²⁵ Parliamentary deputies recognized that ‘the more this institution is extended, the more its use will become possible and provide many inhabitants of our particular fatherland with significant advantages’.²⁶ This placed the state in a rather uncomfortable predicament—existing demand was not only impossible to estimate but would itself be generated by supplying the service.

It was in fact to deal with this unpredictable growth that some favoured establishing a state monopoly over the construction of telegraph lines. From the government’s perspective, as Pfordten announced, it was without question that the state should finance the project.²⁷ Such a monopoly had a precedent in the postal system, which had been nationalized in Bavaria in 1808, but which King Ludwig I had unabashedly used as a source of revenue to fund his ambitious

²² VKR (1850), 12 May 1850, p. 242; see also VKA (1849/50), 28 Apr. 1850, p. 453.
²³ GStA PK I. HA Rep. 77, Tit. 813, Bd. 2, Heydt to Manteuffel, 16 Mar. 1850.
²⁴ VKA (1849/50), 28 Apr. 1850, p. 453.
²⁵ BHStA, Staatsrat 953, ‘Gesetz-Entwurf’, 26 Mar. 1850.
²⁶ VKA (1849/50), 2 May 1850, pp. 736–7.
²⁷ BHStA, Staatsrat 953, ‘Gesetz-Entwurf’, 26 Mar. 1850.
construction projects during the 1840s.²⁸ For the liberal deputy and former minister Ludwig Fürst zu Oettingen-Wallerstein, therefore, the proposed legislation was nothing more than an ‘indemnity bill’, put forward to gain parliamentary approval for measures already taken by the state.²⁹ But new forces were at play, and besides fiscal considerations Graf von Rechberg argued that state involvement was necessary specifically 'because private industry will be hard put to take possession of this object, whose profitability is still very problematic'.³⁰

The outline eventually followed by most states sought to balance newly recognized economic priorities with geopolitical considerations and more traditional concerns for the administration and security of the state. In the upper chamber of the Bavarian parliament, one member emphasized that it was 'necessary that the government, particularly in these agitated times, rapidly receive knowledge of all developments at the larger courts of Germany and Europe' as well as of internal occurrences.³¹ Indeed, the Reichsräte added to the bill the requirement that 'the royal state government establish a connection with neighbouring states and a uniform tariff by means of treaties'.³² In the end, the projected outline provided for lines to Salzburg in Austria, Lindau beside Lake Constance, Ulm in Württemberg, Frankfurt am Main, Hof towards Saxony and Prussia, and finally, upon the insistence of a member of the Staatsrat, Passau as both a fortress and a further point of contact with Austria.³³

Internally, meanwhile, the priority was to connect Munich with the principal seats of local government, fortress towns, and what were termed the ‘main channels’ of trade.³⁴ The principal ‘channel’ in question was the arc running from the north, in Hof, to the south-west, along the border with Württemberg. Above all, the blueprint favoured existing routes of trade, the textile-producing regions of Schwaben and Oberfranken, as well as the incipient machine industry in Nuremberg—a network to which Munich was simply appended.³⁵ In this regard, the outline built upon the decentralized Bavarian postal network whose development, as Zef Segal has shown, followed these routes of traffic between north and south Germany.³⁶

Some regions were neglected, notably the Oberpfalz—despite its significance for the mining industry—and, as was often the case, the Pfalz. The latter, situated on the left bank of the Rhine, was not even assigned a connection to the Bavarian heartland, of the kind Prussia had established with its Rhineland

²⁸ K. Amtmann, Post und politik in Bayern von 1808 bis 1850: Der Weg der königlich-bayerischen Staatspost in den Deutsch-Osterreichischen Postverein (Munich, 2006), pp. 230–44.
²⁹ VKR (1850), 17 May 1850, pp. 364–76.
³⁰ BHStA, Staatsrat 953, ‘Auszug aus dem Protokolle’, 26 Mar. 1850.
³¹ VKA (1849/50), Beil. CXXIX, 28 Apr. 1850, p. 453.
³² Burkhardt, Verhältnis von Wirtschaft und Staat, pp. 32–9.
³³ Z. Segal, The Political Fragmentation of Germany: Formation of German States by Infrastructure, Maps and Movement, 1815–1866 (Palgrave, 2019), esp. pp. 75–105.
provinces—which was all the more surprising given the popular revolts which had taken place there following the dissolution of the National Assembly in the summer of 1849, and which the government had struggled to put down. The outline adopted, therefore, did not provide uniform coverage across the state. Rather, it strengthened the connections between existing economic, administrative, and militarily strategic centres.

The emerging Prussian network similarly reflected a mixture of strategic and commercial concerns. By 1 October 1849, telegraph lines had been built linking the capital city to Aachen, in the Rhineland, Frankfurt, the heart of the German Confederation, Hamburg, Germany’s most active port city, as well as a connection between Düsseldorf and Elberfeld, at the core of the state’s textile and mining industries. Two further lines would be opened by May 1850, connecting Berlin to the eastern border towns of Stettin and Oderberg.

The majority of medium-sized German states introduced similar telegraph networks during the 1850s, forging internal and external links. In Saxony, the network initially prioritized both the internal Leipzig–Dresden connection and that to Hof and Görlitz, establishing a connection with Bavaria and Prussia. Hamburg and Bremen, meanwhile, negotiated connections with Hanover and Prussia. Baden, Württemberg, and Hanover had been slow to introduce the state networks, primarily for financial reasons. All three, however, were spurred to action by Bavaria, France, Prussia, Bremen, and Hamburg, which relied upon these struggling states’ participation in order to connect to foreign territories further afield.

This geography-induced mixture of interstate collaboration and coercion was formalized through the establishment of the *Deutsch-Österreichischer Telegraphen-Verein* (German-Austrian Telegraph Union, DÖTV) in July 1850. Initially composed of Austria, Prussia, Bavaria, and Saxony, these four engines of the German telegraph network soon drew in the remaining German states, generalizing technical norms and raising expectations for each member to live up to. The founding treaty required the service to be open to the public, for instance, and set the tariffs for communication between networks. It also encouraged their continuous expansion by linking the proportion of the DÖTV’s total

---

37 J. Sperber, *Rhineland Radicals: The Democratic Movement and the Revolution of 1848–1849* (Princeton, 1991), pp. 414–66; H. Rall, ‘Die politische Entwicklung von 1848 bis zur Reichsgrundung 1871’, in Spindler (ed.), *Handbuch*, iv/1, p. 234; on popular political culture in the Pfalz during the Vormärz, see J. M. Brophy, *Popular Culture and the Public Sphere in the Rhineland, 1800–1850* (Cambridge, 2007).

38 H. A. Wessel, *Die Entwicklung des elektrischen Nachrichtenwesens in Deutschland* (Wiesbaden, 1983), p. 154.

39 Ibid., p. 73.

40 Ibid., pp. 93, 98.

41 R. Seidel, *Verkehrsmittel Telegraph: Zur Geschichte der Telegraphie im 19. Jahrhundert bis 1866 unter besonderer Berücksichtigung des Raumes Hannover – Bremen* (PhD Thesis, University of Hanover, 1980), pp. 142–4.
4.2 Policing the State

The telegraph’s potential utility in ensuring state security had been repeatedly evoked during the 1840s, and the technology quickly became an essential tool for police forces across Europe. Reforms of the police service had been ongoing since the early nineteenth century, but they received renewed impetus following the insurrections of 1848, and new means of communication strengthened the powers and efficiency of these ostensibly civilian forces which increasingly took over from the army as guardians of the social order. This was, in many ways, a pan-European development, as the international character of the 1848 insurrections and the generation of political exiles which they had dispersed across the continent highlighted the need for cooperation across state borders. The quasi-instantaneity of telegraphy had obvious advantages for institutions such as the semi-official ‘Polizei-Verein’ (Police Association) of German states established during the 1850s, and the networks of secret agents employed by the Prussian and Austrian authorities went some way to monitoring increasingly mobile subversives, although truly international policing associations would only emerge at the turn of the twentieth century.

In the immediate aftermath of the mid-century upheavals, the telegraph offered a means of surveilling regions still simmering with unrest. In Aachen, the Regierungspräsident requested permission to communicate with police authorities across the border in Verviers, a connection which he considered important due to the ‘social and industrial relations’ of local ‘factory cities’, and because the Belgian town in question was rather close to the German border and ‘entirely suited to all manner of gatherings and machinations of the politically dissatisfied’. In Breslau, a senior official asked the government whether he might use the railway telegraph line in case of trouble, as there was no state-owned connection available.

42 J. Reindl, Der Deutsch-Österreichische Telegraphenverein und die Entwicklung des deutschen Telegraphenwesens, 1850–1871 (Frankfurt am Main, 1993), pp. 163–6.
43 C. Emsley, Policing and its Context, 1750–1870 (London, 1983); R. Evans, Rereading German History: From Unification to Reunification, 1800–1996 (London, 1997), pp. 65–86; H.-H. Liang, The Rise of Modern Police and the European State System from Metternich to the Second World War (Cambridge, 1992), pp. 18–82.
44 H. Pogge von Strandmann, ‘1848–1849: A European Revolution?’, in The Revolutions in Europe, 1848–1849, ed. R.J.W. Evans and H. Pogge von Strandmann (Oxford, 2000), pp. 1–8.
45 W. Siemann, Deutschlands Ruhe, Sicherheit und Ordnung: Die Anfänge der politischen Polizei, 1806–1866 (Tübingen, 1985), pp. 242–459; M. Deflem, Policing World Society: Historical Foundations of International Police Cooperation (Oxford, 2002), pp. 45–77.
46 GStA PK I. HA Rep. 77, Tit. 813, Bd. 2, Regierungspräsident Aachen to Westphalen, 11 Dec. 1851.
47 GStA PK I. HA Rep. 77, Tit. 813, Regierungspräsident Breslau to Westphalen, 10 Apr. 1851.
Bavaria, the town of Ansbach was provided with a telegraph office specifically to enable the local government to monitor the political situation in nearby Nuremberg.⁴⁸

In these places, the new technology gave the authorities a temporal advantage, allowing them to coordinate responses to an incident before it got out of hand. In particular, it enabled police forces to keep up with suspects’ movements, an increasingly challenging task in the age of railway transportation. As the mayor of Augsburg stated, ‘The use of the railway is no longer sufficient, because the criminal can make use of it too, and has already obtained a head start. The most reliable means of rapid pursuit is the electromagnetic telegraph.’⁴⁹

Among the most avid users of the technology for the purposes of state security was Berlin’s police president, Carl von Hinckeldey, who oversaw the restructuring of the Prussian police force and, enjoying the confidence of King Friedrich Wilhelm IV, was granted a considerable degree of autonomy. Hinckeldey was eager to use the telegraph in helping his officers to coordinate their activities, and he consistently fought for police telegrams to be considered ‘Staatsdepeschen’ (state telegrams) and therefore free of charge. His zeal in doing so, however, led to repeated conflicts with the Prussian telegraph administration, and indeed Minister of Trade von der Heydt himself, who complained of the excessive burden placed upon the network by the police forces and insisted that they pay the full fee for the service.⁵⁰

One of Hinckeldey’s flagship initiatives was the development of a fire prevention telegraph network across Berlin which could also be employed for police purposes. The original idea was to connect the various firefighting services across the city, so that incidents might be reported and responded to more efficiently. In his 1851 report on the topic, however, Hinckeldey suggested extending this planned network to connect various buildings of the war ministry, the ministry of the interior, and each of the thirty-six police stations spread out across the city.⁵¹ It was then suggested that the foreign ministry and the royal palace in Berlin should be similarly connected to the network.⁵² In proto-Haussmannian style, the state was thus arming itself with a new means of managing the circulation of people and information across urban space.⁵³

⁴⁸ StAN, Rep. 270/IV, Nr. 4, Draft of letter from Regierung Ansbach to HM, 14 Nov. 1850.
⁴⁹ Stadtarchiv Nürnberg, C 7/1, Nr. 2762, Erster Bürgermeister Augsburg to Magistrat Nürnberg, 30 Oct. 1850.
⁵⁰ A. Ross, Beyond the Barricades: Government and State-Building in Post-Revolutionary Prussia, 1848–58 (Oxford, 2019).
⁵¹ GStA PK I. HA Rep. 77, Tit. 1316, Nr. 1, Hinckeldey to Westphalen, 7 June 1851.
⁵² GStA PK I. HA Rep. 77, Tit. 1316, Nr. 1, Berlin Magistrat to Westphalen, 6 Sept. 1851.
⁵³ Cf. Q. Deluermoz, Policiers dans la ville: La construction de l’ordre publique à Paris, 1854–1914 (Paris, 2012).
Outside Berlin, meanwhile, the telegraph was being used to track down suspects moving across Germany and beyond. Cases varied from criminals seeking to flee the country via the port city of Bremen to a missing 16-year-old boy whose father believed he had run away to work on a ship.⁵⁴ The pursuit of these individuals required collaboration between the various state police and telegraph administrations, emphasizing the need for a collective regulation of practices. The 'Polizei-Verein' established by Hinckeldey and his collaborators in Austria, Bavaria, and Saxony for the purpose of monitoring political suspects, in particular, required that the telegraph be used to notify the relevant authorities in case of necessity.⁵⁵

The emerging surveillance network possessed a number of blind spots, however. In 1851, for instance, a Hungarian revolutionary was spotted near Bayreuth, and although warnings were sent from Munich to neighbouring Bamberg, the authorities in Bayreuth, being deprived of a telegraph office, were left unaware of this communication. When the suspect fled to Bohemia, the president of the regional government wrote to the minister of trade explaining that ‘24 hours earlier, warrants could have been sent out to capture [him] if it were possible to telegraph from Munich to here as well as Bamberg,—a loss of time which in such a case, and given the ease with which one can use the railways to escape police deployments, cannot be compensated for.’⁵⁶ As the president’s complaint highlighted, the piecemeal introduction of the technology had begun to establish distinctions between those areas with access to the service and those without. In the process, it was interfering with administrative protocol by creating a temporal hierarchy. In this case, the Stadt-Kommissar in Bamberg had received information by telegraph ahead of the president himself, who now demanded that all such telegrams be forwarded to him with the next post.⁵⁷

Outside the police forces, and despite the considerable enthusiasm which civil servants had expressed for the adoption of the technology, its use was not immediately widespread in the day-to-day workings of the bureaucracy. To be sure, the technology was of immediate utility in diplomatic circles, who had long depended upon extensive networks of communication, but its incorporation into practices of administration was rather slow.⁵⁸ Throughout Bavaria, for instance, only 459 state telegrams were sent during the first six months of 1851. When the regional government in Ansbach asked its subordinate departments to report on their potential use of the technology, the Nuremberg Magistrat replied that its use

⁵⁴ Stadtarchiv Wuppertal, Q II 61, Telegram Polizei-Commissair Elberfeld to Telegraphen-Station Bremen, 18 July 1873.
⁵⁵ W. Siemann (ed.), Der ‘Polizeiverein’ deutscher Staaten: Eine Dokumentation zur Überwachung der Öffentlichkeit nach der Revolution von 1848/9 (Tübingen, 1983), p. 30.
⁵⁶ BHStA, MH 16799, Regierung Oberfranken to HM, 28 Apr. 1851.
⁵⁷ Ibid.
⁵⁸ D. Headrick, The Invisible Weapon: Telecommunications and International Politics, 1851–1945 (New York, 1991), pp. 73–5; D. P. Nickles, Under the Wire: How the Telegraph Changed Diplomacy (Cambridge, Mass., 2003).
had thus far been so rare as to make an informed estimate impossible.⁵⁹ By the end of the decade, even in an important town such as Augsburg, an average of only one state telegram was either sent or received on a daily basis.⁶⁰

Access to the telegraph, it would seem, had often been requested on a precautionary basis, to strengthen the confidence of the authorities in their ability to manage unexpected situations. The Regierungspräsident in Breslau who had asked for access to the telegraph to monitor local unrest, for instance, admitted that he had not once made use of the service. The office which had been opened in Ansbach for similar reasons later reported that its use had been uneconomically low. In fact, the telegraphist there expressed the desire ‘to be kept busy with telegrams more often’, and the local authorities were therefore encouraged to make more frequent use of the service.⁶¹

### 4.3 Confronting Demand

Beyond the state administration lay a vast pool of potential customers within society. Most German telegraph lines were open to the general public by 1850, and over the following decade the volume of traffic across German networks increased ten- to twentyfold. Between 1850 and 1860, the number of telegrams handled annually in Württemberg rose from 7,000 to 100,000; in Bavaria from roughly 10,000 to 200,000; and in much larger Prussia, from 35,000 to 600,000.⁶² And by far the greatest share of these telegrams was private correspondence: of the 121,000 telegrams sent on Prussia’s state lines in 1854, roughly 108,000 were ‘Privat-Depeschen’.⁶³ Network coverage across each state, on the other hand, remained rather limited. In 1855, there was one telegraph office for every 60,000–65,000 inhabitants in Saxony, 190,000 in Bavaria, 344,000 in Prussia, and 634,000 in Austria.⁶⁴ The earliest lines to be built, indeed, privileged existing channels of communication between the state’s recognized administrative and commercial centres. Along these arteries, the volume of traffic developed rapidly, but as it did, it accentuated the disadvantage experienced by those excluded from the network.

---

⁵⁹ Verordnungs- und Anzeige-Blatt für die K. Bayerischen Verkehrs-Anstalten (1851), p. 290; StAN, Rep. 270/IV, Nr. 4, Circular, Präsidium Regierung Mittelfranken, 3 Feb. 1851; StAN, Rep. 270/IV, Nr. 4, Magistrat Nürnberg to Präsidium Regierung Mittelfranken, 3 May 1851.

⁶⁰ BHStA, GDVA 197, Telegraphen Station Kaufbeuren to Telegraphenamt, 5 Oct. 1857; BHStA, MH 16882, ‘Übersicht der Ergebnisse des Telegraphen-Betriebs’.

⁶¹ StAN, Rep. 270/IV, Nr. 4, Präsident Mittelfranken to von Zwehl, 24 Sept. 1852.

⁶² F. Weber, Post und Telegraphie im Königreich Württemberg (Stuttgart, 1901), p. 239; Rückblick auf das erste Jahrhundert der K. Bayer. Staatspost (1. März 1808 bis 31. Dezember 1908), ed. K. B. Staatsministerium für Verkehrsangelegenheiten (Munich, 1909), p. 253; F. Kilger, Die Entwicklung des Telegraphenrechts im 19. Jahrhundert (Frankfurt am Main, 1993), p. 48.

⁶³ Zeitschrift des Deutsch-Osterreichischen Telegraphen-Verein, vol. 2 (1855), p. 71.

⁶⁴ Knies, Der Telegraph, pp. 127–8.
A ‘two-speed society’ had thus begun to emerge and, as governments began to realize, the state’s monopoly over the construction of communications networks came with a responsibility for the quality of the service provided. As early as 1850, the Prussian authorities had begun to receive complaints from the public regarding delays in communication, as well as requests for the introduction of the service in particular regions.⁶⁵ Over the following decades, German governments continually struggled to meet the growing demand for improvements to their networks. How the challenge was met depended upon the legal, financial, and governmental structures in each state, but on the whole demand persistently outpaced supply. Crucially, in addressing these issues, members of government and parliament were forced to reconsider and explicate the state’s perceived obligations towards society.

***

In Bavaria, parliament had approved the law of 7 June 1850, which granted the government a total of 500,000 florins (Gulden) for the construction of the initial proposed lines. Between 1850 and 1854, the main branches of the network were rapidly constructed, and by 1855 the funds which had been devoted to the cause were exhausted. Across the state, railways were simultaneously equipped with their own telegraph lines, but the apparatuses they employed for signalling purposes could not be adapted to the needs of general correspondence. As a result, the number of public telegraph stations throughout the kingdom increased only slowly, with twenty-nine in operation in 1854, and forty in 1857.⁶⁶

Along the sections of the network which had been planned, and where construction had begun, however, the public’s expectations were raised. From 1850, requests for inclusion in the network were sent to the administration from towns such as Bayreuth, Kaufbeuren, Neuburg, and Erlangen, all of which were situated along the principal arc of communication which the government’s blueprint had privileged, running from the south-west to the north.⁶⁷ This region constituted Bavaria’s commercial heartland, and its dependency upon adequate means of communication was frequently evoked.

In 1854, former government minister Ludwig Fürst zu Oettingen-Wallerstein, now a vocal representative of an electoral district in industrious Schwaben, which was also the historic centre of his family’s lands, stood in parliament to demand that a telegraph office be provided in Donauwörth and Nördlingen.⁶⁸ These towns, he explained, lay along ‘the highly important Munich-Hof route’, the former a

⁶⁵ GStA PK Rep. 77, Tit. 813, Heydt to Manteuffel, Oct. 1850.
⁶⁶ Rückblick, p. 253.
⁶⁷ BHStA, GDVA 438, GDVA to Telegraphenamt, 10 May 1853; BHStA, GDVA 227, ’Bitte des Stadtmagistrates und der Gemeindebevollmächtigten der Stadt Neuburg’, 23 Oct. 1853; BHStA, MH 16900, Regierung Schwaben und Neuburg, Kammer des Innern to Handelsministerium, 31 Oct. 1853.
⁶⁸ ’Oettingen-Wallerstein, Ludwig Fürst’, Allgemeine Deutsche Biographie 40 (1896), pp. 736–47 (online version, accessed 22 Mar. 2017, at https://www.deutsche-biographie.de/gnd118589555.html#adbcontent).
‘junction of railway and steam navigation’, and the latter an industrial and haulage hub through which people and freight made their way from Württemberg to the Bavarian railway network. Communications networks, he implied, were essential to commercial activities in the region.

Oettingen-Wallerstein’s request sparked a series of debates in the Bavarian parliament regarding the shape and priorities of the telegraph network, and the state’s ability to provide adequate communications infrastructure. They took place within a context of growing tension between the government and parliament, which had been dominated by a liberal majority since July 1849 and was wary of the king’s attempts to backtrack on the reforms introduced during the revolution. As chief minister in the 1830s, Oettingen-Wallerstein had promoted the construction of roads and railways—as well as the long-awaited Ludwig-Main-Donau-Kanal—until Ludwig I’s government had taken a conservative turn which led to his dismissal in 1837. His extensive study of communications routes in Bavaria remained a point of reference into the 1850s, and, now a committed liberal in parliament, he was eager to impress upon the government the priority of economic concerns.

The public’s use of the network, Wallerstein emphasized, ensured its utility and profitability. Taking neighbouring Württemberg and Switzerland as examples, he highlighted the need to construct more secondary branches so as to broaden public access to the technology and, crucially, to preserve the natural balance of competition between towns. ‘Where . . . the telegraphs are only available to a few exchange metropoles,’ he asserted, ‘trade and industry in other places are placed at a considerable disadvantage; their ability to offer sustained competition with the favoured towns becomes a clear impossibility.’ Oettingen-Wallerstein therefore requested that the telegraph network be extended to ‘all important trading and commercial sites’.

For Oettingen-Wallerstein, the telegraph threatened to create imbalances within existing networks of communication and should instead be designed to allow fair and unhindered exchange and competition. His petition was presented on behalf of a region of western and south-western Germany traditionally associated with ‘proto-industry’ and a dispersed putting-out system, but for which he believed communication was essential. Such a ‘decentralized industrial order’, as Gary Herrigel has proposed to view economic structures in these areas, was all the more dependent upon exchange, in order to coordinate the stages of production

---

69 VKA (1853/5), Beil. XLIV, 16 Nov. 1854, p. 97.
70 Rall, ‘Die politische Entwicklung’, pp. 243–5.
71 M. Spindler, ‘Die Regierungszeit Ludwigs I. (1825–1848)’, in M. Spindler (ed.), Handbuch der Bayerischen Geschichte (4 vols., Munich, 1967–75), iv/1, pp. 175–6.
72 H.-P. Schäfer, ‘Bayerns Verkehrswesen im frühen 19. Jahrhundert’, in C. Grimm (ed.), Aufbruch ins Industriezeitalter (3 vols., Munich, 1985), ii, pp. 308–22.
73 VKA (1853/5), Beil. XLIV, 16 Nov. 1854, p. 97. 74 Ibid.
75 Wehler, Gesellschaftsgeschichte, ii, pp. 87–9.
which were divided between workers and merchants scattered across the landscape.⁷⁶ The telegraph provided a ‘modern’ framework within which these ‘traditional’ methods could persist.

Oettingen-Wallerstein’s emphasis upon free exchange between people and places was part of a broader liberal conception of social and economic order. Wilhelm Neuffer, an entrepreneur, and the head of the designated committee for the chamber of deputies, set out this view to his fellow deputies: ‘Agriculture, industry and trade are the principal factors of human pursuits, and where they are equally carefully fostered and protected, social relations are also well ordered; but if one of these branches comes to a standstill, disturbances soon emerge, and like uneven rings in a chain, they rub until they disconnect, and so the neglect of the particular impacts the whole, and some progress, salutary in and of itself, creates a lacuna instead of exerting a beneficial influence on the entirety.’⁷⁷ All similar countries, he explained, ‘are urgently pressed to develop their installations in this way and to strive for unity, particularly in everything which concerns exchange’.⁷⁸

What concerned both the government and certain members of parliament, however, was the potentially spiralling cost of providing such a service, particularly as reports showed that the Bavarian network was running a growing deficit.⁷⁹ As Neuffer himself suggested, it was ‘absolutely natural, that the slightest facilitation of exchange in any part of the country will also everywhere draw out the desire to become a part of it’. There was a justified sense of injustice, he believed, in the oldest provinces of Bavaria, whose tax burden was unchanged but who did not benefit from improved communications.⁸⁰ Even for left-leaning representatives, however, the financial consequences were potentially troubling. Gustav Freiherr von Lerchenfeld called for a limit to state involvement, complaining that ‘[i]n our country the state caters to everything, must do everything, must have civil servants, civil servants, and yet more civil servants for everything’, which meant, of course, a bulging pensions budget.⁸¹ David Morgenstern, a democrat and the first Jewish member of the Bavarian parliament, floated the idea of adopting a privately run system, as in England and the United States, though he accepted that, now the administrative structure was in place, they should work with the state for the time being.⁸²

The discussion of Oettingen-Wallerstein’s proposal resulted in an agreement in March 1855, which marked a victory for liberal proponents of a network structured around economic priorities. The two chambers agreed to press the government to extend the network to all commercial towns of the kingdom, within the

---

⁷⁶ G. Herrigel, *Industrial Constructions: The Sources of German Industrial Power* (Cambridge, 1996), esp. pp. 33–71.
⁷⁷ VKA (1853/5), Beil. XLIV, 4 Dec. 1854, p. 96.
⁷⁸ Ibid.
⁷⁹ VKA (1855/6), Beil. XXII, 11 Nov. 1855, p. 392; during the 1851/2 financial year, aside from initial construction costs, the network had run a deficit of around 22,754 fl., rising to 39,304 fl. in 1852/3.
⁸⁰ VKA (1855/6), Beil. XXII, 11 Nov. 1855, p. 392.
⁸¹ VKA (1853/5), 20 Dec. 1854, p. 364.
⁸² Ibid.; ‘Morgenstern, David’, *Neue Deutsche Biographie* 18 (1997), p. 108 (online version, accessed 22 Mar. 2017, at https://www.deutsche-biographie.de/gnd133577244.html#ndbcontent).
scope of the budget, and the ministerial commissioner recognized the validity of requests from Nördlingen, Donauwörth, Fürth, Kaufbeuren, Erlangen, and Immenstadt in particular—all situated along the state’s central commercial channel, and most of whose claims had been raised in parliament.\textsuperscript{83}

In Prussia, the outline of the projected network was not explicitly discussed in parliament, but similar concerns were expressed when, in 1854, the government proposed legislation to formalize the state’s monopoly over the construction of telegraph lines. Such a monopoly did not exist in law—indeed it would not until the \textit{Telegraphengesetz} of 1892—and thus far the government had relied upon agreements with various railway companies for the use of their lines.\textsuperscript{84} But the suggestion that private corporations now be formally barred from contributing to the development of the network raised questions as to the state’s ability to do so instead.

In the Prussian Chamber of Deputies, the merchant and moderate liberal Andreas Theodor Kruse led the affront. While praising Trade Minister von der Heydt’s efforts to develop communications in Prussia and his decision to allow the public to make use of the telegraph, he pointed to the emphasis placed by a number of \textit{Handelskammern} on the need for private telegraph installations. The state had achieved what it could with the funds at its disposal, he believed, but it could not cater to the growing demand across Prussia.\textsuperscript{85} Heydt contested the extent of the support for private telegraph installations evoked by Kruse, but he himself acknowledged the work which remained to be done. In his response, he underlined the fact that the world of commerce was dependent upon a secure and reliable development of the telegraph network, and that the state was in the best position to fulfill these needs.\textsuperscript{86}

In both Bavaria and Prussia, the state’s exclusive right to construct telegraph lines was never seriously challenged. But the notion that the state had a duty to provide adequate infrastructure to support economic growth was gaining ground in government circles. This placed the burden of defining economic priorities upon the state, however, and made it a target for the complaints emerging from commercial forces in society. These were often drawn up by municipal authorities, regional chambers of commerce, or even individual businessmen—all now turned to the state as the provider of infrastructure.\textsuperscript{87} In the Bavarian parliament, the state’s priorities were openly questioned: ‘I never asked for a telegraph on the Peißenberg’, Oettingen-Wallerstein declared, ‘but I did want one in Fürth, a town

\textsuperscript{83} VKA (1853/5), 20 Dec. 1854, p. 367.
\textsuperscript{84} F. Kilger, \textit{Die Entwicklung des Telegraphenrechts im 19. Jahrhundert, mit besonderer Berücksichtigung der technischen Entwicklung} (Frankfurt am Main, 1993), p. 53.
\textsuperscript{85} GStA PK I. HA Rep. 77, Tit. 813, Sitzungsprotokoll, 19. Apr. 1855, p. 771.
\textsuperscript{86} Ibid., p. 772.
\textsuperscript{87} See, for instance, BHStA, GDVA 227, ‘Gesuch des Spediteurs Georg Riedel’, 28 Oct. 1856; BHStA, MH 16876, ‘Auszug aus dem Jahresberichte der Kreis- Gewerbs- und Handelskammer von Unterfranken & Aschaffenburg’, 18 Jan. 1856; on the influence of local petitions in the construction of railways, see Green, \textit{Fatherlands}, pp. 246–8.
which pays for 10 to 12 times as many telegrams as a single civil servant requires.\textsuperscript{88} If one discounted the telegraph offices built for administrative purposes, he stated, ‘the number of national-economic and industrial telegraph offices is considerably limited’.\textsuperscript{89} Marquard Adolph Barth, a Progressive, accused the government of judging the ‘importance’ of towns based on the size of their population rather than the extent of their industry and trade.\textsuperscript{90} Why did Bavaria possess stations in Coburg, Meiningen, and Offenbach, Gustav von Lerchenfeld asked meanwhile, when Fürth, Donauwörth and other commercial towns did not?\textsuperscript{91}

Part of the problem was that Bavarian telegraph lines were now part of a much larger, European network of exchanges. As an article in the Neue Münchner Zeitung revealed to the parliamentary representatives in 1855, the very small profit which the network was now generating derived primarily from international traffic—as per the arrangements of the Deutsch-Österreichischer Telegraphen-Verein.\textsuperscript{92} In the agitated geopolitical context of the Crimean War, Bavaria had become a crucial nexus for communication across Europe—to the detriment, it seemed, of domestic exchanges. As Lerchenfeld complained in parliament, ‘we only use the telegraphs to maintain a connection between London and Paris and the Crimea and heaven knows which other external locations’. The income from international traffic, as Ministerial Commissioner Brück explained, would of course fluctuate according to geopolitical circumstances, and so the state now found itself catering to both domestic and foreign demand. Lerchenfeld feared that the state would now be expected to ‘install telegraph offices in all parts of the heavens’.\textsuperscript{93}

A satisfactory compromise was reached in May 1856, on the basis of the very small declared profit.\textsuperscript{94} By this stage, the government had clearly come to accept the priority of economic concerns. Despite the ongoing neglect of the agricultural region of the Oberpfalz and repeated requests from the Pfalz, for instance, Minister-President von der Pfordten insisted upon the need to connect the more commercially significant towns of Fürth, Erlangen, Kaufbeuren, Nördlingen, Donauwörth, and Straubing—all towns situated in the areas bordering Württemberg, the region of ‘decentralized industrial order’ alongside the main commercial route in Bavaria.\textsuperscript{95}

No significant construction work could be carried out, however, without a further grant from parliament—a parliament which, in reaction to the growing power of left-liberals in the lower chamber, the king first suspended in 1856 and

\textsuperscript{88} VKA (1855/6), 22 Nov. 1855, p. 253. \textsuperscript{89} Ibid., p. 253. \textsuperscript{90} Ibid., p. 254.
\textsuperscript{91} VKA (1855/5), 6 May 1856, p. 151.
\textsuperscript{92} Neue Münchner Zeitung, 3 Nov. 1855. ‘International traffic’ included telegrams sent both from or to Bavaria, and those simply ‘in transit’ across the network.
\textsuperscript{93} VKA (1855/5), 6 May 1856, p. 151. \textsuperscript{94} BHStA, MH 16799, Dyck, Erinnerung, 8 Dec. 1855. \textsuperscript{95} BHStA MH 16799, ‘Kostenvoranschlag über die Ergänzung des Telegraphen-Netzes’, 9 Dec. 1855; Herrigel, Industrial Constructions, pp. 33–71.
then dissolved in 1858. The state now had to find a means of extending the service without increasing its expenditure, and so in 1857 the telegraph offices in railway stations, now better equipped to transmit ordinary correspondence, were opened to the public. The Pfalz was initially excluded from the measure, but after repeated complaints from the regional Handelskammer, the local railways were permitted to transmit private correspondence in 1859. In one fell swoop, the number of publicly accessible offices in Bavaria rose from 40 to 145, and the number of telegrams transmitted grew from 128,000 in 1857 to 207,000 in 1859.

Prussia, too, was struggling to cope with the spiralling demand for services across the state, particularly in centres of trade and industry. The twin textile-producing towns of Elberfeld and Barmen, in the Wupper valley of the northern Rhineland, epitomized the ‘two-speed economy’ which the network had created. The establishment of a telegraph office in Elberfeld had been of great benefit to this emerging industrial district, as it had previously possessed no direct means of communicating with the principal nearby waterways—the Rhine and Ruhr. The town’s banking network, which was at the heart of local investments in the railway industry, was also most likely decisive in procuring the service at an early stage. But the inhabitants of nearby Barmen, who relied upon the same networks of trade and production, had not had such luck and were obliged to send their messages through the office in Elberfeld.

Those who had suffered most from this disparity, the trading establishments (Handlungshäuser) of Barmen, presented a petition to the minister of trade, von der Heydt. The minister was himself from a merchant and banking family based in Elberfeld, a connection which had no doubt contributed to the town’s early inclusion in the Prussian network. Time was being lost, the petitioners explained, sending telegrams to and from Barmen by post so that they might be forwarded from Elberfeld’s telegraph station. As a result, ‘the telegrams of competing establishments of this neighbouring town are given such a head start, which, in local transactions, can be extended to our disadvantage’. The petition, containing fifty signatures, analysed the average time lost by telegrams in transit to

---

96 Rall, ‘Die politische Entwicklung’, pp. 243–5.
97 BHStA, MH 16864, ‘Antrag, die Benützung der Bahnbetriebstelegraphen betr.’, 11 June 1857; Rückblick, p. 162.
98 BHStA, GDVA 227, ‘Extract aus dem Jahresbericht der pfälzischen Gewerbs- und Handelskammer’, 6 May 1857; BHStA GDVA 227, ‘Extract aus dem Jahresbericht der pfälzischen Gewerbs- und Handelskammer für 1857’, 13 Apr. 1858; BHStA GDVA 227, ‘Antrag aus dem Jahresberichte der Pfälzischen Gewerbs- und Handelskammer’, 15 Jan. 1859; BHStA GDVA 227, v. Schrenck to HM, 5 May. 1859.
99 Rückblick, p. 253.
100 D. Ziegler, ‘German Private Banks and German Industry, 1830–1938’, in Y. Cassis and P. Cottrell (eds.), The World of Private Banking (Burlington, 2009), p. 161.
101 Stadtarchiv Wuppertal, Q II 15, Vertreter der Handlungshäuser to von der Heydt, 23 Feb. 1856.
102 Ibid.
and from the telegraph office in Elberfeld to Barmen, highlighting the financial cost of being relegated to a slower rhythm of business.¹⁰³

The response from the Prussian government was becoming common policy: a telegraph office could be established in Barmen if some of its inhabitants agreed to underwrite the costs incurred.¹⁰⁴ Forty-five local establishments agreed to provide this guarantee, demonstrating both the perceived necessity of the connection and the state’s acquiescence to a degree of self-management on the part of its production sector in light of the unmanageable growth of the network.¹⁰⁵ Indeed, during the 1850s even those new telegraph offices which were established by the Prussian administration were increasingly only provided with a ‘limited daytime service’ (beschränkter Tagesdienst), reflecting its limited means in dealing with demand.¹⁰⁶

As in Bavaria, in 1858 the Prussian administration also allowed railway telegraph lines to transmit private correspondence, in order to cope with the increased traffic on its lines. The problem was in fact common to most German states: this policy had already been introduced in Saxony in 1853, to compensate for its difficulty in financing the network; it was discussed at a meeting of the DÖTV, and Austria implemented it in 1858.¹⁰⁷ The effect of this measure was double-edged, however. It satisfied some demands, while raising new ones from communities which had seen wires ‘drawn before their eyes’ and increasingly proposed to cover the costs of obtaining the service for themselves.¹⁰⁸

The corollary to this rising demand was the stimulation, through forward and backward linkages, of numerous branches of industry. The construction of telegraph lines involved the production of apparatuses, iron and copper wires, insulators, and the wooden—later metal—poles on which to hang them. The potential benefit to regional industries was evident, and the Bavarian parliament initially insisted that these products be locally sourced.¹⁰⁹ Wires were ordered from manufacturers both near Nuremberg and in Ixheim, in the Pfalz, while the porcelain manufacture in Nymphenburg provided insulators.¹¹⁰ In Prussia, Siemens & Halske’s newly established workshop had specialized from the outset in apparatuses and cables, but across Germany craftsmen and manufacturers

¹⁰³ Ibid. ¹⁰⁴ Wessel, *Entwicklung des Nachrichtenwesens*, p. 174.
¹⁰⁵ Stadtarchiv Wuppertal, Q II 15, Auszug aus dem Protokoll des Gemeinderaths von Barmen, 15 Apr. 1856.
¹⁰⁶ See the announcements from Heydt regarding the opening of telegraph stations over the years, in GStA PK, I. HA Rep. 77, Tit. 813.
¹⁰⁷ Reindl, *Der Deutsch-Österreichischer Telegraphenverein*, pp. 130–4; Landesarchiv NRW Abteilung Rheinland, BR 0005, Nr. 1534, Minn to Oberpräsident von Kleist-Retzow zu Coblenz, 14 Aug. 1858.
¹⁰⁸ BHStA, MH 16902, Jahresbericht der Kreis- G und HK von Oberpfalz und Regensburg für 1859, p. 21; see, for instance, the request from the Handelsrat in Marktbreit: BHStA, MH 16876, Handelsrat Marktbreit to HM, 19 May 1858.
¹⁰⁹ BHStA MH, 5 July 1850, Finanzminister.
¹¹⁰ BHStA GD der VA 228, GD der VA to Telegraphenamt, 20 Dec. 1861.
turned their skills to the production of new materials.¹¹¹ Among the most important was the rope manufacturing firm of Felten & Guilleaume in Cologne, which swapped hemp for metal as it derived a growing proportion of business from the production of cables and wires.¹¹² Initially dependent upon foreign imports, by the 1850s the German wire industry had become self-sufficient.¹¹³

This transformation was by no means linear, however, shifting with the technology and demands of the market. Siemens initially monopolized the construction of the Prussian state’s telegraph lines, but found that his own invention, the Zeigertelegraph, had been superseded and his workshop switched to the production of Morse, later Hughes, apparatuses. These were uncertain times for Siemens’s business, particularly when the insulation on his underground cables deteriorated, lines were damaged, and the Prussian government cancelled their contracts with him in 1851, allowing other Berlin-based firms to step into the breach. This crisis turned into opportunity, in fact, as Siemens was asked to build the new Russian imperial telegraph network, before turning his attention to Germany once again after a few years.¹¹⁴

After the fiasco with Siemens’s underground cables, most German states and railways decided to build their lines with overhead wires, but the incident also shone the spotlight on the broader entanglements of the industry. The insulation for Siemens’s wires had been made from gutta-percha, now a generally forgotten substance similar to rubber that was extracted from trees in South East Asia. When prepared correctly, gutta-percha proved an ideal insulator for submarine cables, in particular, but its production was monopolized by a British company with imperial connections—Siemens had in fact first obtained a sample of the substance through his brother Wilhelm in London. Over the following decades, demand for the material would soar along with the construction of telegraph cables across the globe, as well as the decision to bury overhead wires into the ground once again. This was a dependency from which Germany could not extricate itself unless, it was hoped, an alternative source was found in colonies of its own.¹¹⁵

* * *

Back home, despite the growing chorus of anxious demands from different communities and the increasing volume of traffic over the network as a whole, statistics suggested that average local usage was remarkably low. Pfordten informed the Bavarian parliament that the offices opened between 1852 and

¹¹¹ Wessel, Entwicklung des Nachrichtenwesens, pp. 207–44.
¹¹² H. Vogt, Die Überseebeziehungen von Felten & Guilleaume (1874–1914) (Stuttgart, 1979), pp. 12–16.
¹¹³ L. Hatzfeld, Der Anfang der Deutschen Drahtindustrie’, Tradition: Zeitschrift für Firmengeschichte und Unternehmerbiographie, vol. 6, no. 6 (Dec. 1961), p. 250.
¹¹⁴ W. Kirchner, ‘The Industrialization of Russia and the Siemens Firm, 1853–1890’, Jahrbücher für Geschichte Osteuropas, vol. 22, no. 3 (1974), pp. 321–57.
¹¹⁵ H. Godfrey, Submarine Telegraphy and the Hunt for Gutta-Percha (Leiden, 2018).
1854 had received on average only 334 paid telegrams per year, a ‘so noticeably small number, that one should bear in mind when it is claimed that one need only build more stations to ensure profitability’¹¹⁶ Experience began to show that even the stations spotlighted in the parliamentary debates had failed to cover their costs.¹¹⁷ As the director of the Telegraphenamt Carl von Dyck explained, in these places ‘only few, individual tradespeople or manufacturers might have an interest in using the telegraph here and there’.¹¹⁸

Statistics, where they are available or can be inferred at a local level, appear to confirm this observation. In its second year of service, for instance, the telegraph office in Nuremberg had been handed only 262 private telegrams, fewer than one per day.¹¹⁹ In Kaufbeuren, where the service had been vigorously requested, only forty-eight private telegrams were sent over a period of three months in 1857.¹²⁰ Even in industrious Augsburg, towards the end of the decade, an average of eight private messages per day were handed in for transmission, a number, it was reported, which ‘fully occupies neither a telegraphist nor a messenger’.¹²¹

Carl von Dyck’s observation was therefore particularly revealing. The state had progressively acceded to the demands emanating from its commercial centres, but the requests to which it had been responding were those of a vocal minority. From a distance, the authorities beheld the spectacle of a pulsating, growing network, but it was beating to the rhythm of a privileged social stratum. Throughout Germany and Europe, the wiring of towns, regions, and states was primarily enhancing the support structure of a business community (see Figure 4.1).

4.4 The Telegraphic Sphere

The small class of individuals who were first drawn to the telegraph included news agents, newspaper editors, bankers, merchants, and, to a lesser extent, local manufacturers, whose business practices already relied upon long-distance communication. Statistics on the proportion of traffic generated by each group are sparse, but in Prussia, 45 per cent of the roughly 218,000 private telegrams sent in 1857 were ‘trade’ or ‘business’ telegrams; roughly 29 per cent were classed as ‘Börsen-Depeschen’ (stock exchange telegrams); a further 4 per cent were newspaper telegrams; and under 25 per cent were ‘family’-related.¹²² As these figures suggest, although commercial users of the telegraph represented only a small

¹¹⁶ VKA (1855/6), 22 Nov. 1855, p. 256.
¹¹⁷ BHStA, GDVA 227, ‘Erinnerung des Telegraphenamts-Vorstands’, 4 Mar. 1858.
¹¹⁸ BHStA, GDVA 227, ‘Erinnerung des Telegraphenamts-Vorstands’, 4 Mar. 1858.
¹¹⁹ K. Wiesemeyer, ‘Die Post als Verkehrsträger’, in G. Hirschmann and W. Schultheiss (eds.), Verkehrsentwicklung Nürnbergs im 19. Und 20. Jahrhundert (Nuremberg, 1972), pp. 298–301.
¹²⁰ 5 Oct. 1857, Telegraphen-Station Kaufbeuren to Telegraphenamt, BHStA GD der VA 197.
¹²¹ BHStA, MH 16882, GDVA to HM, 21 May 1859.
¹²² Reindl, Der Deutsch-Österreichischer Telegraphenverein, p. 286.
proportion of each town’s population, they dominated traffic on the network as a whole. These were the individuals for whom exclusion from the network bore the most severe consequences, and who were particularly vocal in advocating its introduction as a result.

They were also among the minority of the population who could afford what remained, in these years, a luxury. In the first year of the network’s operation, for instance, a twenty-word telegram sent from Berlin to Hamburg was charged at a rate of 2 haler and 30 Silbergroschen, higher than the average weekly earnings of a worker employed in the crafts or industry.¹²³ Indeed, only a few wealthy individuals were likely at this stage to make use of the technology for purely personal reasons. Telegraph offices were called for in popular but exclusive holiday destinations during the 1850s, such as Bad Kissingen or Bad Reichenhall, and the technology enabled the aristocracy to keep track of their peregrinations.¹²⁴ These were the circles which could afford to make the technology a part of

---

¹²³ Ibid., pp. 70–1.
¹²⁴ BHStA GDVA 227, MIInn to MA, 17 Nov. 1856.
everyday practice, as when Duchess Alexandrine of Coburg messaged her husband from Frankfurt to announce that she had ‘finally arrived. Very tired. Will leave again at 12.’

4.4.1 News and Public Opinion

The telegraph’s utility to the press was immediately evident. As early as December 1848, Robert Graßmann, editor of the Norddeutsche Zeitung in Stettin, had requested permission to establish his own private line to Berlin. "The distribution of a daily paper depends principally and almost solely upon the speed (of news) and reliability of its messages. If a new means can be obtained, through which political news can be transmitted sooner than for other daily papers, then one will dominate the entire daily press, and no paper will be in a position to compete."

As Graßmann’s request suggested, the technology could shift the balance of power between newspapers and, by extension, shape public opinion. Emphasizing his credentials as a ‘conservative man’, Graßmann proposed to rent and manage a telegraph line between Berlin and Stettin, which he would use to transmit news to private individuals, always prioritizing the information and views provided by the government. By obtaining news twenty-four hours ahead of his competitors in the province, the editor promised that his newspaper, and therefore also the government’s perspective on current affairs, would soon come to dominate the local press. Trade Minister von der Heydt, however, considered such an arrangement unacceptable, on the one hand because the state should not relinquish control over its network to a private citizen, and, crucially, on the other because ‘the opposing party would, quite legitimately, raise the most vivid protests against such a demonstration of favour’.

Heydt’s opposition to such overt control of the press represented a major shift in government attitudes towards public opinion. A number of historians have now shown that the ‘reactionary’ policies of the 1850s, while going some way to counteract the freedom of the press introduced during the 1848 revolutions, were aimed at influencing, rather than controlling, public opinion—the Vormärz era of censorship, particularly pre-publication censorship, was definitively over. In this regard, the telegraph presented both a challenge and an opportunity for governments, both enabling the rapid dissemination of potentially

125 BHStA, GDVA 680, Telegram from Frankfurt to Coburg, 8 Sept. 1858.
126 GStA PK, I. HA Rep. 77, Tit. 813, Bd. 1, Robert Graßmann to MInn, 16 Jan. 1849.
127 Ibid.
128 GStA PK, I. HA Rep. 77, Tit. 813, Bd. 1, Heydt to Manteuffel, 25 Jan. 1849.
129 Green, Fatherlands, p. 148; see also K. Koszyk, Deutsche Presse im 19. Jahrhundert (2vols., Berlin, 1966); R. Kohnen, Pressepolitik des Deutschen Bundes: Methoden staatlicher Pressepolitik nach der Revolution von 1848 (Tübingen, 1995); Ross, Beyond the Barricades.
'harmful' news and providing a tool to more efficiently monitor the evolution of public opinion.

In a number of German states, new government departments were established to help produce articles, subsidize newspapers, and infiltrate editorial boards with a view to shaping the distribution of news as surreptitiously as possible. The most effective—and best endowed—of these were the Centralstelle für Pressangelegenheiten (often referred to by its former appellation, the Literarisches Kabinett) in Prussia, and the Presseleitungskomitee in Austria.¹³⁰ There were similar efforts to influence the press in Bavaria, Saxony, and Württemberg, though the means at these governments’ disposal were more limited.¹³¹

Prussian Minister-President Otto von Manteuffel soon made the telegraph a central component of the information-gathering and distribution network centred on the Literarisches Kabinett. In 1850 he asked the presidents of all regional governments to report daily to the minister of the interior on the state of the local press and, conversely, to deliver the latest political news to selected newspapers. The aim, he explained, was ‘to put the governmental press in a position always to distribute the latest political news and to act against the diffusion of false rumours through other papers’.¹³² The policy was not without its issues, however, and led to conflicts within the administration itself. Von der Heydt, for one, was not pleased with Manteuffel’s decision to consider telegrams sent for these purposes free of charge.¹³³

Very quickly, however, many independent papers joined the race for the receipt and transmission of the latest news. The Kölnische Zeitung published its first telegrams on 5 October, with recent news from Vienna in particular.¹³⁴ In Berlin, one of the first editors to introduce the practice was Bernhard Wolff, whose newly established liberal National-Zeitung first promised its readers daily telegraphic updates in November 1849.¹³⁵ The Allgemeine Zeitung, a leading German newspaper published in Augsburg, took the initiative in Bavaria. Before the first line between Munich and Salzburg had even been completed, its subsidiary in the Bavarian capital wrote to the telegraph administration requesting a monthly subscription for regular updates on the course of the Vienna stock exchange.¹³⁶ Within a year, the Allgemeine Zeitung was also receiving regular news on the

¹³⁰ Kohnen, Pressepolitik; on the attitudes of the Austrian government to the press, see E. Dörrfler and W. Pensold, Die Macht der Nachricht: Die Geschichte der Nachrichtenagenturen in Österreich (Vienna, 2001).
¹³¹ Green, Fatherlands, pp. 148–88; Hanisch, Für Fürst und Vaterland, esp. pp. 304–20.
¹³² GStA PK I. HA Rep. 77, Tit. 813, Bd. 1, MInn to Oberpräsident von Schlesien, 11 Apr. 1850.
¹³³ GStA PK I. HA Rep. 77, Tit. 813, Bd. 1, Heydt to Manteuffel, 20 Mar. 1850.
¹³⁴ F. Fuchs, Telegraphische Nachrichtenbüros: Eine Untersuchung über die Probleme des internationalen Nachrichtenwesens (Berlin, 1919), p. 39.
¹³⁵ D. Basse, Wolffs Telegraphisches Bureau 1849 bis 1933: Agenturpublizistik zwischen Politik und Wirtschaft (Munich, 1991), p. 17.
¹³⁶ BHStA, GDVA 673, J.G. Cotta’sche Buchhandlung to Telegraphenamt, 11 Jan. 1850.
stock market from an agent in Frankfurt. Further north, within a day of the telegraph’s inauguration in Nuremberg the editors of the Korrespondent von und für Deutschland placed a request for a similar subscription.

Besides stock prices, news reports also began to be exchanged telegraphically. Days after the Munich–Salzburg line’s inauguration, the Allgemeine Zeitung began to obtain such reports from Vienna. Further evidence suggests that the newspaper also made use of the telegraph offices in Aschaffenburg and Hof, presumably to receive news from correspondents in Frankfurt and Leipzig, respectively, or perhaps even Berlin. In Würzburg, meanwhile, the Neue Würzburger Zeitung asked the administration for a reduction in tariff as it expected to receive telegrams of up to 100 words on a daily basis. Notwithstanding the government’s efforts to influence public opinion, therefore, state and society had come to share one and the same network of information circulation.

While individual newspapers could seek arrangements with state telegraph administrations, the cost of employing permanent correspondents in a variety of locations and requiring them to transmit reports by telegraph remained relatively prohibitive. Following the example of Charles Havas in Paris, therefore, in 1849 the owner of the National-Zeitung, Bernhard Wolff, began to sell the news he obtained telegraphically to other individuals and newspapers, thereby offsetting the costs incurred. This arrangement was eventually formalized, and Wolffs Telegraphisches Büro was established. By collecting information and redistributing it to a number of regular subscribers, the costs of the telegraphic transmission were more easily offset.

During the 1850s, similar news agencies were formed across Germany, constituting nodes in a network of information distribution to which newspapers and individuals could themselves connect. Among the first was Reuters, initially established in Aachen (before moving to London), which collected news from the French and Belgian networks and transmitted it to German lines. Others included Bösmann’s in Bremen, Wagner’s Correspondenzbureau in Frankfurt, the Süddeutsches Correspondenzbureau und Correspondenzbureau Hoffmann in Munich, and Erwin Treiber’s Telegraphen-Agentur Süddeutsches Correspondenzbureau in Stuttgart.

¹³⁷ BHStA, GDVA 673, Literarisch-artistische Anstalt der J.G. Cotta’schen Buchhandlung to HM, 9 Dec. 1850.
¹³⁸ BHStA, GDVA 673, Institut des Correspondenten to Handelsministerium, 11 June 1850.
¹³⁹ BHStA, GDVA 673, J.G. Cotta’sche Buchhandlung to Telegraphenamt, 20 Jan. 1850.
¹⁴⁰ BHStA, GDVA 673, Dyck to Telegraphen-Station Hof, 15 July 1850; BHStA, GDVA 673, Expedition der Allgemeine Zeitung to Telegraphenanamt, 19 Oct. 1850.
¹⁴¹ BHStA, GDVA 673, Verlegerin der Neuen Würzburger Zeitung to Telegraphenamt, 28 Oct. 1850.
¹⁴² Basse, Wolffs Telegraphisches Büro, pp. 17–18.
¹⁴³ Fuchs, Telegraphische Nachrichtenbüros, pp. 72–96; see also C. Wunderlich, ‘Telegraphische Nachrichtenbureaus in Deutschland bis zum Ersten Weltkrieg’, in J. Wilke (ed.) Teleographenbüros und Nachrichtenagenturen in Deutschland (Munich, 1991), pp. 23–85.
News agencies represented a new force in the shaping of public opinion and a new challenge for governments as a result. The success of an individual establishment depended upon the extent of its connections, the diversity of the news it obtained, the speed and reliability with which it was distributed, as well as a circle of regular, committed subscribers who constituted the principal source of income. Despite the range of agencies which emerged across Germany during the 1850s, therefore, the monopolistic tendency of the business slowly became clear. When a group of businessmen attempted to establish an independent news agency in Berlin in 1854, for instance, they were almost immediately forced to shut down operations due to competition with Wolff’s.¹⁴⁴

Indeed, by the late 1850s Wolff had established offices in Paris, London, Vienna, Hamburg, and Frankfurt, and, as will be explored in the following chapter, his agency was soon to dominate the distribution of news across Germany. In 1856, the agency first discussed the possibility of sharing stock market news with its major European counterparts, Havas in Paris and Reuters in London, and in 1859 the three firms signed the first in a series of formal agreements that established a European news cartel.¹⁴⁵ On the basis of the 1859 agreement, each agency was guaranteed a monopoly over the collection and distribution of information within its home country, but all telegrams were to be exchanged between the three firms free of charge. At this stage, Wolff’s regional monopoly was still limited—Havas reserved the right, for instance, to send news to Augsburg, Stuttgart, Würzburg, and Vienna—but a ‘national’ press sphere had begun to emerge, within which a single source threatened to dominate the distribution of information.

This fact was not lost on the Prussian authorities, in particular. As early as 1850, the police president in Berlin had reached an arrangement with Wolff which reflected the government’s efforts to influence the press. Wolff agreed to moderate the liberal views expressed in the National-Zeitung in exchange for news from the ministry of the interior.¹⁴⁶ After 1852, and until 1869, relations between the government and Wolffs then became rather more informal. But the importance which the authorities attributed to Wolff’s influence was demonstrated in 1857, when a certain Eli Samter proposed to establish another news agency in Berlin. Competition in this industry, an official stated, could be ‘damaging’, in that it encouraged rivals to publish their news first, ‘without taking the time, as duty imposes, to read the information whose further distribution could be of detriment to the government, or cause mischief among the public, and to subject it to

¹⁴⁴ GStA PK, III. HA Ministerium der auswärtigen Angelegenheiten II, Nr. 8117, Untitled document, Aug. 1857.
¹⁴⁵ A. Nalbach, “‘Poisoned at the Source’? Telegraphic News Services and Big Business in the Nineteenth Century”, Business History Review, vol. 77, no. 4 (2003), pp. 577–610.
¹⁴⁶ Ross, Beyond the Barricades, p. 190.
verification by a competent institution’.\textsuperscript{147} Wolff’s agency, on the other hand, had given adequate proof that it wrote its telegrams ‘in keeping with Prussian interests’.\textsuperscript{148} Wolff’s influence on the interpretation of news was to become increasingly significant during and after the Crimean War, when the telegraph allowed Germans to follow in ‘real time’ the evolution of major geopolitical conflagrations.

Wolff’s monopoly was as yet uncertain, however, and newspapers across Germany appear to have continuously relied, where financially possible, upon their own correspondents in the field. In fact, newspapers such as the \textit{Vossische Zeitung}, which had direct connections to Wolffs, continued to do so through to 1919.\textsuperscript{149} Moreover, as long as it remained costly and technically cumbersome to exchange lengthy messages, the greater part of the news reported telegraphically was the daily run of stock prices. Even in Berlin, Wolffs’ primary function remained the distribution of financial information to its subscribers.\textsuperscript{150} News agencies and newspapers had begun by plugging into the circulation of information upon which the business community depended, and they served as a further outlet for its distribution.

\subsection*{4.4.2 Business and Finance}

The acceleration of information distribution both fuelled and inflected an ongoing transformation in the world of finance. The securities market in German-speaking Central Europe had received an impetus in the early nineteenth century with the trade in state bonds, in particular. After the Napoleonic Wars, Vienna and Frankfurt am Main, in particular, had established themselves as major centres of finance, but the progressive repayment of government debts and the emergence of the railway industry in the 1840s had stimulated a diversification in the stock market. Shares in companies were increasingly traded in smaller hubs such as Berlin, and, as Robert Radu has demonstrated, new practices had emerged which allowed a broader public to receive information on prices at different stock exchanges. Ever more regular \textit{‘Kursberichte’} had begun to circulate, allowing individuals to speculate on the market without depending upon brokers or bankers in the know.\textsuperscript{151} The introduction of the telegraph was to accelerate these developments, allowing both for the concentration of capital in existing

\textsuperscript{147} GStA PK, III. HA Ministerium der auswärtigen Angelegenheiten II, Nr. 8117, Untitled document, Aug. 1857.
\textsuperscript{148} Ibid.
\textsuperscript{149} J. Wilke, ‘Die telegraphischen Depeschen des Wolff’schen Telegraphischen Büros (WTB)’, \textit{Publizistik}, vol. 49, no. 2 (June 2004), pp. 125–51.
\textsuperscript{150} Ibid.
\textsuperscript{151} R. Gömmel, Entstehung und Entwicklung der Effektenbörse im 19. Jahrhundert bis 1914’, in \textit{Deutsche Börsengeschichte}, ed. H. Pohl (Frankfurt, 1992), pp. 135–210; R. Radu, \textit{Auguren des Geldes: Eine Kulturgeschichte des Finanzjournalismus in Deutschland, 1850–1914} (Göttingen, 2017).
centres of finance and for promoting the diversification and decentralization that characterized the German market.

The *Allgemeine Zeitung* became a crucial node in local and interstate banking and trading networks. In 1851, the banker Heinzelmann in Augsburg explained that the newspaper received the Vienna exchange rates every day between 1 p.m. and 2 p.m., and distributed them to all exchange houses in the town between 3 p.m. and 4 p.m. The benefits of this information were recognized across the border in Württemberg, where Heinzelmann’s colleagues Gebrüder Benedict, bankers in Stuttgart, asked to be included in the news-sharing arrangement.¹ Catering to changing investment practices, the *Allgemeine Zeitung* requested different stock listings from Vienna, swapping updates on Hofkammer bonds for railway shares, Vienna Bank shares, and the exchange rate of silver in 1850, for instance.¹² Within a couple of years, the editors were pressurizing the Bavarian government to establish a direct connection to Frankfurt.¹³ News agencies and newspapers were thus links in a chain connecting bankers within and beyond individual states, thickening the network of individuals drawn into the world of finance. They did so in conjunction with a raft of new journals offering both news and advice on the stock market, including the *Berliner Börsen-Zeitung* (1855) and the *Frankfurter Handels-Zeitung* (1856).¹⁴

In the *Allgemeine Zeitung*’s home base of Augsburg, the telegraph provided an opportunity to reposition the town on international financial markets. After the end of the Napoleonic Wars, Augsburg’s bankers, too, had primarily traded in government debts but had struggled to adapt to the changing financial environment. The situation had worsened when the Bavarian king Ludwig I had chosen to establish the Bayerische Hypotheken- und Wechselbank—exceptionally, as a joint-stock bank—in Munich rather than Augsburg, in 1834.¹⁵ Now, Augsburg’s elite were given an opportunity to recover the town’s status as a second-tier financial centre. One of the town’s principal bankers, Paul von Stetten, for instance, acted as an intermediary between the Königlich Württembergische Hofbank and the Bavarian telegraph administration, requesting stock market updates on behalf of his colleagues.¹⁶ The aforementioned Heinzelmann, meanwhile, proposed to establish a weekly subscription to stock market updates, which would be exchanged between Vienna, Augsburg, and Stuttgart.¹⁷ Both von Stetten and Heinzelmann were leading figures in the local protestant elite, whose capital

¹² BHStA, GDVA 673, Banquier Heinzelmann to Telegraphenamt, 2 June 1851.
¹³ BHStA, GDVA 673, Literarisch-artistiche Anstalt der Cotta’sche Buchhandlung to Telegraphenamt, 17 July 1852; BHStA, GDVA 673, Literarisch-artistiche Anstalt der Cotta’sche Buchhandlung to Telegraphenamt, 28 Jan. 1856.
¹⁴ BHStA, GDVA 673, Expedition der Allgemeine Zeitung to Telegraphenamt, 23 Oct. 1852.
¹⁵ Radu, *Auguren des Geldes*, p. 61.
¹⁶ F. Möller, *Bürgerliche Herrschaft in Augsburg, 1790–1880* (Munich, 1998), pp. 137–50.
¹⁷ BHStA, GDVA 673, Paul von Stetten to Telegraphenamt, 5 July 1851.
¹⁸ BHStA, GDVA 673, Heinzelmann to Telegraphenamt, 2 June 1851.
had supported the early stages of industrialization in Augsburg by investing in the Munich–Augsburg railway line, and large mechanized textile manufactures.¹⁵⁹ Now, the telegraph allowed them to take part in a larger, changing investment market.

The Bavarian network did not initially provide a direct connection to Frankfurt, and the telegraph office which opened in Hanau in 1852 became its closest link to the city. Immediately, one of Frankfurt’s leading bankers, Andreas Grunelius, warned the new telegraph station that it would ‘often’ be receiving telegrams from his correspondent in Vienna, via an agent in Munich, and asked that they be forwarded from Hanau to Frankfurt ‘by railway, or if necessary, immediately by express post’.¹⁶⁰ Another member of Frankfurt’s banking elite, Benedikt Hayum Goldschmidt, meanwhile, was sent a complimentary overview of the DÖTV’s state lines, as the person who, through the station in Hanau, had ‘used the Bavarian state lines and those of the DÖTV the most for his extensive private correspondence’.¹⁶¹ The telegraph administration’s dependence upon these users was highlighted when its director, Carl von Dyck, emphasized that ‘one should always favourably accommodate the depositors of telegrams, and in particular those trading houses which often use the state telegraph for their correspondence, and show them the greatest facilitation’.¹⁶²

Outside these hubs, a broad constellation of individuals emerged who similarly relied on telegraphic news of price fluctuations. The Hypotheken- und Wechselbank and the banker Salomon Rau in Munich, the merchants Roth & Sohn in Meiningen, and the banker Frank Hirsch in Landau, for instance, all sought to establish subscriptions with the telegraph administration for regular updates on the Vienna and Frankfurt stock exchanges.¹⁶³ Similar subscriptions were negotiated with larger representative bodies, such as the Handels-Gremium in Munich, the Handelskammer in Frankfurt, and the Handelsvorstand in Würzburg, illustrating the broader business community’s growing attentiveness to the vagaries of the stock market.¹⁶⁴ The Landshuter Zeitung, meanwhile, requested a weekly update on cereal prices, hinting at the growing dependency of producers and merchants in agricultural regions upon cycles of supply and demand in other markets.¹⁶⁵ There were also more spontaneous, sporadic users of the telegraph, whose presence is often revealed by their complaints to the

¹⁵⁹ Möller, Bürgerliche Herrschaft, pp. 148–50.
¹⁶⁰ BHStA, GDVA 673, Grunelius to Telegraphenbureau Hanau, 17 Apr. 1852.
¹⁶¹ BHStA, GDVA 673, Dyck to Banquier B. H. Goldschmidt, 4 Mar. 1852.
¹⁶² BHStA, GDVA 673, Dyck to Telegraphenstation Hanau, 17 May 1852.
¹⁶³ BHStA, GDVA 673, Dyck to Handelskammer Frankfurt, 27 Oct. 1854; BHStA, GDVA 673, Handels-Vorstand Würzburg to Telegrafenamt Würzburg, 19 Dec. 1854; BHStA, GDVA 673, Telegrafenamt to Banquier Rau, 5 Mar. 1856; BHStA, GDVA 673 Kaufmann Roth & Sohn to Telegrafenamt, 28 Jan. 1856.
¹⁶⁴ BHStA, GDVA 673, Dyck to Cotta’sche Buchhandlung, 9 Feb. 1851.
¹⁶⁵ BHStA GDVA 673, Expedition der Landshuter Zeitung to Telegrafenamt, 18 Dec. 1854.
administration. These range from a Bayreuth-based merchant, to the Main-Dampfschiffahrts-Gesellschaft, which sent around thirty telegrams per year.¹⁶⁶

Mirroring their effect upon industry, telegraph networks thus both strengthened existing structures of finance and reconfigured its extensions. Frankfurt’s ‘Effectensocietät’ had long depended upon methods of enhanced communication—such as a pigeon-carrier service to Madrid and Paris—and the telegraph built upon such channels.¹⁶⁷ Many of the names which appear in the sources as early users of the technology, meanwhile, from Gebrüder Benedikt to B. H. Goldschmidt and Salomon Rau, also hint at the significance of networks of communication within the elite of the Jewish community which had long enabled them to mobilize financial resources.¹⁶⁸ The point should not be overemphasized, however, as many other private bankers clearly depended upon similar means.¹⁶⁹ Elsewhere, on the other hand, stock exchanges would only appear later, once the technology had been introduced—in Dresden in 1857, Stuttgart in 1860, and Düsseldorf in 1874.¹⁷⁰

Indeed, the telegraph maintained and enhanced the decentralized structure of financial markets in Germany.¹⁷¹ Unlike in Britain and France, a ‘merchant banking’ centre such as Hamburg was placed alongside Frankfurt, which specialized in trading government debt, as well as Vienna, Berlin, and Munich, where railway shares were favoured, while Augsburg, which had shown little interest in securities trading, now functioned as a junction between southern financial hubs. The modern framework of communication provided by the telegraph network could thus give renewed vigour to traditional areas of investment—Frankfurt’s connectedness enabled it to profit from the American Civil War, for instance, having been chosen as the market for the listing of the Northern States’ bonds.¹⁷²

The telegraph’s first major effect was thus to transform, though not necessarily to revolutionize, finance and trade. In conjunction with the press, the technology allowed the prices of stocks and merchandise to be distributed more widely and with greater regularity across Germany, and indeed beyond. The influence of financial markets was thus extended and business practices arguably democratized, as information circulated to a broader audience. But it also established and strengthened connections between old and new centres of finance, between ‘traditional’ private banking and ‘modern’ stock trading. Indeed, despite the

¹⁶⁶ BHStA, GDVA 673, J. N. Oberndörffer to Handelsministerium, 25 Feb. 1850; BHStA, GDVA 673, Telegraphen-Station Würzburg to Telegraphenamt, 29 Sept. 1852.
¹⁶⁷ C.-L. Holtfrerich, Frankfurt as a Financial Centre: From Medieval Fair to European Banking Centre (Munich, 1999), p. 161.
¹⁶⁸ Seigel, Modernity and Bourgeois Life, pp. 376–410; see also W. Mosse, Jews in the German Economy: The German-Jewish Economic Elite, 1820–1935 (Oxford, 1987), pp. 34–68; G. Kurgan-van-Hentenryk, ‘Jewish Private Banks’, in Cassis and Cottrell (eds.), The World of Private Banking (Burlington, 2009), pp. 213–30.
¹⁶⁹ See, for example, M. Körner, ‘Protestant Banking’, in Cassis and Cottrell (eds.), The World of Private Banking (Burlington, 2009), pp. 231–46.
¹⁷⁰ R. Michie, The Global Securities Market: A History (Oxford, 2006), p. 96.
¹⁷¹ Holtfrerich, Frankfurt as a Financial Centre, p. 148.
influence of new practices, the period 1830–80 has been described as the ‘heyday’ of private banking. Its perceived impact, however, was more ominous. The Prussian government was concerned, for instance, that allowing the construction of private telegraph lines would ‘throw the gates wide open to harmful stock market games’. Whether or not the fear was justified, it served as a reminder that the state had an important regulatory role to play in an increasingly liberal but connected economy.

4.4.3 Rhythms of Communication

The business community’s use of the telegraph was fuelled by and in turn accentuated its dependency upon the timely and reliable receipt of information. From the outset, news distributors, bankers, and chambers of commerce sought to establish ‘Abonnements’, or subscriptions, with telegraph administrations in order to ensure a regular influx of specific types of news. The subscription model had been exemplified in Hamburg and Bremen in the 1840s, where a regular service was introduced announcing the arrivals and departures of ships further downstream in Bremerhaven and Cuxhaven—initially, by semaphore. Local merchants and shipowners paid a monthly or yearly fee to receive this information, which was often delivered to the city’s Börse.

The telegraph encouraged the standardization of such practices across Germany. Announcements and stock prices received by telegraph were displayed at exchanges, where businessmen congregated and increasingly expected updates from other markets at particular times. Only in 1851, after the introduction of the telegraph, for instance, did the Frankfurt Effectensocietät begin to provide an official listing of stock prices to be transmitted to other markets. Telegraph administrations, meanwhile, urged their customers to use standardized tables, or ‘Blanquette’ when communicating such information. It was thus also the need for speed and ease in transmission that fuelled the rationalization and integration of financial markets.

The synchronization of commercial activities within these privileged circles required a process of adjustment, however. Delays in the receipt of information could render a transaction redundant if the stock market on which it was to take place had closed, or if prices had by then significantly shifted. The Augsburg banker Heinzelmann, for instance, wrote to the telegraph administration to

---

173 D. Ziegler, ‘German Private Banks and German Industry, 1830–1938’, in Y. Cassis and P. Cottrell (eds.), *The World of Private Banking* (Burlington, 2009), pp. 159–76.
174 GStA PK I. HA Rep. 77, Tit. 813, Heydt to Westphalen, 28 Nov. 1854.
175 See Chapter 2, p. 59.
176 Holtfrerich, *Frankfurt as a Financial Centre*, p. 161; BHStA GDVA 673, Telegraphenamt to Banquier Heinzelmann, 3 June 1851.
inquire whether they might send the exchange rates which he received through the *Allgemeine Zeitung* to his colleagues in Stuttgart directly. Otherwise, he would have to forward them himself by depositing them once again at the telegraph office: ‘it would be 4pm or 5pm before the telegraph office here receives our telegram, and its content would reach Messrs Gebrüder Benedict so late that they could not achieve their purpose’.¹⁷⁷ Similarly, when the *Landshuter Zeitung* asked for weekly notices on cereal prices, it was insisted that they should not be sent if they would arrive after 5 p.m., at which point they had lost all value.¹⁷⁸ Business was increasingly dominated by the tempo of communication across the telegraph network, and falling out of sync came at a price.

The extension of business hours and the acceleration of trading cycles began to interfere with other long-established social rhythms too. In Frankfurt, when a telegram was ‘handed to the Israelite banking house E.M. Vrane on Friday… at 7:50 pm, after the Sabbath had begun’, the addressee refused to sign the delivery receipt because it was ‘forbidden by his religious statutes’, and asked that it be brought to him after 9 p.m. on Saturday.¹⁷⁹ As the local chief engineer pointed out, this was often the response among Jewish bankers, namely the Rothschilds, Grunelius, Goldschmidt, and Weiller.¹⁸⁰ Only since the early nineteenth century had the Jews of Frankfurt been allowed to engage in commodity and loan trading, and this particular issue arose in 1854, the year in which Jews were finally granted full political rights by the city. The observation suggests some of the ‘modern’ pressures being exerted upon the community to adapt to the city’s secularizing schedules.¹⁸¹

Across the network itself, distinctions soon emerged between the speeds of communication enjoyed by users in different locations, particularly when the volume of traffic on the lines was high. This was demonstrated during the Crimean War, when political leaders communicated with commanders on the battleground, journalists visited and reported on the conflict, and Russia’s telegraph network was expanded.¹⁸² With business, news, and diplomatic exchanges competing for bandwidth along the same wires, traffic began to jam the rather limited lines traversing the European continent, and state and society engaged in a battle over time. Newspaper editors were informed that their connection would suffer delays because of ‘the extraordinary piling up of telegraphic correspondence, due to political circumstances, not only from the government but also private telegrams on the line from Vienna, through Munich… to Paris’.¹⁸³

¹⁷⁷ BHStA, GDVA 673, Banquier Heinzelmann to Telegraphenamt, 2 June 1851.
¹⁷⁸ BHStA GDVA 673, Expedition der Landshuter Zeitung to Telegraphenamt, 18 Dec. 1854.
¹⁷⁹ BHStA, GDVA 673, Telegraphen-Station Frankfurt to Telegraphenamt, 4 May 1854.
¹⁸⁰ Ibid., note from engineer Saifert.
¹⁸¹ Holtfrerich, *Frankfurt as a Financial Centre*, p. 120.
¹⁸² Nickles, *Under the Wire*, p. 33; R. H. Davison, ‘The Advent of the Electric Telegraph in the Ottoman Empire’, in R. H. Davison (ed.), *Essays in Ottoman and Turkish History, 1774–1923: The Impact of the West* (London, 1990), pp. 133–65.
¹⁸³ BHStA, GDVA 673, Dyck to Redaktion der Pfälzer Zeitung, 9 Apr. 1854.
When the Frankfurt Handelskammer complained that news of the Vienna exchange rates was arriving late, it was explained that traffic along the Munich–Vienna line ‘upon which at this time the entire oriental correspondence to France and England, and vice versa to the Orient, is moving at a rate of a few hundred telegrams a day’.¹⁸⁴

Friction between the administration and its principal customers derived not only from the inconvenience of the delays they suffered but also from the temporal hierarchy which it established between state and private correspondence. According to the regulations, state telegrams were prioritized, and private telegrams were then to be sent according to the order in which they had been handed over.¹⁸⁵ Telegrams were handled sequentially, according to the neutral standard of time, but when traffic overburdened the lines, the priority given to government and administrative correspondence was translated into a temporal advantage.

As the decade progressed, the growing volume of traffic on the telegraph network increased the frequency of delays, and the sequential procedure was called into question. In 1861, in response to the Prussian government’s recent reduction in tariffs, the Neue Frankfurter Zeitung produced an article criticizing the way in which the administration was managing the network. In a text echoing the terms of current debates on ‘network neutrality’, the newspaper complained that, however cheap the use of the telegraph had become, the fact that two-thirds of correspondence came with a note stating ‘delayed due to accumulation’ was unacceptable. Time and promptness were more important for the principal users of the technology, the article insisted, and ‘if [a telegram] arrives in the hands of the addressee too late, then it is too expensive [even] if it only costs one Kreuzer; if it is handed over to the addressee quickly, then it often has great value’.¹⁸⁶

According to the Neue Frankfurter Zeitung, a blanket reduction in the cost of the telegraph service failed to account for the varying value which different users placed upon rapid communication. Since 1859, it reported, increases in use of the telegraph had been registered at 92 per cent for financial news, 33 per cent for commercial telegrams, 65 per cent for newspaper reports, and only 21 per cent for family news. This increase, however, had not been matched by an improvement in Prussian infrastructure. Cost was of secondary importance to ‘those who use the telegraph most...namely the commercial estate and newspaper editors’, the author insisted, and they should be given the option of paying more to ensure the priority of their correspondence.¹⁸⁷ ‘Barely 15 of the telegrams deposited here

¹⁸⁴ BHStA, GDVA 673, Handelskammer Frankfurt to Telegraphen-Direction München, 30 Mar. 1855; BHStA, GDVA 673, Dyck to Redaktion der Landshuter Zeitung, 30 Sept. 1855.
¹⁸⁵ BHStA, GDVA 673, Dyck to Redaktion der Pfälzer Zeitung, 9 Apr. 1854.
¹⁸⁶ BHStA, GDVA 674, Neue Frankfurter Zeitung, 25 July 1861.
¹⁸⁷ Ibid.
reach the stock exchange in Berlin on time’, the article continued, and it was therefore ‘unjust to increase the number of useless telegrams being sent by reducing the tariff’.¹⁸⁸ As the newspaper made clear, lowering the cost of telegraphing would encourage its practice among those for whom cost was the main concern, and thereby further burden the network. For the principal users of the telegraph, however, the time gained by using the telegraph, rather than the money spent upon a telegram, was of greater value.

Within and across states, the telegraph network had begun by distinguishing between included and excluded localities, between those tuned in to a faster pace of life and those left behind. Already, however, the limited bandwidth available had begun to interfere with relations even among those connected to the network, not only towns and villages but states too. The archives are replete with examples of attempts by the telegraph administration to discern the true source of delays, tracing back their origin across Europe.¹⁸⁹ Blame for these disruptions was passed from one state administration to another, as the material deficiencies of different lines came to impact individuals’ and governments’ relations with one another.

* * *

By 1860, there were already 7,270 kilometres of telegraph lines in Prussia, 12,822 kilometres in Austria–Hungary, 2,030 kilometres in Bavaria, and 1,023 kilometres in Saxony.¹⁹⁰ In that year, around 250,000 telegrams were sent within the territories of northern Germany,¹⁹¹ almost 500,000 in Austria–Hungary, 100,000 in Bavaria, and 37,000 in Württemberg.¹⁹² Around 354,000 telegrams were sent and received in international correspondence in northern Germany, 222,000 in Austria–Hungary, 98,000 in Bavaria, and 37,000 in Württemberg.¹⁹³ The telegraph’s tentacles were now reaching out beyond the continental landmass, moreover, as submarine cables were laid across the Mediterranean, and a first (unsuccessful) attempt to establish a transatlantic connection was made in 1858.¹⁹⁴ With this expansion came new connections and divisions, new distinctions between the telegraphically privileged and the disadvantaged, and new challenges for the state and society.

¹⁸⁸ Ibid.
¹⁸⁹ See, for example, BHStA, GDVA 680, Directeur général de l’administration des lignes télégraphiques to Telegrafenamt, 10 Oct. 1854; BHStA, GDVA 680, Dyck to KK General-Direktion der Communication, 30 Mar. 1853. Many more examples are located in BHStA GDVA 680, 682, 683, 684.
¹⁹⁰ Reindl, Der Deutsch-Österreichische Telegraphenverein, pp. 262–5.
¹⁹¹ According to the statistics of the International Telegraph Union, the heading ‘northern Germany’ comprised the future states of the Kaiserreich of 1871, excluding Baden, Württemberg, and Bavaria.
¹⁹² Statistique générale de la télégraphie dans les différents pays de l’ancien continent (Bern, 1871), pp. 26–7, ‘ITU Historical Statistics’ (accessed 22 Mar. 2017, at http://www.itu.int/en/history/Pages/HistoricalStatistics.aspx).
¹⁹³ Statistique générale de la télégraphie (1871), pp. 32–3.
¹⁹⁴ Statistique générale de la télégraphie (1871), pp. 74–5.
4.5 The Ambiguities of Progress

During the Vormärz years, scientists, businessmen, bureaucrats, and the press had set high expectations for the future of telegraphic communication, and there was no shortage of praise for its achievements following its implementation. In 1853, an article in Die Gartenlaube, the leading publication in the new field of family illustrated journals, announced that ‘distance is no more!’\footnote{‘Keine Entfernung Mehr!’, Die Gartenlaube (1853), no.7, p. 74.} Developing a well-established trope, the article proclaimed the success of the new technology in overcoming the obstacles of time and space, and over the following years the journal continued to report upon heroic developments in the field.

Telegraph lines, like the railways, became a symbol of modernity and progress. Although the inauguration of telegraph offices, far more modest than railway stations during this period, presented few opportunities for pomp and circumstance, descriptions of the latest developments in the field were a means for journals such as Die Gartenlaube to promote liberal values of exchange, communication, and material progress.\footnote{On the subtle promotion of liberal values in family illustrated journals, see C. Richards, ‘Pages of Progress: German Liberalism and the Popular Press after 1848’, (PhD Dissertation, University of Pennsylvania, 2013).} The ‘bonds of friendship’ represented by the planned transatlantic cable between Britain and the USA, for instance, were contrasted with the ‘wall of enmity’ of the recently completed harbour in Cherbourg.\footnote{‘Cherbourg und der atlantische Telegraph’, Die Gartenlaube (1858), no. 37, p. 531.} As shown in Figure 4.2, the satirical Berlin newspaper Kladderadatsch caricatured conditions in the notoriously backward state of Hessen—while armed forces seek to halt a mass exodus by train, two workers appear to be stealing the telegraph cables they have been employed to lay.\footnote{Kladderadatsch, 17 Dec. 1854.}

At the same time, however, experience had begun to reveal the peculiarities of telegraphic communication, the exclusionary logic of the network, and the technical and logistical constraints on its use. It became increasingly clear, for instance, that the corollary to the ‘death of distance’ proclaimed by Die Gartenlaube was the victory of time. The technology allowed for dematerialized communication—for the first time, information could circulate faster than goods themselves. The telegraph had, in the words of James Carey, ‘invented the future as a zone of uncertainty, and a new region of practical action’.\footnote{J. W. Carey, Communication as Culture: Essays on Media and Society (London, 1989), p. 218.} This was not lost upon Gustav Freytag, whose bestselling novel Soll und Haben (1855) described a world where ‘railways and telegraphs bind a land’s shores to its interior, and every merchant in the coastal towns has his goods sold in the heart of the country, almost before they reach the harbour’.\footnote{G. Freytag, Soll und Haben: Roman in Sechs Büchern, 7th edn., 2 vols. (Leipzig, 1858), i, pp. 54–5.}
Businessmen, as we have seen, were indeed particularly dependent upon the speed and reliability of telegraphic communication, a time sensitivity which often came to be seen as pathological. This made them a subject of predilection for the satirical paper Kladderadatsch. In 1853, a cartoon depicted a businessman clutching a copy of the latest stock prices and holding his ear to a telegraph wire leading into town, with a caption stating, ‘The latest stock exchange technique to receive telegraphic dispatches yet another hour earlier than the others’ (see Figure 4.3).²³

Always seeking to remain one step ahead of developments, businessmen characterized much of the anxiety associated with the pace of modern life.²⁰² With the telegraph, then, emerged the image of the nervous entrepreneur which would later epitomize Germany’s struggle with the pressures of modernity.²⁰³

It was the fluctuations of the stock market, in particular, that stimulated the anxieties of businessmen and traders. The value of shares had now come to

²⁰¹ Kladderadatsch, 27 Mar. 1853.
²⁰² R. Wenzlhuemer, ‘‘Less than No Time’’. Zum Verhältnis von Telegrafie und Zeit’, Geschichte und Gesellschaft, vol. 37 (2011), pp. 591–613., esp. pp. 606–13.
²⁰³ M. Cowan, Cult of the Will: Nervousness and German Modernity (University Park, Pa., 2008), pp. 24–31.
depend upon the quasi-instantaneous diffusion of news through a network which spanned the European continent and would eventually extend across the globe. Economic responses to geopolitical changes, it was understood, were all the more rapid as a result. In 1853, for instance, as uncertainty reigned regarding the outbreak of war in the Crimea, *Kladderadatsch* produced a caricature of ‘Stock Exchange Physiognomies’. The illustration juxtaposed the visible excitement of businessmen upon receipt of a telegram announcing that peace was likely secured with their anger and despondency when a new dispatch announced that the ultimatum was rejected and that the Russians could be expected to invade the principalities of the Danube. Crucial to the depiction in both cases was the uncertainty of the news to which the businessmen reacted so vividly: neither had peace been guaranteed, nor had the Russians in fact begun their offensive. The telegraph brought news of probable, not real, events (see Figure 4.4).²⁰⁴

The Crimean War triggered the construction of numerous telegraph lines in the region and illustrated the capacity for the speed of communication to upset the

---

²⁰⁴ *Kladderadatsch*, 3 July 1853.

*Figure 4.3* ‘The latest stock exchange technique to receive telegraphic dispatches yet another hour earlier than other people.’ *Kladderadatsch*, 27 Mar. 1853. Universitätsbibliothek Heidelberg, https://digi.ub.uni-heidelberg.de/diglit/kla1853/0060, CC-BY-SA 3.0.
traditional conduct of warfare, journalism, and international relations.²⁰⁵ For the first time, diplomats, but also military commanders, received a rapid succession of direct orders from a distance, impeding their ability to adapt to conditions on the ground, often with bewildering consequences.²⁰⁶ War correspondents—most famously William Howard Russell—now reported directly from the zone of conflict, and although by no means all dispatches were sent by telegraph, the rapid circulation of news hindered the capacity for governments to manage the

²⁰⁵ K. Beauchamp, *History of Telegraphy* (London, 2001), 103–8; R. H. Davison, “The Advent of the Electric Telegraph in the Ottoman Empire”, in Roderic H. Davison (ed.), *Essays in Ottoman and Turkish History, 1774–1923: The Impact of the West* (London, 1990), pp. 133–65; on the influence of telegraphy and international relations upon one another, see Headrick, *The Invisible Weapon*.

²⁰⁶ D. P. Nickles, *Under the Wire: How the Telegraph Changed Diplomacy* (Cambridge, Mass., 2001), pp. 33, 92–6, describes the impact of the speed of telegraphy upon the diplomatic exchanges leading to the outbreak of war and the confusion produced by telegrams sent to military commanders. On the use of telegraphy by the Prussian and German armies, see S. Kaufmann, *Kommunikationstechnik und Kriegsführung 1815–1945: Stufen telemedialer Rüstung* (Munich, 1996), esp. pp. 69–169.
public perception of developments.²⁰⁷ On the one hand, the general public was forced to accept delays in their personal correspondence as the to and fro of diplomatic telegrams across Europe jammed the wires; on the other hand, the speed of information circulation sparked concerns as to the quality of the news which was published. In particular, the spread of ‘fake news’ became a subject of satire in Kladderadatsch when a ‘telegraphic hoax’ wrongly announced the fall of Sebastopol in 1854.²⁰⁸ In both the conduct and the representation of the Crimean War, the purported and desired simultaneity of telegraphic communication often proved illusory and highlighted the distinct temporalities in which events and their reporting took place.²⁰⁹

The ‘lies’ spread by the telegraph became the subject of a number of satirical pieces in Kladderadatsch, which soon linked the problem to the speed of communication. Picking up on the potential public mistrust of telegraphic news, it described telegrams as ‘these wire-born lies, this mendacious hoax-post … these couriers of reprehensible curiosity, which hurry faster than the winds and often are nothing more than wind’.²¹ As the primary victims of this oversensitivity to telegraphic news, businessmen became the ‘Pharisees of the Stock Exchange’, who lent too much credence to the ‘treacherous’ telegraph.²¹¹

The potential dangers of telegraphic communication highlighted during the Crimean War reached their climax in the stock market crash which followed. Indeed the ‘Panic of 1857’, though undoubtedly milder in its economic effects than its successor, provoked reactions which foreshadowed those later stimulated by the Gründerkrach of 1873. Having begun in the United States and made its way through London and Hamburg to Germany within a couple of months, this (arguably) ‘first truly global economic crisis in history’ illustrated the role of the telegraph in binding together financial markets—at the very least across Europe and North America.²¹² This fact was not lost on Karl Marx, whose Grundrisse, written in response to these events, highlighted the scramble that crises provoked among individuals to gain access to new, faster sources of information, which in turn played into the fluctuations of the market.²¹³

²⁰⁷ P. Knightley, The First Casualty: The War Correspondent as Hero and Myth-Maker from the Crimea to Kosovo (London, 2000), esp. pp. 1–17; A. Lambert and S. Badsey, The War Correspondents: The Crimean War (Stroud, 1994).
²⁰⁸ Kladderadatsch, 8 Oct. 1854.
²⁰⁹ G. Maag, W. Pyta, and M. Windisch (eds.), Der Krimkrieg als erster europäischer Medienkrieg (Berlin, 2010). On the ‘telegraphic hoax’ and its place within an early modernist culture of ephemeral media, see E. S. Cutler, Recovering the New: Transatlantic Roots of Modernism (Hanover, N.H., 2003), pp. 65–93.
²¹ Kladderadatsch, 19 Nov. 1854.
²¹¹ Kladderadatsch, 2 Dec. 1855.
²¹² H. Rosenberg, Die Weltwirtschaftskrise von 1857–59 (Stuttgart, 1934), p. 8. Most historians emphasize Germany’s rapid economic recovery from the 1857 crisis: Wehler, Gesellschaftsgeschichte, iii, pp. 94–5; Blackbourn, History of Germany, pp. 190–1; H. Kiesewetter, Industrielle Revolution in Deutschland: Regionen als Wachstumsmotoren (Stuttgart, 2004), pp. 73–5.
²¹³ K. Marx, Grundrisse: Foundations of the Critique of Political Economy, trans. Martin Nicolaus (London, 1973), p. 161: ‘[I]nstitutions emerge whereby each individual can acquire information about
This capacity for the technology to rapidly spread news of the impending disaster was illustrated through a poem in *Kladderadatsch*: ‘how they run and flee with a startled look / before the spectre of the day, “Panique”! / It’s coming! It’s coming!—its steed, the telegram / From Hamburg now, and now from Amsterdam! . . . How they change with every dispatch / their colours and, if they could, their clothes! / How the goose bumps on their skin arise / when upon the telegram they set eyes.’²¹⁴ As Janine Murphy has shown, these anxieties were part of a broader liberal intellectual climate which recognized the ambiguity of the changing social, industrial, and commercial landscape and, after 1848, no longer predicted that an impending ‘crisis’ would be necessarily political but, rather, economic.²¹⁵

* * *

It is within this context that Karl Knies wrote *Der Telegraph als Verkehrsmittel* (1857), investigating and predicting the effects of telegraphic communication. Conventionally associated with the ‘older’ historical school of economics, Knies shared with many contemporary intellectuals a desire to investigate the foundations of ‘classical’ liberal economic theory, as derived from the works of Adam Smith and the British tradition which it spawned. Having already written on the subject of railways, Knies turned to the telegraph as one of the principal modern means of communication, in order better to understand the laws of exchange upon which this theory was based.²¹⁶ Acutely aware of both the advantages and material limitations of telegraphic communication, however, his work reflected an effort to come to terms with the potentially socially divisive consequences of a new technology.

The term ‘historical school’ is somewhat misleading. The rather loose grouping of writers to which it refers, which included Wilhelm Roscher and Bruno Hildebrand, is often characterized as having rejected the universal laws of economic interaction adhered to by British and French thinkers in favour of a more holistic, historical understanding of the evolution of individual societies—a model seen as peculiarly German.²¹⁷ To be sure, since the 1840s the tenets of classical

²¹⁴ Kladderadatsch, 29 Nov. 1857.
²¹⁵ J. Murphy, ‘Treating Revolutionary Sickness: Crisis and the Formative Years of German Liberalism (1834–1866)’ (forthcoming).
²¹⁶ K. Knies, *Die Eisenbahnen und ihre Wirkungen* (Braunschweig, 1853).
²¹⁷ Y. Shionoya, *The Soul of the Historical School: Methodological Essays on Schneller, Weber and Schumpeter* (Boston, 2005), p. 1; K. Tribe, *Governing Economy: The Reformation of German Economic Discourse, 1750–1840* (Cambridge, 1988), p. 205; G. Stavenhagen, *Geschichte der Wirtschaftstheorie* (Göttingen, 1969), p. 196; D. Lindenfeld, *The Practical Imagination: The German Sciences of State in the Nineteenth Century* (Chicago, 1997), p. 152; Erik Grimme-Solem has raised a similar criticism against the term ‘younger Historical School’ in *The Rise of Historical Economics and Social Reform in Germany, 1864–1894* (Oxford, 2003), pp. 19–34.
economics had been placed under increasing scrutiny, most notably by Friedrich List, who questioned Adam Smith’s cosmopolitanism in *Der nationale System der politischen Ökonomie* (1841). Others, such as Bruno Hildebrand, Lorenz Stein, and of course Karl Marx, had since turned their attention to the ‘social question’ and begun to question the natural order which was supposed to derive from the ‘invisible hand’ of the free market.²¹

Despite these critiques, however, the foundational axiom of Smithian theory was in fact widely accepted in Germany, namely that the striving to satisfy each individual’s material needs by means of exchange was fundamentally constitutive of an autonomous realm of economic interaction. What the founder of the ‘historical school’, Wilhelm Roscher, had called for in the early 1840s, in fact, was not a jettisoning of Smith’s ideas but a more thoroughgoing inquiry into its details, working upwards from the individual to the universal laws of economic interaction which Smith appeared to have identified.²¹⁹ The principal concern for German writers in doing so was how to accommodate the emergence of a dynamic, independently growing, realm of social and economic activity without reducing it to a mere assemblage of individuals driven by egotistical needs.²²

Knies’s inquiry into the telegraph ‘as a means of exchange’ (als Verkehrsmittel) was an attempt to address these concerns. He proceeded from the assumption that economic life was driven by the human desire to satisfy material needs and by the social interactions through which this was achieved: ‘[T]o live actively is nothing other than to live in intercourse [im Verkehr leben],’ he wrote.²²¹ Communication, he believed, was a human necessity, and its objective was both economic and intellectual: ‘Is the spiritual, the ethical need for communication weaker than the economic?’ he asked.²²² In this regard, he shared with Marx the belief that ideas, the ‘spiritual’ life of individuals, were intimately related to their material, economic interactions.²²³

Telegraphy, Knies believed, was merely a further tool in human efforts to communicate as broadly as possible—a catalyst for an ongoing process of social transformation. Newspapers, in his view, had already contributed to this process by enabling the widespread distribution of information across an increasingly literate society. Latent needs for communication were thereby being released, and the result was to allow populations to share in a ‘common destiny’, an early assertion of the power of print-based ‘imagined communities’.²²⁴ The telegraph had its limitations, however. ‘The telegraph is a winged messenger equipped with

²¹ Lindenfeld, *Practical Imagination*, pp. 180–5.
²¹⁹ Stavenhagen, *Geschichte der Wirtschaftstheorie*, p. 195.
²² Tribe, *Governing Economy*, p. 150. ²²¹ Knies, *Der Telegraph*, p. 1.
²²² Knies, *Der Telegraph*, p. 3.
²²³ H. Hardt, *Social Theories of the Press: Constituents of Communication Research, 1840s to 1920s*, 2nd edn. (Lanham, 2001), p. 23.
²²⁴ Knies, *Der Telegraph*, p. 63; B. Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism* (London, 1983).
the speed of lightning,’ Knies wrote, ‘but he only ever bears one letter.’\textsuperscript{225} Trains could carry bundles of letters at once, but telegraph wires could only bear a limited load and transmit messages sequentially.\textsuperscript{226} Indeed, as we have seen, this had already become the source of delays and frustrations, as a growing number of individuals competed for bandwidth on the network. As a result, Knies believed that ‘[o]nly time-sensitive, important messages can and should be sent by telegraph. It is not the means of transport for extended discussion of sentimental outpourings [gemüthlichen Ergießerungen]’. For the latter, the letter remained the most appropriate medium.\textsuperscript{227}

The very nature of telegraphic communication, therefore, made it suited to particular forms of interaction, and it was not adequate as a means of individualized communication. Knies recognized that the technology was of especial utility for commercial purposes, but as experience had shown, this too could lead to the privileging of certain groups. Instead, therefore, Knies insisted that the telegraph should be combined with the press to transmit, reproduce, and widely distribute telegrams of ‘general interest’. In this respect, he was echoing Friedrich List’s assertion, twenty years earlier, that the telegraph would provide news of utility to the ‘intérêt général’ and the ‘chose publique’, to be published for the benefit of all.\textsuperscript{228}

Knies proposed that telegraphic news be shared by ‘associative consumption’.\textsuperscript{229} This practice, based on the kinds of arrangements made at the Bremen Börse, involved group subscriptions to news, as a healthy means of spreading the cost of telegrams and maximizing the utility of each individual message.\textsuperscript{230} In promoting this means of ‘consumption’, Knies was drawing upon the theme of association which was seen by other writers and indeed politicians as a crucial social intermediary between the individual and the state.\textsuperscript{231} The technical constraints which he had identified in the technology—namely, its inability to transmit multiple messages at once—had thereby been turned into a means of reinforcing a sense of community.

With these material limitations of the technology in mind, Knies was able to conceive of a state telegraph network as the ‘nerves’ of the body politic, or ‘Staatskörper’.\textsuperscript{232} In doing so, he drew upon a discourse of nervous stimulation derived from the emerging discipline of organic physics, or physiology, propounded by academics such as Hermann Helmholtz, who had himself closely followed the development of telegraphy.\textsuperscript{233} He also thereby contributed to the diffusion of an organic metaphor which many intellectuals were using as a means

\begin{itemize}
\item \textsuperscript{225} Knies, Der Telegraph, pp. 206–7.
\item \textsuperscript{226} Ibid., pp. 206, 212.
\item \textsuperscript{227} Ibid., p. 208.
\item \textsuperscript{228} See Chapter 1, p. 33.
\item \textsuperscript{229} Knies, Der Telegraph, p. 215.
\item \textsuperscript{230} Ibid., p. 215.
\item \textsuperscript{231} Lindenfeld, Practical Imagination, p. 182.
\item \textsuperscript{232} Knies, Der Telegraph, pp. 243–4.
\item \textsuperscript{233} L. Otis, Networking: Communicating with Bodies and Machines in the Nineteenth Century (Ann Arbor, 2001), pp. 11–48.
\end{itemize}
to reconcile the individual, society, and the state as a system of interdependent organs.²³

Crucially, Knies used the analogy with nerves to emphasize that the network would not simply foster communication between all individuals—as it was technically unfeasible to do so, he thought—but instead distribute identical information to and, crucially, from every nerve ending, enhancing the sense of commonality within a nation. As the telegraph served to satisfy a natural human propensity to communicate, and could be used to enhance the feeling of a ‘community of destiny’ within society, it was natural that the state should maintain its monopoly in order to best evaluate how and where to establish the technology. Within the space of the network, however, communication should be allowed to take place freely.²³ The representation of the telegraph network as a ‘national’ nervous system was thus not simply a useful and convincing analogy. It was a response to the challenge of maintaining social unity in light of the material realities of networked communication.

²³ Lindenfeld, *Practical Imagination*, pp. 176–80. ²³⁵ Knies, *Der Telegraph*, p. 247.