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The Telegraphic Revolution:

Speed, Space and Time in the Nineteenth Century

At 6.40 am on 13 April 1859, a telegram was received at the railway station office in Augsburg, addressed to Ernst Freiherr von Lerchenfeld, president of the regional government: 'His Majesty wishes that you present yourself upon his passage through the station, exceptionally in civilian dress, for a brief discussion'.[1]* The Bavarian king was due to arrive at 7.35 am, so time was pressing.[2] At 6.48 am, the telegram was handed over to the messenger who was to deliver it to Lerchenfeld's home, 1.6 kilometres away in town. He arrived twenty minutes later, but was unable to hand the message to the official in person, and waited a further ten minutes before the delivery confirmation slip was returned to him, signed by another individual, and indicating an approximate time of receipt.[3] It was now around 7.20 am, and only fifteen minutes remained before the king was due to arrive at the railway station on the outskirts of town.

It is unclear who warned Lerchenfeld directly of the king's imminent arrival and at what time, but he was able to make the appointment. Indeed, the monarch's train was late. Returning home after his meeting, Lerchenfeld was appalled to find that the telegram announcing the visit had supposedly been delivered to his home at 7.30. Had the king arrived as originally planned, he later complained, he would barely have reached the station in time, and 'would have

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[1] Bayerisches Hauptstaatsarchiv, General-Direktion der Verkehrs-Anstalten (hereafter BHStA GDVA) 680, Telegram from Munich to Augsburg, 13 Apr. 1859.
[2] BHStA GDVA 680, Lerchenfeld to Oberpostmeister, 13 Apr. 1859.
[3] BHStA GDVA 680, Telegraphen-Station Augsburg to Telegraphenamt, 26 Apr. 1859.

appeared negligent in the eyes of His Majesty, and disobedient to his orders'. This was not the first incident of the kind, he added; telegrams were often delivered at least an hour after their arrival at the telegraph office. In future, such urgent messages would have to be delivered immediately, a service for which he was willing to pay any delivery fee which might be applied.[4]

The details of this unremarkable event in Bavarian history can be read in two ways. On one hand, it illustrates the impact of the speed associated with the nineteenth-century revolution in transport and communication. A rather early start notwithstanding, King Maximilian II could expect a swift and pleasant train journey from Munich to Augsburg, a distance of roughly 80 kilometres, lasting around two hours.[5] Twenty years earlier, the trip would have taken around seven or eight hours by coach.[6] In the absence of a telegraph connection between the two cities, moreover, it would have been necessary to send prior warning of the king's proposed meeting from Munich well before his departure, perhaps even a day in advance. By 1859, a telegram could simply be sent once he was on his way, and still reach Augsburg in time. From the king's perspective, the space separating Munich and Augsburg appeared to be shrinking in the face of technological progress.

On the other hand, the smooth running of this event depended upon the careful coordination of a number of social and technological processes. The meeting between Freiherr von Lerchenfeld and the Bavarian king depended upon the successful dispatch and receipt of the notification telegram, its swift delivery by messenger to Lerchenfeld's home, the latter's presence and availability at the time of delivery, his ability to reach the railway station in time,

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[4] BHStA GDVA 680, Lerchenfeld to Oberpostmeister, 13 Apr. 1859.
[5] Based on the timetables in *Münchner Tages-Anzeiger*, 25 Sep. 1859, and average train speed of 40 km/h: see Peter Borscheid, *Das Tempo-Virus: eine Kulturgeschichte der Beschleunigung* (Frankfurt, 2004), 133.
[6] Based on the timetables in *Der Bayerische Eilbote*, 7 Jan. 1848, and an average speed of 9-10 km/h: see Borscheid, *Tempo-Virus*, 133.

and the prompt departure and arrival of the monarch's train. The failure of one of these elements could put the entire operation in jeopardy; indeed it almost did, when the distance between the office and the addressee caused the messenger to deliver the telegram with a considerable delay. Lerchenfeld's anger at the situation was palpable. Punctuality, and with it his reputation, had been at stake, and he later demanded that every minute lost be accounted for. From his perspective, in particular, the speed of modern technologies and the pace of events had momentarily heightened the value of every instant and the importance of every footstep.

Such were the diverging experiences of the 'communications revolution' across Germany in the nineteenth century.[7] The perceived impact of a technology such as the electric telegraph, this article argues, varied from one person, place and situation to another, reflecting its progressive and uneven expansion across cities, towns and the countryside. In the 1830s, one of the German pioneers of electrical telegraphy, Carl Steinheil, had declared that his invention would allow 'thought to reach across distance in an instant', and yet as the above example suggests, this promise often remained unfulfilled—the interplay of numerous actors and means of communication could lead to delays and interruptions.[8] Railways and telegraphs, indeed, built upon pre-existing and persisting infrastructures of transport and communication which had themselves previously altered attitudes to speed, space and time. As Wolfgang Behringer has demonstrated, for instance, the emergence of the *Reichspost* in Central Europe in the fifteenth century had stimulated a re-evaluation of the region's spatial representation by reducing average communication times across the length and breadth of the Holy Roman Empire.[9] Whether or not, as Behringer suggests, this earlier transformation should be

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[7] The expression 'communication revolution' was coined by Roger Albion in 'The "Communication Revolution"', *The American Historical Review*, vol. 37, no. 4 (Jul., 1932), 718-20.

[8] Carl August Steinheil, *Ueber Telegraphie, insbesondere durch galvanische Kräfte: Eine öffentliche Vorlesung gehalten in der festlichen Sitzung der Königl. Bayerischen Akademie der Wissenschaften am 25. August 1838* (Munich, 1838), 4.

[9] Wolfgang Behringer, *Im Zeichen des Merkur: Reichspost und Kommunikationsrevolution in der Frühen Neuzeit* (Göttingen, 2003).

considered *the* foundational 'communications revolution' underpinning subsequent 'media revolutions', railways and the electric telegraph should certainly be placed within the *longue durée* of technological development, a further outbreak of what Peter Borscheid describes as an enduring '*Tempo-Virus*' which has repeatedly shifted the fundamental dimensions of everyday life.[10]

Doing so invites us to consider the complex nature of the nineteenth-century transformation in communication, the fits and starts which belie linear narratives of a 'great acceleration', and the multi-layered perceptions of time and space which they served to produce.[11] Contemporaries naturally marvelled at the speed of railways and telegraphs from the moment of their introduction. In the 1840s in Germany, a young Jakob Burckhardt famously remarked of the newly-built railway to Berlin that the 'train… glides in 33 to 35 minutes to five-hours' distant Potsdam… It really flies there like a bird'.[12] The art and literature of the ensuing half century certainly attest that some celebrated, others bemoaned, but all acknowledged the fact that they lived in a fast age.[13] As this article demonstrates, however, during the nineteenth century access to new means of communication remained the privilege of particular people in particular places, reflecting their social, economic and political status.

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[10] Wolfgang Behringer, 'Communications Revolutions: A Historiographical Concept', *German History*, vol. 24, no. 3 (2006), 333-74; Borscheid, *Tempo-Virus*.

[11] The expression 'great acceleration' is used by Christopher Bayly to describe the intensification of global connections and developments between 1890 and 1914: *The Birth of the Modern World, 1780-1914: Global Connections and Comparisons* (Oxford, 2004), 451-87. For recent general overviews of the development of communications during the nineteenth century, see Richard Evans, *The Pursuit of Power: Europe, 1815-1914* (London, 2016), 147-58; Jürgen Osterhammel *The Transformation of the World: A Global History of the Nineteenth Century*, trans. Patrick Camiller (Princeton, 2014), esp. pp. 710-24.

[12] Quoted in Evans, *Pursuit of Power*, 155.

[13] Heinrich Heine, for one, warned of the 'imponderable and incalculable' consequences of railway travel—quoted in Wolfgang Schivelbusch, *The Railway Journey: The Industrialization of Time and Space in the 19th Century* (Leamington Spa, 1986), 37.On the ambivalent reactions to industrialisation in Germany, see David Blackbourn, *The Long Nineteenth Century: A History of Germany, 1780-1918* (New York, 1998), 270-310; See also Borscheid, *Tempo-Virus,* 149-79. On representations of speed in the 19th century, see Andreas Braun, *Tempo, Tempo! Eine Kunst- und Kulturgeschichte der Geschwindigkeit im 19. Jahrhundert* (Frankfurt am Main, 2001).

Speed, space and time, as a result, became a measure of the divisions emerging in modern Germany.

Writing in the 1850s, Karl Marx prophesied that the effect of technological acceleration would be the 'annihilation of space by time', drawing upon a widespread contemporary trope which remains commonplace in the literature on the subject today.[17] David Harvey, in particular, has argued that the nineteenth century witnessed a phase of intensified 'time-space compression', as technological innovations helped to overcome the obstacle which distance posed to capitalist methods of production and distribution.[18] At the very least, it seems, time and space 'drifted away from each other', in the words of Zygmunt Bauman, whilst a more extreme formulation suggests that telegraphic, dematerialised communication, 'emptied' time of all spatial content.[19] Recent works, however, suggest that the 'death of distance' anxiously awaited by Steinheil, Burckhardt and Marx is still imminent.[20]

If space was to be rendered moot, time, it follows, would reign supreme. Rational, clock-based time measurement, as historians and sociologists have demonstrated, has always served as a means of coordinating social, economic and political life independently of 'natural' diurnal cycles.[21] The complexity of modern networks of communication, however, accentuated

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[17] Karl Marx, *Grundrisse: Foundations of the Critique of Political Economy*, trans. Martin Nicolaus (London, 1973), 524.

[18] David Harvey, *The Condition of Postmodernity: An Enquiry into the Origins of Cultural Change* (Oxford, 1989), 201-326. From a different philosophical standpoint, Anthony Giddens defines 'time-space distanciation' as the socially structuring relationship between the 'when' and the 'where' of events. This relationship, he argues, was altered when new means of communication allowed interactions to take place with little regard for their location: Anthony Giddens, *The Consequences of Modernity* (Cambridge, 1990), 1-29.

[19] Zygmunt Bauman, 'Time and Space Reunited', *Time & Society*, vol. 9, nos.2/3 (2000), 172; James W. Carey, *Communication as Culture: Essays on Media and Society* (London, 1989), 201-29.

[20] See, for example, Frances Cairncross, *The Death of Distance: How the Communications Revolution is Transforming our Lives*, 2nd edn. (Boston, 2001).

[21] Jacques Le Goff emphasised the emergence of 'merchants' time' during the Middle Ages, as a means of coordinating exchanges, which contrasted with 'church time': *Time, Work, & Culture in the Middle Ages*, trans. Arthur Goldhammer (Chicago, 1982), 29-42. Edward P. Thompson famously argued that the clock-based time discipline introduced in factories was crucial to the organisation of labour in the early stages of industrialisation: 'Time, Work-Discipline, and Industrial Capitalism', *Past & Present*, 38 (December 1967), 56–97. Gerhard Dohrn van Rossum underscores the use of public clocks by state authorities: *History of the Hour: Clocks and Modern*

our dependency upon the clock, as railway timetables, schedules, and time-stamped telegrams became, quite literally, the order of the day.[22] The diffusion of new practices of communication increased the pressure to standardise time within states and, eventually, across the globe, a process culminating in the International Meridian Conference of 1884.[23] Time, it appeared, could now be measured uniformly, and became the principal currency of the modern age.

Reality, of course, was messier. As Stephen Kern's refined analysis of *belle époque* culture suggests, by the turn of the twentieth century European understandings of space and time had become unstable—a perception exemplified by the melting clocks of Salvador Dali's paintings and the stream-of-consciousness novels of James Joyce.[24] The standardisation of time across nation-states and eventually the globe, in fact, was a protracted process, which lasted until the mid-1900s.[25] The increasingly contested nature of time and space, indeed, arguably influenced the theories of relativity put forward by Henri Poincaré and Albert Einstein during the period.[26]

In Germany, this temporal and spatial confusion fuelled anxieties regarding the mounting pace of modern life—society itself appeared to be 'accelerating'.[27] In 1909, the historian Karl Lamprecht expressed his concern at the growing 'excitability' (*Reizsamkeit*) of

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Temporal Orders (Chicago, 1996). More recently, Avner Wishnitzer has wonderfully illustrated the different modes of 'reading' time which co-existed in the late Ottoman Empire, and the struggles of imperial authorities to introduce rigorous time standards in their administration: *Reading Clocks, Alla Turca: Time and Society in the Late Ottoman Empire* (Chicago, 2015). On the history of timekeeping in general, see David Landes, *Revolution in Time: Clocks and the Making of the Modern World* (Cambridge, Mass., 1983). On the temporal organisation of social life, see Eviatar Zerubavel, *Hidden Rhythms: Schedules and Calendars in Social Life* (Chicago, 1981).

[22] Rudolf Wendorff, *Zeit und Kultur: Geschichte des Zeitbewußtseins in Europa*, 3rd edn. (Opladen, 1985), 414-45; Nigel Thrift, 'The Making of a Capitalist Time Consciousness', in John Hassard (ed.), *The Sociology of Time* (New York, 1990), 105-29.

[23] Ian R. Bartky, *One Time Fits All: The Campaigns for Global Uniformity* (Palo Alto, 2007).

[24] Stephen Kern, *The Culture of Time and Space, 1880-1918* (Cambridge, Mass., 2003).

[25] Vanessa Ogle, *The Global Transformation of Time: 1870-1950* (Cambridge, MA, 2015), esp. pp. 20-98.

[26] Peter Galison, *Einstein's Clocks, Poincaré's Maps: Empires of Time* (London, 2003).

[27] The relationship between technological and social 'acceleration' remains difficult to elucidate; in particular, the paradox that time-saving innovations appear to result in a perceived scarcity of time. The most sustained and illuminating attempt to clarify the relationship between the two is provided by Hartmut Rosa in *Social Acceleration: A New Theory of Modernity*, trans. Jonathan Trejo-Mathys (New York, 2013).

society, driven by the new spirit of capitalist enterprise: 'forwards, without pausing, is the catchword of the present'.[28] 'Five-minute audiences' and 'minute-long telephone conversations […] in moral terms, punctuality', he wrote, were the prevailing concerns. 'There is no doubt', Lamprecht believed, 'that this concern [*Betrachtung*] for every second is directly, and to a large extent, due to modern means of communication'.[29] Lamprecht's concerns were shared by many ordinary citizens—doctors and patients, for instance, who blamed the overstimulation of modern, particularly urban life, with its excess of noise, light and movement, for a crisis of 'neurasthenia'. The turn of the twentieth century, as Joachim Radkau has argued, was an 'Age of Nervousness'.[30]

Focusing upon the first three decades of telegraphic communication, this article traces the origins of this fraught relationship to modernity. It emphasises the importance of the transformations which took place between the 1848 revolutions and 1880, the period which witnessed Germany's 'industrial take-off' and considerable social upheaval.[32] In doing so, it examines the foundations of the 'nervous great power' which the *Kaiserreich* is said to have later become—an empire purportedly characterised by a dangerous combination of industrial strength and cultural self-doubt, driven to exude self-confidence on the international stage in response.[33] It looks beyond the watershed of the 1873 stock market collapse and the crisis of

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[28] Karl Lamprecht, *Zur jüngsten deutschen Vergangenheit*, 2 vols. (Freiburg im Breisgau, 1903), ii/1, 262, 242.

[29] ibid., 159.

[30] Joachim Radkau, *Das Zeitalter der Nervosität: Deutschland zwischen Bismarck und Hitler* (Munich, 1998).

[32] Hans-Ulrich Wehler, *Deutsche Gesellschaftsgeschichte*, 5 vols. (Munich, 1987-2008), iii., 66-97; Wolfram Siemann, *Gesellschaft im Aufbruch. Deutschland 1849-1871* (Frankfurt am Main, 1990). On the significance of economic developments during this period for the future shape of Germany, see Helmut Böhme, *Deutschlands Weg zur Grossmacht: Studien zum Verhältnis von Staat und Wirtschaft während der Reichsgründungszeit, 1848-1881* (Cologne, 1968).

[33] Volker Ullrich, *Die nervöse Großmacht: Aufstieg und Untergang des deutschen Kaiserreichs, 1871-1918* (Frankfurt am Main, 1997); Radkau, *Zeitalter der Nervosität*; The cultural response to this nervousness in the form of a 'cult of the will', are discussed in Michael Cowan, *Cult of the Will: Nervousness and German Modernity* (University Park, PA, 2008).

faith in liberalism to understand the roots of the anxieties generally associated with the Wilhelmine Empire.[34]

During these decades, Germany's 'modern' counterparts on both sides of the Atlantic already appeared to be succumbing to an epidemic of restlessness. In the 1860s, the neurologist George Miller Beard singled out the telegraph as a major cause of the crisis of neurasthenia in North America, and the British psychiatrist James Crichton Browne warned of the dangers of the growing 'velocity in thought and action' for the human mind.[35] And yet a similar technological acceleration was taking place across Central Europe during this period, as the individual states of the German Confederation pursued policies of socio-economic development whose effects continued to be felt after unification in 1871.[36] The concerted efforts of governments to improve communications networks meant that, by the 1850s and 1860s, the construction of railway and telegraph lines was in full swing. In this respect, therefore, Germany was part of a much broader, Western European process of modernisation. The mechanism through which telegraphic communication transformed society was much the same across the continent, and it was not the case that, as one recent work has put it, telegraphs 'rapidly compressed time and space for its users as these technologies rippled through society'.[37] Rather, networks expanded progressively, reaching different people and places at

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[34] Geoff Eley, 'What was German Modernity and When?', in Geoff Eley, Jennifer L. Jenkins, and Tracie Matysik (eds.), *German Modernities from Wilhelm to Weimar: A Contest of Futures* (London, 2016), 59-82. On the impact of the 1873 crisis, see Hans Rosenberg, *Grosse Depression und Bismarckzeit: Wirtschaftsablauf, Gesellschaft und Politik in Mitteleuropa* (Berlin, 1967). On the crisis of liberalism after 1873, see J. Sheehan, *German Liberalism in the Nineteenth Century* (London, 1982), pp. 123-80.

[35] Andreas Killen, *Berlin Electropolis: Shock, Nerves, and German Modernity* (London, 2006), 2; Sally Shuttleworth, *The Mind of the Child: Child Development in Literature, Science and Medicine, 1840-1900* (Oxford, 2010), 131.

[36] Abigail Green, *Fatherlands: State-Building and Nationhood in Nineteenth-Century Germany* (Cambridge, 2001); Manfred Hanisch, Hanisch, *Für Fürst und Vaterland: Legitimitätsstiftung in Bayern zwischen Revolution 1848 und deutscher Einheit* (Munich, 1991). On the persistence of regional peculiarities under the Bismarckian Reich, see Siegfried Weichlein, *Nation und Region: Integrationsprozesse im Bismarckreich* (Düsseldorf, 2004).

[37] Robert Hassan, *Empires of Speed: Time and the Acceleration of Politics and Society* (Boston, 2009), 38.

different times, including some whilst excluding others.[38] Even where access to the service was available, communication between individuals often depended upon the careful coordination of the technologies and social activities involved. As a result, speed, space and time appeared to fluctuate according to one's position within or outside the network.[39]

The shape of the network itself, however, the location of telegraph offices within towns, and the quality of the service provided, reflected the political, social, and economic peculiarities of the German landscape. Space might appear to contract in Germany's privileged industrial and financial heartland, for instance, but local distances became all the more burdensome in neglected rural backwaters. Time, meanwhile, often appeared to 'stand still' when institutional and technological obstacles interrupted communication between users in better or worse served localities.[40] Speed, this article argues, was perceived as the affliction of specific social classes, but as the network expanded, concerns were raised at the volatility of economic, geopolitical, and even social life as a whole. These fluctuations in speed, space and time were the cognitive counterpart to the socio-economic divisions which had become apparent across Germany by the 1870s, reflecting newly emerging hierarchies of privilege; they thereby sharpened people's experiences of their changing status in an industrialised and globalising world; they fuelled the symptoms and epidemiology of modernity.[41]

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[38] Manuel Castells highlights the inclusion/exclusion logic of modern networks in 'Informationalism, Networks, and the Network Society: A Theoretical Blueprint', in Manuel Castells (ed.), *The Network Society: A Cross-Cultural Perspective* (Cheltenham, 2004), 3-45.

[39] On the limitations of the 'time-space compression' model, see the introduction by Jon May and Nigel Thrift in *TimeSpace*, ed. Jon May & Nigel Thrift (2001), 1-46.

[40] Roland Wenzlhuemer has called attention to these disparities in his reflections on the 'annihilatory' capacities of the telegraph: *Connecting the Nineteenth-Century World: The Telegraph and Globalization* (Cambridge, 2013), 37-50.

[41] There have recently been efforts to re-situate the history and historiography of nineteenth-century Germany in the context of emerging, global, networks of trade, particularly Sebastian Conrad's extremely insightful *Globalisation and the Nation in Imperial Germany*, trans. Sorcha O'Hagan (New York, 2010). Once again, however, the focus is on the Wilhelmine Era. Cornelius Torp, *Die Herausforderung der Globalisierung: Wirtschaft und Politik in Deutschland, 1860-1914* (Göttingen, 2005), provides an interesting discussion of Germany's place in a globalising world before unification.

I)   **The Resilience of Space**

'Distance is no more!' proclaimed the title of an article in the first edition of *Die Gartenlaube*, in 1853.[42] Like many similar publications, this article expressed a widespread fascination with electricity and its application to telegraphic communication: 'Franklin wrested lightning from the heavenly god Jupiter; our epoch has made it into the fastest of postal messengers […]'[43] Like Britain and France, Germany had crossed the threshold of a new era in communication, and celebrated the death of distance.

After a series of trials and commercial initiatives during the 1830s and 1840s, the construction of telegraph networks had begun in earnest after the outbreak of revolution in 1848.[44] Two months after the convening of the German National Assembly in May of that year, Friedrich Wilhelm IV of Prussia ordered the construction of two major lines connecting Berlin to Cologne and Frankfurt am Main, and Bavaria, Saxony and Hamburg soon followed suit.[45] Despite tight government control over the construction of telegraph lines, within a year the emerging network was made accessible to the general public, and individuals were soon able to communicate across Germany.

The technology was of immediate use to state authorities, particularly the police forces which were re-structured throughout Germany in response to the recent disturbances.[46] The

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[42] 'Keine Entfernung mehr!', *Die Gartenlaube* (1853), no.7, 74. In 1856, *Die Gartenlaube* had a print run of 60,000 copies, and over 100,000 by the 1860s: Werner Faulstich, *Medienwandel im Industrie- und Massenzeitalter, 1830-1900* (Göttingen, 2004), 66.

[43] ibid.

[44] An electric telegraph line existed since 1847 in Bremen, funded by and primarily intended for the local merchant community: Staatsarchiv Bremen (hereafter StAB), 2-R.15.b.1, Public notice, 'Bremer Telegraphen-Verein benachrichtigt das geehrte Publikum', 1 Jan. 1847. See also Rita Seidel, 'Verkehrsmittel Telegraph: Zur Geschichte der Telegraphie im 19. Jahrhundert bis 1866 unter besonderer Berücksichtigung des Raumes Hannover – Bremen' (University of Hanover PhD Thesis, 1980), .

[45] Wessel, *Die Entwicklung des elektrischen Nachrichtenwesens in Deutschland*, p. 153.

[46] Anna Ross, *Beyond the Barricades: Government and State-Building in Post-Revolutionary Prussia* (forthcoming, 2018); On the emerging network of 'political' police in the German confederation, see Wolfram Siemann, *Deutschlands Ruhe, Sicherheit und Ordnung: die Anfänge der politischen Polizei, 1806-1866* (Tübingen, 1985), and for discussions of the telegraph within this organisation, Wolfram Siemann, *Der*

security implications of the technology had been emphasised by King Ludwig I of Bavaria in 1848: 'The telegraph associated with the railways', he stated, 'is almost the only means of arresting criminals fleeing the police […]'.[47] Through the telegraph network, public authorities became, in theory, omnipresent, freeing their agents from a dependency upon existing means of transportation. As the mayor of Augsburg wrote to officials in Nuremberg, '[t]he 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 electro-magnetic telegraph'.[48]

In civil society, meanwhile, businessmen involved in banking, trade and news distribution quickly became avid users of the service. Within months of the construction of the first telegraph lines, news agencies such as Wolffs in Berlin, as well as individual newspaper editors, reached agreements with state administrations for prioritised and subsidised correspondence.[49] Traditional centres of finance were soon linked up, particularly Vienna, Frankfurt, Augsburg and Berlin, and commercial associations throughout Germany began to request subscriptions to news from a number of European stock markets. Telegraph networks, it seemed, had launched a process of territorial and economic integration across European states.

"Polizeiverein" deutscher Staaten:eine Dokumentation zur Überwachung der Öffentlichkeit nach der Revolution von 1848/9 (Tübingen, 1983).

[47] BHStA, MH 16863, 'Antrag des Minister des Innern', 8 Jan. 1848.

[48] Stadtarchiv Nürnberg, C 7/I, Nr. 2762, Erster Bürgermeister Augsburg to Magistrat Nürnberg, 30 Oct. 1850.

[49] See, for example, the request from the *Allgemeine Zeitung*: BHStA, GDVA 673, J.G. Cotta'sche Buchhandlung to Telegraphenamt, 11 Jan. 1850. On telegraphic news agencies in Germany, see Dieter Basse, *Wolffs Telegraphisches Bureau, 1849 bis 1933: Agenturpublizistik zwischen Politik und Wirtschaft* (Munich, 1991), and C. Wunderlich, 'Telegraphische Nachrichtenbureaus in Deutschland bis zum Ersten Weltkrieg', in J. Wilke (ed.) *Telegraphenbüros und Nachrichtenagenturen in Deutschland* (Munich, 1991), 23-85. In general, see Volker Barth, 'Making the Wire Speak: Transnational Techniques of Journalism, 1860-1930', in Michaela M. Hampf and Simone Müller-Pohl (eds.), *Global Communication Electric. Business, News and Politics in the World of Telegraphy*, (Frankfurt am Main, 2013), 246-7; Alexander Nalbach, '"Poisoned at the Source"? Telegraphic News Services and Big Business in the Nineteenth Century', *Business History Review*, 77, No. 4 (2003), 577-610.

Self-evidently, however, the emerging network included certain towns, regions and social groups whilst excluding others.[50] The initial cost for a standard twenty-word telegram was equivalent to the average worker's weekly earnings, such that the service remained beyond the financial means of the vast majority of the population. The pace of construction itself, meanwhile, varied across Germany, with states such as Baden, Württemberg and Hanover lagging behind as they struggled to meet the costs involved.[51] Once construction was launched, political and strategic centres were the first to be connected, and lines were built between Munich and Vienna, Bremen and Hanover, Berlin and Cologne, whilst mid-level administrative towns were only slowly provided with the service. Industrialising regions were also prioritised—a line connected Düsseldorf and Elberfeld in Prussia from an early stage, and a dense network emerged in Saxony.[52] In Bavaria, the existing channel of industry and trade running through the west of the state was quickly integrated, and a higher concentration of lines eventually developed in Baden and Württemberg. South-West Germany's 'decentralized industrial order' was thereby adequately served, facilitating the coordination of activities between merchants and dispersed workers which characterised the region.[53] On the other hand, agricultural regions, such as in eastern Bavaria, were neglected, and only in the 1860s did secondary lines begin to extend to the countryside.[54] A two-speed society had begun to emerge, placing trade and industry, in particular, ahead of agriculture.

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[50] The 'gaps' in communications networks, as well as the new centres and peripheries which they create, have recently received more attention in the field of global history. See, for example, Osterhammel, *Transformation of the World*, 710**;** Wenzlhuemer, *The Telegraph and Nineteenth-Century Globalization*, 135-62*;* Simone M. Müller, *Wiring the World: The Social and Cultural Creation of Global Telegraph Networks* (New York, 2016).

[51] Seidel, 'Verkehrsmittel Telegraph', 142-4.

[52] Horst A. Wessel, *Die Entwicklung des elektrischen Nachrichtenwesens in Deutschland und die rheinische Industrie : von den Anfängen bis zum Ausbruch des Ersten Weltkrieges* (Wiesbaden, 1983), 15-244.

[53] G. Herrigel, *Industrial Constructions : The Sources of German Industrial Power* (Cambridge, 1996), esp. pp. 33-71.

[54] On this 'arc' of communication in Bavaria, see Zef Segal, 'Communication and State Construction: The Postal Service in German States, 1815-1866', *Journal of Interdisciplinary History*, 44, no. 4 (Spring, 2014), 453-73. Cf. Josef Reindl, *Der Deutsch-Österreichische Telegraphenverein und die Entwicklung des deutschen Telegraphenwesens, 1850-1871* (Frankfurt am Main, 1993), 70-1.

The state's command over space was itself limited by the shape of the network. This was highlighted in 1851, when a Hungarian revolutionary was spotted in northern Bavaria. Warnings were sent by telegraph from Munich to the town of Bamberg, where the conspirator had been identified. But the senior regional authorities in Bayreuth, which was yet to obtain access to the network, were left unaware of this exchange, and the suspect fled to Bohemia. The president of the regional government in Bayreuth later complained 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'. In the absence of a telegraphic connection, the authorities were at the mercy of the distances across which news and people travelled. The result, the president asserted, was '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'.[55]

Ordinary citizens, too, soon complained of the perceived 'head-start' that certain towns possessed over others, views which were expressed in petitions to telegraph administrations or in parliament. In Bavaria, the tide of complaints reaching parliament in the 1850s led the head of a committee investigating the issue, Wilhelm Neuffer, to warn of the emerging two-speed society which privileged some economic sectors over others: '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'.[56] And yet such 'lacunae', or gaps, repeatedly re-appeared wherever states sought to satisfy the demands from individual localities for access to a telegraph office. As Neuffer surmised: 'If

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[55] BHStA, MH 16799, Regierung Oberfranken to HM, 28 Apr. 1851.
[56] *Verhandlungen der Kammer der Abegordneten des Bayerischen Landtages* (hereafter *VKA*) (1853/5), Beil. XLIV, 4 Dec. 1854, p. 96.

one part in any way moves forward past another then the other must not stay behind […] [I]t is therefore also 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'.[57] Across Germany, as space 'disappeared' for those—principally commercial—towns drawn into the expanding network, those beyond its reach found themselves in a seemingly expanding vacuum.

Even within privileged regions, the uneven development of the network had begun to establish distinctions within the same economic sector. In the Wupper Valley of the northern Rhineland, for instance, tensions arose between the twin textile producing towns of Elberfeld and Barmen. Elberfeld, a town with an important banking network, had been provided with a telegraph office from an early stage, suggesting the primacy of finance in the economic landscape.[58] But the technology had also become a crucial aid for manufacturers deprived of direct communication with the principal nearby waterways, the Rhine and Ruhr. The inhabitants of Barmen, on the other hand, had not had such luck, and were obliged to send their messages through the office in neighbouring Elberfeld. Those most affected by this disparity, the trading establishments of Barmen, presented a joint petition to the Prussian minister of trade, August von der Heydt, himself from a merchant and banking family in Elberfeld.[59] 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'.[60] The petition then analysed the average

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[57] ibid.

[58] Dieter Ziegler, 'German Private Banks and German Industry, 1830-1938', in Youssef Cassis and Philip Cottrell (eds.), *The World of Private Banking* (Burlington, 2009), 161.

[59] Stadtarchiv Wuppertal, Q II 15, Vertreter der Handlungshäuser to von der Heydt, 23 Feb. 1856.

[60] ibid.

time spent by telegrams in transit from the telegraph office in Elberfeld to Barmen and vice-versa, emphasising the burden which local distances had now become.[61]

Perceptions of local space changed all the more as the telegraph's tentacles progressively integrated Germany's trade and manufacturing sectors into a network of European and global exchanges during the 1860s and 1870s. Caspar Honegger, the Swiss founder of the large 'Spinning and Weaving Mill, and Machine Factory' in Kottern, near the Bavarian town of Kempten, explained that in order to keep up with competition in the cotton industry, it was essential that he remain 'in the most direct connection with the consumers of the products as well as the deliverers of the raw material'. In England, where the tariffs on yarn had been considerably reduced, he pointed out, industrialists possessed this advantage.[62] Honegger's manufactory, however, was beyond the limits of the nearby town, close to a source of water which could power his machinery. As a result, it could take a few hours for the messages arriving at the office in Kempten to be delivered to him, and a further hour for the reply to be handed in, 'and so half a day often goes lost, which given the very regular fluctuations in price which take place, can be disastrous and incur losses'.[63]

As these two examples imply, where telegraph lines did not exist, messages had to be conveyed by other means—the future media mogul Julius Reuter, for instance, began his career using pigeons to transmit telegrams between Aachen and Brussels—and where villages lacked a telegraph office, they were delivered by the next available post.[64] Within towns themselves, telegrams were distributed to their addressees by local messengers who generally made the journey by foot. Having travelled, dematerialised and unhindered, through the wires of the

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[61] ibid.

[62] BHStA, MH 16873, Caspar Honegger, Vorstand der Spinnerei, Weberei, Maschinenfabrik Kottern, to HM, 1 Mar. 1870.

[63] ibid.

[64] Tom Standage, *The Victorian Internet: The Remarkable Story of the Telegraph and the Nineteenth Century's Online Pioneers* (New York, 1999). 150-2.

telegraph network, messages re-assumed their written form and encountered the reality of local space through which they remained to be transported.

This, indeed, was the point of contention in the event described at the beginning of this article. According to the official, Freiherr von Lerchenfeld, telegrams in Augsburg were often being delivered over an hour after their reception at the railway station office. As the local administrator explained, the telegraph office possessed only two messengers covering day and night shifts, and it took these employees an average of 45 minutes to walk from the railway station into town and back. Delays were therefore inevitable, and similar complaints were frequently expressed throughout the period under consideration. The 'annihilation of space' appeared somewhat illusory when, as Lerchenfeld asserted, 'a telegram takes three or four times as long from the office to its delivery as it does from St Petersburg and London to Augsburg'.[65]

The *Gremium des Handelsstandes* in Augsburg also wrote to the minister of trade, asking that the telegraph office be re-located to the centre of town, where it had originally stood. Not only did addressees now often have to wait for hours after the arrival of their telegrams to receive them, the letter stated, senders also had to waste time covering great distances to reach the office. If the weather was bad, they might even have to rent a hackney carriage to take them to the railway station (if one could even be found!).[66] But the administration's inquiries into the situation revealed that the telegraph's principal users no longer consisted exclusively of bankers and editors in the centre of town. They now also included local textile manufacturers whose establishments were situated outside the city walls, by the river Lech. 'It would be with far more justification', the administration specified, 'for the factory owners […] to request the

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[65] BHStA, MH 16882, Bericht, Präsident Regierung Schwaben und Neuburg to MInn, 14 Sep. 1859.
[66] BHStA, MH 16882, 'Vorstellung und Bitte des Gremiums des Augsburger Handelsstandes', 5 Nov. 1859.

establishment of a subsidiary branch in the Jacobervorstadt', outside the town centre.[67] Competition between finance and industry for access to the telegraph network threatened to make the changing socio-economic configuration of local space a matter of contention.

By the 1870s, at a national level, concerns were raised that the telegraph was sharpening the urban-rural divide. Reichstag deputies discussed the justification for charging supplementary delivery fees to those living beyond a certain radius from telegraph offices—which were generally situated in towns. The conservative deputy and estate owner Friedrich von Behr-Schmoldow warned of an emerging dispute 'between town and countryside', whilst another deputy demanded that all fees be either abolished or charged uniformly throughout the *Kaiserreich*.[68] The Centre Party representative, Burghard von Schorlemer-Alst, questioned their reasoning, however, arguing that applying a universal flat rate was unfair, and would effectively mean town dwellers were subsidising correspondence for those in the countryside.[69]

The value placed upon distance in communication, meanwhile, had become a factor of socio-economic status. During the 1850s and 1860s, telegrams had generally been charged according to the number of words they contained and the particular 'zone', or distance, to which they were being sent. As telegraph networks extended ever further across the globe, however, such distance-based pricing strategies increasingly appeared to disadvantage those users engaging in international correspondence. By the 1870s, the new imperial Postmaster General Heinrich Stephan considered them an unnecessary relic of Germany's earlier divisions—in both postal and telegraphic matters, he strove for a unity of administration that would secure the *Kaiserreich*'s position in a globalised world of nation-states and empires.[70] Defending his

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[67] BHStA, MH 16882, Dyck, 'Erinnerung', 15 Mar. 1864.
[68] *Verhandlungen des Deutschen Reichstags* (hereafter *VDR*) (1877), 12 Apr. 1877, 398, 407.
[69] ibid., 407.
[70] On Heinrich Stephan's efforts to unify the *Reich*'s postal administration, see Weichlein, *Nation und Region*, 105-90.

proposal to introduce a flat rate of five pfennig per word across the entire country in 1876, he believed he argued that to do so was to support the technology's function as an 'annihilator of distance', by abolishing the 'weak barrages' which regional zones were opposing to 'the tide of world correspondence'.[71]

As the conservative Theodor Günther pointed out, however, only 'particular classes are in the habit of sending telegrams over a long distance', and the flat rate under consideration was higher than that which used to apply for short-range transmissions.[72] The new tariff would only be to the benefit of '*Großhandel*' and '*Großindustrie*', therefore, those engaging in increasingly global transactions, whilst those whose horizon of communication was limited would see the cost of distance increase.[73] The latter, Günther believed, comprised 'agriculture in its entirety, the artisan class, the public, even the working classes', who only communicated at a short range. What, he asked, did the imperial Postmaster General intend to do for the 'vast majority' of the population?[74] At the opposite end of the political spectrum, the left-liberal deputy Leopold Sonnemann similarly recommended lower fees in order to give 'the public the opportunity to telegraph more', and the National Liberal Bernhard Schröder later emphasised that preserving distance-based tariffs would favour exchanges from 'locality to locality, small enterprise to small enterprise, as well as agriculture'.[75]

Despite the Postmaster General's enthusiasm for the effects of telegraphic communication, therefore, distance had not been annihilated. His arguments represented the views of a cosmopolitan capitalist elite, for whom global exchanges were quite simply of higher value than the modest, short-range everyday interactions of most ordinary individuals.

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[71] *VDR* (1876), 8 Nov. 1876, 88-9.
[72] *VDR* (1875/6), 26 Nov. 1875, pp. 326-7.
[73] ibid.
[74] ibid., p. 327.
[75] ibid., pp. 327-8; *VDR* (1876), 8 Nov. 1876, p. 84.

Defending such views in the aftermath of the 1873 crisis was contentious, and deputies from across the political spectrum rallied to defend the interests of agriculture and localised industry.[76] Indeed, Stephan's introduction of an *Einheitsporto* for the postal service was similarly criticised in the *Reichstag* for promoting the interests of the trading classes to the detriment of ordinary workers.[77] As this section has argued, however, these debates reflected transformations which had begun much earlier. Across Germany, the developing telegraph network had privileged centres of administration, finance and industry, 'shrinking' space in economically advanced regions whilst 'expanding' it in agricultural areas. It had heightened the value of previously insignificant local distances, as competition for access to the service arose between neighbouring towns with a similar economic focus, or between individuals engaged in different sectors within the same municipality. Everywhere, the value of space had been re-emphasised.

II)   **The Fluctuations of Time**

Like railway transportation, the coordination of telegraphic transmissions depended upon one, shared notion of time. In 1854, the regulations of the German-Austrian Telegraph Union (*Deutsch-Österreichischer Telegraphen-Verein*) had stipulated that 'in order to avoid irregularities which might result from digressions from the standard times (*mittleren Zeiten*) at the different offices, the clocks of all telegraph offices under one and the same government will be set to the standard time of the capital city of the state in question'.[78] Telegraph offices, the railway stations they often served, and the networks connecting them in each state now

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[76] On the re-orientation of Liberalism after 1871 and 1873, see Sheehan, *German Liberalism*, pp. 123-80.
[77] Weichlein, *Nation und Region*, 118-20.
[78] *Zeitschrift des Deutsch-Österreichischen Telegraphen-Vereins*, vol. 1 (1854), 5.

constituted spaces of communication within which a single, homogeneous and clock-based time dominated.

Until the adoption of *Mitteleuropäische Zeit* in 1893, however, the 'standard time-orientation' adopted across railway and telegraph networks remained distinct from the many local clocks and social rhythms which ordered the day in towns and villages across Germany.[79] The clock in the telegraph office in Fürth, for instance, was set to Munich time every morning, but differed from those in the city by a few minutes as a result.[80] When the editors of the *Allgemeine Zeitung* in Augsburg complained that the news which they received by telegraph often arrived too late to be printed, meanwhile, the telegraph administration retorted their estimation of delivery times was inaccurate, because the 'the town clocks very often differ from the standard clock of the [telegraph] office and the railway station by five to ten minutes'.[81]

Across the lines of the network itself, in theory, time was uniform, and allowed for greater coordination of social and economic activities. Keeping up with the fluctuations of the stock market, for instance, required that news be sent and received at specific times, and the Munich *Handelsverein* insisted that it must receive telegrams from Vienna in time for the '*Börse*' which it held between 10 and 11 am and 5.30 and 6.30pm.[82] This coordination of activities required a considerable amount of calibration and cooperation between the parties involved. In 1869, the Filialbank in Bamberg complained that stock prices from Frankfurt were often arriving after 8pm, whereas the *Frankfurter Effecten Societät* processed its daily

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[79] Vanessa Ogle, *The Global Transformation of Time: 1870-1950* (Cambridge, MA, 2015), esp. pp. 20-98; Jeremy Stein, 'Reflections on Time, Time-Space Compression and Technology in the Nineteenth Century', in Thrift and May (eds.), *TimeSpace*, 106-19. Beyond Europe, On Barak has illustrated the co-existence of multiple temporalities in the context of nineteenth- and early twentieth-century Egypt: *On Time: Technology and Temporality in Modern Egypt* (Berkeley, 2013). Eviatar Zerubavel, 'Timetables and Scheduling: On the Social Organization of Time', *Sociological Inquiry*, 46, no. 2 (1976), 88.
[80] BHStA, GDVA 674, Telegraphen-Station Fürth to Telegraphenamt, 23 Dec. 1856.
[81] BHStA, GDVA 674, Telegraphen-Station Augsburg to Telegraphenamt, 26 Jan. 1860.
[82] BHStA, GDVA 676, Vorstandschaft des Münchener Handelsvereines to Telegraphenamt, 29 Apr. 1869.

transactions between 6pm and 7pm.[83] Time, for these users, was indeed money, and as fixed trading hours were progressively established, businessmen reached agreements with their local telegraph administration for the regular and punctual transmission of information.[84]

Nevertheless, a number of technological, institutional, and social limitations often stood in the way of uninterrupted, instantaneous communication. In Bremen, for instance, merchants were unable to receive news of ships arriving in the port of Bremerhaven at night, when the telegraph office was closed. Until the decision was made to install an alarm in the telegraphist's bedroom to cater for these occurrences, both the ship's crew in Bremerhaven and the ship owner or merchant in Bremen had to wait through the night before taking action.[85] Elsewhere, in Frankfurt, operators complained that communication was interrupted when, 'during the whole night, Nuremberg wouldn't listen […] and it was impossible even for the offices of Bamberg and Munich to wake Nuremberg up'.[86] In these moments, time appeared to stand still or—far worse—drag on, as transmissions were put on hold and users were forced to wait.[87]

The limitation of communication to office opening hours seemed to negate the utility of the technology's purported instantaneity. In 1854, *Kladderadatsch* mocked the latest Prussian telegraph regulations asking that staff be given prior warning when telegrams were going to be sent at night. In consequence, the newspaper explained: '1) All sudden occurrences may only take place before the closing of the telegraph office. 2) All deaths occurring at night must be announced the preceding evening.'[88] Unlike the post, or indeed the railways, the telegraph was

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[83] BHStA, GDVA 676, Königl. Filial Bank Bamberg to Telegraphenamt Bamberg, 21 Jul. 1869. Carl-Ludwig Holtfrerich, *Frankfurt as a Financial Centre: From Medieval Fair to European Banking Centre* (Munich, 1999), 116-219.

[84] Ranald Michie, *The Global Securities Market: A History* (Oxford, 2006), 83-118; cf. also, Youssef Cassis, *Capitals of Capital: The Rise and Fall of International Financial Centres, 1750-2009*, trans. J. Collier (Cambridge, 2010), 41-73.

[85] StAB, 2-R.15.b.1, Commission des Senats für die Häfen to Telegraphenamt Bremerhaven, 30 Nov. 1859.

[86] BHStA, GDVA 674, TelegraphenStation Frankfurt am Main to Telegraphenamt, 7 Nov. 1861.

[87] On changing attitudes to waiting times and impatience as a characteristic of the modern era, see Oliver Zimmer, 'Die Ungeduld mit der Zeit: Britische und Deutsche Bahnpassagiere im 19. Jahrhundert', *Historische Zeitschrift* (forthcoming, 2019).

[88] *Kladderadatsch*, 13th Aug. 1854.

sold as a technology that allowed for fully individualised communication, independent of prescribed schedules or routines, but this promise masked the technical and logistical realities of running the service.

Alterations to official regulations suggest that pressure was increasing upon administrations to ensure the continuous, uninterrupted flow of communication. The treaty establishing the German-Austrian Telegraph Union in 1850 had initially stipulated that offices in member states should be open from 7am to 9pm between April and September, and from 8am to 9pm during the remaining autumn and winter months.[89] By 1858, however, three categories of service had been established, roughly similar in all German states. The initial, now standard, opening hours were termed 'full daytime service' (*voller Tagesdienst*). Two new categories were now also introduced to describe smaller offices with a 'limited daytime service' (*beschränkter Tagesdienst*) during weekdays, and those open on a 24-hour basis.[90]

These regulations, however, launched a new form of competition between places with longer or shorter opening hours. For economic reasons, as one chamber of commerce explained, some towns needed uninterrupted access to the telegraph, whilst others only made use of the service 'at particular times', such as during the autumn harvest, or during the summer '*Badesaison*' in Kissingen.[91] Discrepancies could also interfere with administrative practices. The Bavarian minister of the interior, for example, could not communicate with the president of the regional government in Ansbach after 6pm—a situation which had become 'urgent' by

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[89] *Zeitschrift des Deutsch-Österreichischen Telegraphen-Vereins*, vol. 1 (1854), 4.

[90] *Dienstanweisung für die telegraphische Correspondenz auf den Linien des Deutsch-Österreichischen Telegraphen-Vereins* (1858), 2-3.

[91] Staatsarchive Nürnberg (hereafter StAN), Rep. D4, 67, 'Antrag Hr Fröttek, Mitglied der Gewerbe und Handelskammer von Mittelfranken, die Erweiterung der Telegraphen-Netzes betr.' 13 Feb. 1866; BHStA, GDVA 444, Telegraphenamt to Telegraphen-Ingenieur Seifert, 23 Jan. 1865.

1863, when the local telegraph office's hours were extended to 11pm.[92] Business, leisure and agriculture operated according to different schedules.

Once again, the growing integration of regional, national, and European markets changed local perceptions of time for certain social groups. The offices established across Germany in the 1850s had often provided a 'limited daytime service', and in Straubing, a town of 12,000 inhabitants, this situation had initially been 'accepted as sufficient'. Barely a decade later, expectations had changed.[93] 'As useful as the telegraph is to the public', a petition from the town's representatives stated in 1860, 'it is only such insofar as it is continuously [in large towns, both day and night] at the disposal of the public'. It was particularly disappointing, the letter continued, when one found limited opening hours in a town 'from which it might be expected that a telegraph office exists with full daytime service'. The example was given of a visitor arriving by train at 12 pm, who was unable to execute his personal or commercial transactions until the office opened at 2 pm, by which time his family matters and business had passed. 'This is the situation facing an outsider travelling through, but is a daily occurrence for the inhabitant of Straubing'.[94]

Straubing, situated in the agricultural heartland of Lower Bavaria, was dependent upon its trade in cereals, and its merchants in grain and other produce were the telegraph's most avid users. As things stood, the town's weekly market opened on Saturdays at 8am, but the first telegrams came in no earlier than 9.30, and sometimes later. By that time, produce had been bought, as most transactions were conducted within the first one or two hours of the market. If

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[92] StAN, Rep. 270/IV, Nr. 4, 'Bericht des ersten Bürgermeisters Nürnberg', 29 May 1854; StAN, Rep. 270/IV, Nr. 4, 'Freiherr von Brück to Oberamt Nürnberg', 19 Dec. 1863.

[93] BHStA, GDVA 440, Handelsrat Straubing to Telegraphenamt', 25 Nov. 1860; Stadtarchiv Wuppertal, Q II 15, 'Von Eynern to Bürgermeister Bredt', 28 Mar. 1856.

[94] BHStA, GDVA 440, 'Gesuch um Einrichtung des vollen Tagdienstes bei der Station Straubing', 23 Nov. 1860. On 13 December, full daytime service was granted by the Bavarian Telegraph administration: BHStA GDVA 440, Brück to Telegraphenamt, 13 Dec. 1860.

one then wished to telegraph the results of the trade to Munich or Lindau, this could not be done until the office was free around 11.30, by which time people in those places had no interest in the matter. If one then sought to sell on some of the purchased goods, a suitable offer might be received at 7pm, but by this stage it could not be received, as the office was shut until 2pm the next day (a Sunday).[95] The petition demonstrates the extent to which the telegraph could help or hinder the integration of local trade in agricultural produce into state-wide exchanges. In the case of Straubing, decisions were being made based upon demand over 300 kilometres away in Lindau, on Lake Constance. The distance between these two centres no longer determined when the going rates for products at each market could be known, nor the speed at which exchanges could be made. Now, local merchants had been drawn into the temporal framework of an increasingly integrated regional and national economy; for them, prices might fluctuate rapidly, raising the financial value of any time lost moments of interruption.

Whilst it remained within the power of state authorities to regulate local office opening hours, the growing use of the telegraph service also increased competition for 'bandwidth' on the network. This first became evident during the Crimean War, when diplomatic correspondence jammed the lines passing through central Europe, and the Bavarian telegraph warned some of its best customers to expect delays.[96] As networks then expanded during the 1860s and the cost of the service was reduced, the volume of correspondence, the social diversity of telegraph users, and consequently the number of delays in transmission increased considerably.

An article in the *Neue Frankfurter Zeitung* in 1861 highlighted the socially variegated impact of such delays, and resulting perceptions of time. The Prussian government's decision

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[95] BHStA, GDVA 440, 'Gesuch um Einrichtung des vollen Tagdienstes bei der Station Straubing', 23 Nov. 1860.
[96] In response to one complaint, the director of the Bavarian telegraph administration pointed to 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': BHStA, GDVA 673, Dyck to Redaktion der Pfälzer Zeitung, 9 Apr. 1854.

to reduce tariffs, the author argued, had caused traffic on the network to increase, to the point where two thirds of telegrams were being either sent or received late. For many individuals, the reduced cost of telegraphing was the primary motivating factor in their adoption of this new means of communication, but for 'those who use the telegraph most [...] namely the commercial estate and newspaper editors', these monetary savings were more than offset by the loss of time from the resulting delays. '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'.[97] It was therefore 'unjust to increase the number of useless telegrams being sent by reducing the tariff'.[98] More economically productive sections of society, the article implied, had a greater need for speed.

In fact, by the early 1870s, the prioritisation of business meant that the time allocated to the transmission of financial news had become utterly disproportionate to its share of the overall volume of correspondence. In Augsburg, it was shown, 'the *Börse* provides at most four percent of all correspondence, but requires a much speedier transmission of its telegrams than all other branches of communication, due to the task of completing its business during a trading day, or even to operate on two stock exchanges at the same time'.[99] Time was in high demand, and the world of finance claimed a larger share.

Competition for bandwidth also varied throughout the day, businessmen being particularly active during trading hours. At the central office in Munich, on average, a trickle of telegrams began to be handed in for transmission around 7am, the flow reaching its peak between 11am and 12pm, during which an average of 110 to 120 telegrams were handled, declining to around 24 at midnight, and a few more before dying out completely at 4am.[100]

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[97] BHStA, GDVA 674, *Neue Frankfurter Zeitung*, 25 Jul. 1861.
[98] ibid.
[99] BHStA, MV I 2069, Gumbart to HM, 30 Sep. 1872.
[100] BHStA, MH 16799, Gumbart, 'Bericht, Erweiterung des bayerischen Telegraphen-Netzes betr.', Beilage VII.

Telegraphic traffic had a life-cycle of its own, and the value of time itself varied at different times of the day. In order to cope with demand, telegraph administrations were left with two options, either to drastically expand the capacity of their networks at great cost, or to adapt their tariff policies to reflect the fluctuating values of time.

These issues came to a head when tariffs were debated in the Reichstag during the 1870s, in the wake of the 1873 economic crisis. In response to the growing cost of running the imperial telegraph network, the left-liberal deputy Leopold Sonneman argued that stock exchanges should be taxed for the priority which their transmissions were given at peak hours—they were to pay a high premium for their time.[101] The social implications of this measure were contentious, however, and the conservative Adalbert von Nordeck zur Rabenau denounced the unfair advantage which it would confer upon the financial elites. Instead, he believed, telegrams should be sent in the order in which they were deposited at offices, ensuring universal equality before time.[102] In the wake of the 1873 stock market crisis, Reichstag deputies were clearly less willing to give speculators the time of day, time which, they believed, should be redistributed more fairly among users. The press, it was meanwhile suggested, might be allowed to make use of telegraph lines at a reduced cost during off-peak hours—night-time, this implied, whilst of far less value for the general public, still constituted important working hours for the news industry.[103] It was thus not only time itself, but the times of the day that were being revalued, as different social groups and professions reclaimed various portions of nature's diurnal cycle for themselves.

Time's reign over social and economic life was perhaps expanding, but its empire was thus increasingly divided, as it became a site of contestation between the higher echelons of

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[101] *VDR* (1874), 7 Dec. 1874, 542.
[102] *VDR* (1875/6), 26 Nov. 1875, 328.
[103] *VDR* (1874), 7 Dec. 1874, 542.

the *Wirtschaftsbürgertum* and the rest of society. The telegraph had not simply diffused a universally rational temporal framework of interaction, allowing all individuals to communicate and coordinate activities more efficiently across space. Very quickly, the physical infrastructure upon which the service depended had fostered the emergence of new hierarchies between those with more or less access to uninterrupted high-speed communication. From the outset, those involved in finance and trade at the centre of large urban hubs had possessed an advantage in this regard, suffering fewer delays in transmission than those in suburban or rural peripheries whose exchanges were often put on hold during periods of increased traffic or outside opening hours. By the 1870s, these disparities had become apparent, as competition for telegraphic bandwidth led different groups to emphasise the importance of prompt communication for their respective social or economic activities. The onus was now on the telegraphic elites to justify the greater value of their time over others', or to pay the appropriate price.

III) **Metropolitan Modernity**

In his classic work, *The Metropolis and Mental Life* (1903), Georg Simmel described the modern city as the site where 'the tempo and complexity of economic, occupational and social life' contrasted most sharply with the 'slower, more habitual, and more steadily flowing rhythm […] of small town and rural existence'.[104] It was here that the concentration of people and technologies was most intense, and that movement, noise and light subjected the individual to the repeated 'shocks' of modernity. Of particular importance, for Simmel, was the '[p]unctuality, calculability, and exactness which the complications and extent of metropolitan

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[104] Georg Simmel, 'Die Groβstädte und das Geistesleben', in Rüdiger Kramme, Angela Rammstedt and Otthein Rammstedt (eds.), *Georg Simmel: Aufsätze und Abhandlungen, 1901-1908*, 2 vols. (Frankfurt am main, 1995), i., 117.

life require'.[105] In the city, both space and time had been most acutely transformed by the speed of modern life.

The second half of the nineteenth century witnessed the explosion of Germany's principal cities. Between 1850 and 1910, the population of Berlin quadrupled from 400,000 to over 2 million; that of Munich more than quintupled to almost 600,000; and Hamburg grew from around 130,000 to almost 1 million inhabitants.[106] New systems of gas, water, and electricity provision, of sewage, and urban transportation, laid the foundations for the modern 'networked city', understood as a space of circulation and interaction.[107] Urban telegraph services were also introduced, allowing for localised exchanges and the synchronisation of public clocks which facilitated the seamless conduct of social life.[108] In cities too, David Harvey has argued, the 'annihilation of space' was afoot.[109]

In reality, however, urban telegraph networks moulded perceptions of time and space to the changing socio-economic configuration of towns and cities. Telegraph offices had generally been established in locations which benefitted the local administration and commercial elite. In Munich, plans were drawn up in 1850 to adapt rooms in the Ministry of Trade for the purpose, and the service was later re-located to the central post office.[110] In Bremen, a telegraph office was first established in the *Museum*, home of the scientific

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[105] ibid., 120

[106] Andrew Lees and Lynn Hollen Lees, *Cities and the Making of Modern Europe, 1750-1914* (Cambridge, 2007), 287-8.

[107] Joel A Tarr and Gabriel Dupuy (eds.), *Technology and the Rise of the Networked City in Europe and America* (Philadelphia, 1988); Wolfgang R. Krabbe, 'Die Entfaltung der modernen Leistungsverwaltung in den deutschen Städten des späten 19. Jahrhuunderts', in Hans Jürgen Teuteberg (ed.), *Urbanisierung im 19. und 20. Jahrhundert: historische und geographische Aspekte* (Cologne, 1983), 373-92; Friedrich Lenger, *European Cities in the Modern Era, 1850-1914*, transl. Joel Golb (Boston, 2012), esp. pp. 157-72; On Germany in particular, see Brian Ladd, *Urban Planning and Civic Order in Germany, 1860-1914* (London, 1990).

[108] Two notable exceptions include Joel Tarr, 'The City and the Telegraph: Urban Communication in the Pre-Telephone Era', *Journal of Urban History*, vol. 14, no. 1 (1987), 38-80, and Gregory J. Downey, *Telegraph Messenger Boys: Labor, Technology and Geography, 1850-1950* (New York, 2002), both of which focus upon the United States.

[109] David Harvey, *The Urbanization of Capital: Studies in the History and Theory of Capitalist Urbanization* (Oxford, 1985), 35-45.

[110] BHStA, GDVA 372, Dyck, 'Bericht des Telegraphenamts', 7 Feb. 1850.

association of the town, but was soon moved to the stock exchange which lay at the heart of the city-state.[111] In Berlin, the telegraph office at the junction of Französische Straße and Oberwallstraße was a stone's throw away from the Berliner Schloß, a short walking distance from the Alte Börse, and became a focal point for budding news agents.[112] As mentioned earlier, the removal of the office in central Augsburg to the railway station cause considerable anger, and after some debate it was re-located to the *Börsengebäude*.[113] The privileging of government, business and finance established an urban 'digital divide' which, in places such as London, has endured to the present day.[114]

During the 1870s, urban space was then pervaded with new access points which reflected the social diversification of its user-base. The construction of central telegraph offices in larger towns spawned an array of subsidiary branches – '*Zweigstellen*' or '*Filialbüros*'. Munich's new central *Telegraphenstation* was connected to former offices in the *Hauptpostgebäude* and *Börsengebäude* which were now subordinated to it.[115] In Bremen, new suburban branches served the expanding manufacturing districts.[116] In Elberfeld and Barmen, where the population was stretched out along a considerable portion of the Wupper river, small offices were set up at regular intervals through the valley.[117] Urban networks created new spaces of privileged, rapid communication. As one observer remarked of the underground telegraph lines

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[111] StAB, 2-R.15.b.3, Extract aus dem Senatsprotocolle, 27 Dec. 1850.

[112] See, for example, the requests from Eli Samter for the establishment of a 'Correspondenz-Bureau', in GStA PK III. HA Ministerium der ausw. Angelegenheiten II. Nr. 8117.

[113] BHStA, GDVA 193, Geschäftsnummer 341, 7 Dec. 1867; BHStA, GDVA 193, Ministerial Entschliessung, 23 Feb. 1850; BHStA, GDVA 193, Dyck to Präsidium Regierung Schwaben und Neuburg, 30 Apr. 1859.

[114] Roland Wenzlhuemer, 'Metropolitan Telecommunication: Uneven Telegraphic Connectivity in 19th-Century London', *Social Science Computer Review*, vol. 27, no. 3 (Aug. 2009), pp. 437-51.

[115] BHStA, MA 109800, GDVA to MA, 22 Apr. 1877.

[116] Handelskammer Bremen Archiv (hereafter HKBA), MA P II 1, Bd. 3, 'Statistische Angaben über den telegraphischen Verkehr für das Jahr 1877'.

[117] Stadtarchiv Wuppertal, E V 22, Manuscript zum Verwaltungsbericht für das Jahr 1877.

in Berlin, 'beneath the street pavement across which carriages, riders, gazers, idlers and the industrious hurry, the strikes of verbal lightning course through their wires'.[118]

The growing significance of telegraphic correspondence also led to the establishment of much grander, purpose built offices. In the 1870s, the new imperial Postmaster General Heinrich Stephan launched a large restructuring project across most of Germany, which involved the construction of a new *Oberpostdirektion* in Dresden (1876), a *Post- und Telegraphenamt* in Bremen (1877), and a *Kaiserliches Telegraphenamt* in Berlin (1878), among others.[119] In Bavaria, whose administrative independence had been guaranteed by the *Reservatrechte* of 1871, the Munich telegraph office was relocated from the central post office in the centre of town to an independent building erected by the railway station.[120]

Reconfiguring these urban channels of communication threatened the privilege which had until then been conferred upon local elites, however. In Bremen, the new *Post- und Telegraphenamt* was designed to replace the existing office in the *Börse*, the centre of business for the mercantile class which dominated the city's political and economic life.[121] Representing the merchants' frustration at this decision, the powerful local *Handelskammer* explained that '[t]he telegraph office was given its current place on the one hand because it is at the centre of the town, but also because all trade correspondence is undertaken at the *Börse*, in particular during trading hours, and it is of vital importance for this correspondence […] that it be in a position to use the telegraph at all moments without losing any time'.[122]

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[118] 'In der Central-Telegraphenstation zu Berlin', *Die Gartenlaube* (1867), no.4, 59.
[119] 'Denkschrift', *Haushalts-Etat des Deutschen Reichs für das Jahr 1874*, Anlage XI,. 23-4.
[120] *Rückblick auf das erste Jahrhundert der K. Bayer. Staatspost (1. März 1808 bis 31. Dezember 1908)*, ed. K. B. Staatsministerium für Verkehrsangelegenheiten (Munich, 1909), 163-4. For the details of the '*Reservatrechte*' see Ernst Rudolf Huber, *Dokumente zur deutschen Verfassungsgeschichte*, 3 vols. (Stuttgart, 1961-6), ii., 298-300. On the impact of the *Reservatrechte* on the process of national-imperial integration, see Weichlein, *Nation und Region*, 105-90.
[121] Lars Maischak, *German Merchants in the Nineteenth-Century Atlantic* (Cambridge, 2013), 1-108.
[122] HKBA, MA – P II 1, Bd.2, Handelskammer to Generalpostamt, 8 May 1875.

In Nuremberg, meanwhile, the telegraph office which had been established in the railway station, away from the city centre, had in fact been ideally situated to serve the industries which had developed outside the city walls. When plans were drawn up to relocate the main office to the centre of town, therefore, a petition from over 700 local businessmen was brought forward, denouncing the change. '[T]he carrying of telegrams to the main office by messengers', it was insisted, 'even if it takes place quickly and regularly, implies a loss of time relative to the previous transmission by telegraphic route, because as far as we understand, those telegrams transported by […] messengers must be placed in a queue'.[123] Whether a town's economic focus was the central stock exchange, as in Bremen, or its burgeoning industry beyond the city walls, as in Nuremberg, it had become the principal point of access to the telegraph network.

In towns and cities too, then, telegraphy altered the boundaries of space and time in accordance with the broader process of urban transformation, calling for a reassessment of local priorities.[124] Efforts were often made to compensate for the changes introduced. In Bremen, for instance, the Reich telegraph administration promised to maintain a subsidiary office at the stock exchange, but telegrams would nonetheless have to make their way to the central office for transmission. The merchants' representatives therefore insisted that urgent messages be forwarded 'immediately after being handed over, without waiting for other telegrams to be collected'.[125] In Nuremberg, a messenger service was considered inadequate, and the petitioners insisted that a special telegraph line be constructed to connect the town's two offices.[126]

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[123] StAN, D4 158, Handelskammer Nürnberg to Stadt-Magistrat, 7 Aug. 1872.
[124] See Oliver Zimmer, *Remaking the Rhythms of Life: German Communities in the Age of the Nation-State* (Oxford, 2013). See also Richard J. Evans, *Death in Hamburg: Society and Politics in the Cholera Years* (Oxford, 1987).
[125] HKBA, MA – P II 1, Bd.2, J. Albers, Namens der Handelskammer to Oberpostdirektor, 21 Sep. 1877.
[126] StAN, D4 158, Handelskammer Nürnberg to Stadt-Magistrat, 7 Aug. 1872.

In larger cities, these 'gaps' in communication were filled in part by other modes of communication—networks of messengers, coaches, and postal services which sought to ensure uninterrupted communication across urban space. In Munich, a contract had been established with Zechmeister's Stadtomnibus-Institut, enabling telegraph messengers to use the omnibus service which was to 'cross the entire city in every direction at intervals of 15 minutes'. Within the city limits, the institute was contractually obliged to deliver telegrams into the hands of the addressee within 30 minutes of the messenger's receipt of the message.[127] Measures such as these ensured that the delays in communication engendered by local space remained at the very least quantifiable and predictable, but in some cities they proved insufficient. 'As these days time is money', an article in *Die Gartenlaube* asserted in 1869, 'the prompt and rapid urban postal system is no longer sufficient to ensure that messages reach people living in distant streets, nor is the private messenger service. To make one's way personally often involves a loss of time and costs associated with the use of coaches (*Droschke*), omnibuses, etc.' [128]

One solution was to bypass the human component of transportation entirely. In Munich, the head of the Bavarian telegraph administration recognised that the relocation of the central office to a new building near the railway station would '[bring] with it inconveniences for previously privileged classes within the population'. He therefore considered proposals for the introduction of a pneumatic post to connect the city's various offices.[129] As work got under way in 1876, it was decided that the installation should be constructed so as 'later with the increase in Munich's population, to include the suburbs of Au, Haidhausen, Schwabing, and

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[127] BHStA, GDVA 454, 'Uebereinkommen zwischen der Telegraphen-Central-Station München und dem Stadt-Omnibus-Institute', 11 Nov. 1871.
[128] 'Berlins Post- und Telegraphen-Verkehr', *Die Gartenlaube* (1869), no. 25, 399.
[129] BHStA, GDVA 234, Gumbart, 'Voranschlag über die zur Erweiterung des bayerischen Telegraphennetzes herzustellenden Linien', 25 Apr. 1873.

Sendling' and, upon the insistence of the local chamber of commerce (*Handelsgremium*), a transmitter and receiver was installed in the city's stock exchange on a trial basis.[130]

A 'pneumatic telegraph'—an underground networks of pipes through which letters, postcards and telegrams could be sent from one city office to another—had been built in Berlin in 1865.[131] There, the network had initially been built to connect the stock exchange to the central telegraph office, which was in fact nearby. By the mid-1870s, 26 kilometres of pipes had been installed beneath the city's streets, running through fifteen pneumatic post offices. An article in *Die Gartenlaube* explained that 'the aim of this new service is primarily the saving of time and manpower': messages were sent through the network at regular, fifteen-minute intervals, with an average transit time from one station to another of between one and three minutes. The author had witnessed a demonstration in which the receptacle containing a telegram had reached the next station in 49 seconds, 'such that one could indeed believe that this was magic'.[132]

The author's attention to the speed of transmission, however, implied, that these installations fell short of the instantaneous communication which users of the telegraph had been promised. Within the space of the urban network, time itself had once again become the principle variable and concern for its users. As the former Bavarian minister of trade, Gustav von Schlör, explained to the Chamber of Deputies when discussing the pneumatic installation in Munich, 'there are now some things in the world which are desired by public opinion with such determination and emphasis, that one cannot successfully oppose them in the long term, and I include among them the installation of a pneumatic connection between the *Centralstation* and the *Localstation*. Even if you prove by a hair's breadth and with

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[130] BHStA, MA 109800, Gumbart to MA, 6 Feb. 1876; BHStA, MA 109800, Gumbart to MA, 22. Apr. 1877.

[131] 'Ueber pneumatische Anlagen zur Depeschenbeförderung', *Dinglers Polytechnisches Journal*, vol. 227 (1878), 39-49; Ingmar Arnold, *Luft-Züge: Die Geschichte der Rohrpost* (Berlin, 2016).

[132] 'Die pneumatische Brief-Beforderung in Berlin', *Die Gartenlaube* (1876), no. 51, 861-3.

mathematical certainty that the telegrams would not lose a minute if they were handed over to an omnibus, a messenger or a horse-drawn carriage […] not a single person will believe you, and if only for this reason, this installation is necessary'.[133]

In 1867, an alternative had been provided in Berlin with the installation of an urban electric telegraph service dedicated to communication within the city, and a similar system was discussed in Bremen.[134] The aim was to enable individuals to communicate with interlocutors living in what were described as 'the furthest of streets', reflecting not only the physical expansion of the city, but also the re-conceptualisation of local distances.[135] Referring to the cost of the urban network, however, the author of the article evoked the 'numerous messengers required' by the service. Like the telegraph network at large, urban electric and pneumatic telegraphs had served to contract distances within the network, but space repeatedly re-emerged within the gaps between access points, threatening users with a loss of time.

As a result, an increasing number of private enterprises reached arrangements with state and municipal governments in order to tailor the network to their needs. In 1873, for instance, the founder of the renowned Badische Anilin- und Soda-Fabrik (BASF), August Clemm obtained permission to establish a direct line from his factory to the telegraph office in Ludwigshafen, allowing him to avoid 'time-consuming messenger transport between both points'.[136] In Munich, the owner of the München-Dachauer Aktien-Gesellschaft für Maschinenpapier Fabrikation took matters one step further. The company possessed two factories, one in the Munich suburb of Au, the other in the town of Dachau, twenty kilometres away. Work took place 'day and night' in both establishments, meaning that information had

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[133] *VKA* (1873/5), 19 Dec. 1873, p. 116.
[134] StAB, 6,40-K.4.c., Mittheilung des Senats, 24 Jun. 1879.
[135] 'Berlins Post- und Telegraphenverkehr', *Gartenlaube*, 399.
[136] BHStA, MA 109807, August Clemm of BASF to MA, 19 May 1873.

to be exchanged between them with the 'greatest haste', at all hours.[137] There was no night-time service at the telegraph offices in Au and Dachau, however, such that messages transmitted at a late hour from one branch of the company to the other often arrived 'too late to achieve the desired goal'. The director of the firm had initially requested permission to construct a telegraph line between the two factories, effectively creating a private inter-city network—something which the Bavarian authorities categorically refused. Instead, however, and in order to cater to the manufacturer's needs, the administration suggested that the two branches be connected *via* the Munich central office, which would effectively serve as a switchboard capable of linking them directly.[138] With this compromise, the Bavarian administration had sketched out the blueprint for a new form of individualised communication—the switchboard, which was to become the hallmark of the telephonic revolution, provided a junction for electric wires reaching into individuals' place of work and, eventually, their homes, intended to bypass time-consuming, space-generating messenger services.[139]

IV)   <u>Pathologies of Speed[143]</u>

In 1851, a section in *Kladderadatsch* entitled 'New Sayings of Solomon' contained a new injunction to its readers. 'Do not boast about tomorrow', it stated, adapting a biblical proverb, 'because many more telegrams may yet arrive before seven o'clock in the evening'.[144]

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[137] BHStA, MA 109807, Vorstand der München-Dachauer AG fur Maschinenpapier Fabrikation to MA, 12 Jul. 1873; BHStA, MA 109807, Vorstand der München-Dachauer AG fur Maschinenpapier Fabrikation to MA, 2 Dec. 1873.

[138] BHStA, MA 109807, Gumbart to MA, 20 Dec. 1873.

[139] Anton Huurdeman, *The Worldwide History of Telecommunications* (Hoboken, NJ, 2003), p, 188.

[143] The expression is Robert Hassan's, in *Empires of Speed: Time and the Acceleration of Politics and Society* (Boston, 2009), esp. pp. 97-122.

[144] *Kladderadatsch*, 7 Dec. 1851.

Barely two years after the opening of the Prussian telegraph network to the general public, the impact of the technology upon the conduct of social life had become the subject of satire.[145] As the 'proverb' implied, the speed of telegraphic communication had introduced a new element of instability into the lives of its users. At the tap of a telegraph key, it now seemed, the certainties which governed people's decisions could be radically altered. Current affairs, personal circumstances, and the value of investments, could turn at any moment—the space of one's lived experience, to use Reinhart Koselleck's terminology, could be radically altered.[146]

From the outset, then, the perceived instantaneity of telegraphic communication fuelled concern for the volatility and unpredictability of modern life. An 'advertisement' in *Kladderadatsch* joked that just as August Wilhelm Bullrich's sodium bicarbonate tablets helped to regulate the body's bowel rhythms, so '[t]he antichrist rules the world, insofar as he keeps humanity in movement with the constant stream of incoming telegrams, thereby promoting digestion'.[147] As a technology of circulation and social acceleration, the telegraph provided the liberal editors of *Kladderadatsch* with an ideal lens through which to observe and comment upon the upheavals of the post-1848 era, an age in which, they believed, children would 'learn world history not by the year but by the hour'.[148] The journal was, of course, but one voice in an increasingly dynamic public sphere, but the comic effect of its references also necessarily rested upon widespread assumptions as to the characteristics of the technology and of its users, hinting at broader prevailing concerns.

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[145] The journal's circulation figures rose from 6,000 in 1851, to 22,000 in 1858, and 50,000 in 1872: see Ann Taylor Allen, *Satire and Society in Wilhelmine Germany:* Kladderadatsch *and* Simplicissimus, *1890-1914* (Lexington, 1984), 20, 29.
[146] Reinhart Koselleck, '"Erfahrungsraum" und "Erwartungshorizont" – zwei historische Kategorien', in *Vergangene Zukunft. Zur Semantik geschichtlicher Zeiten*, 4th edn. (Frankfurt am Main, 2000), 349-75.
[147] *Kladderadatsch*, 12 Jun. 1859.
[148] Quoted in Taylor Allen, *Satire and Society*, 15.

Whilst the pace of modernity was often described in general terms, telegraphic speed, as this article has argued, often remained a privilege, whose effects were therefore associated with certain sections of society. The technology's appeal to businessmen was recognised from the outset, and with good reason, allowing as it did for the precise coordination of supply and demand, and providing up-to-date news on investment opportunities at home and abroad.[149] But by disseminating information faster and more widely, the telegraph also intensified the competition among businessmen, particularly those involved in finance, for ever smaller temporal advantages in obtaining news relevant to their activities.[150] No wonder that bankers such as James Rothschild complained that 'the telegraph is ruining our business', as it robbed him of the benefits which his family's efficient networks of communication had previously afforded him over competitors.[151] The telegraph, as James Carey observed, also 'invented the future as a zone of uncertainty, and a new region of practical action', opening up a new field of speculation in the fluctuating price of goods, or futures trading.[152] Gustav Freytag hinted at this practice in 1855, in one of the major novels of the period, *Soll und Haben*, describing the contemporary world of business as one 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'.[153] A double-edged sword, the telegraph could both alleviate or heighten concerns over trade and investment, tightening the delicate balance between risk and opportunity that defined business.[154]

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[149] Michie, *The Global Securities Market,* 83-118; On the telegraph, among other technologies, as an instrument of control and coordination, see James Beniger, *The Control Revolution: Technological and Economic Origins of the Information Society* (Cambridge, MA., 1986), esp. pp. 219-90.

[150] Roland Wenzlhuemer, '"Less than No Time". Zum Verhältnis von Telegrafie und Zeit', *Geschichte und Gesellschaft*, vol. 37 (2011), 591-613., esp. pp. 606-13.

[151] N. Ferguson, *The World's Banker: The History of the House of Rothschild* (London, 1998).

[152] Carey, *Communication as Culture*, 218. On the emergence of the futures market, see William Cronon, *Nature's Metropolis: Chicago and the Great West* (New York, 1991).
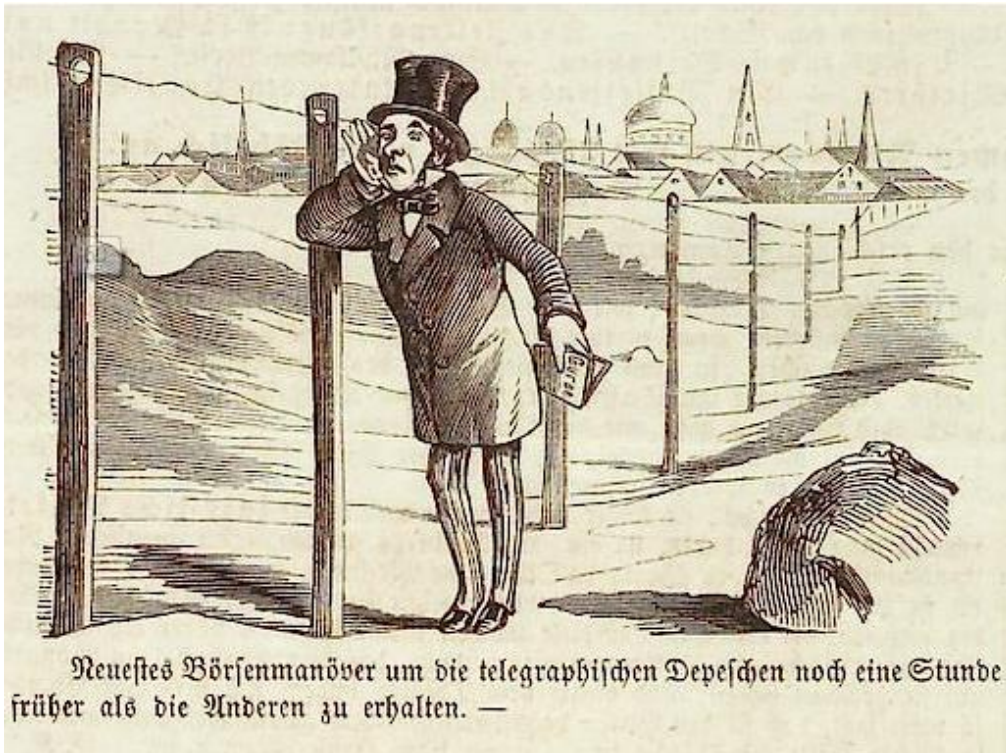
[153] Gustav Freytag, *Soll und Haben: Roman in Sechs Büchern*, 7th edn., 2 vols. (Leipzig, 1858), i., 54-5.

[154] On the ambivalent reception of new technologies in the world of finance, see Ranald Michie, 'Friend or Foe? Information Technology and the London Stock Exchange since 1700', *Journal of Historical Geography*, vol. 23, no. 3 (Jul. 1997), 304-26.
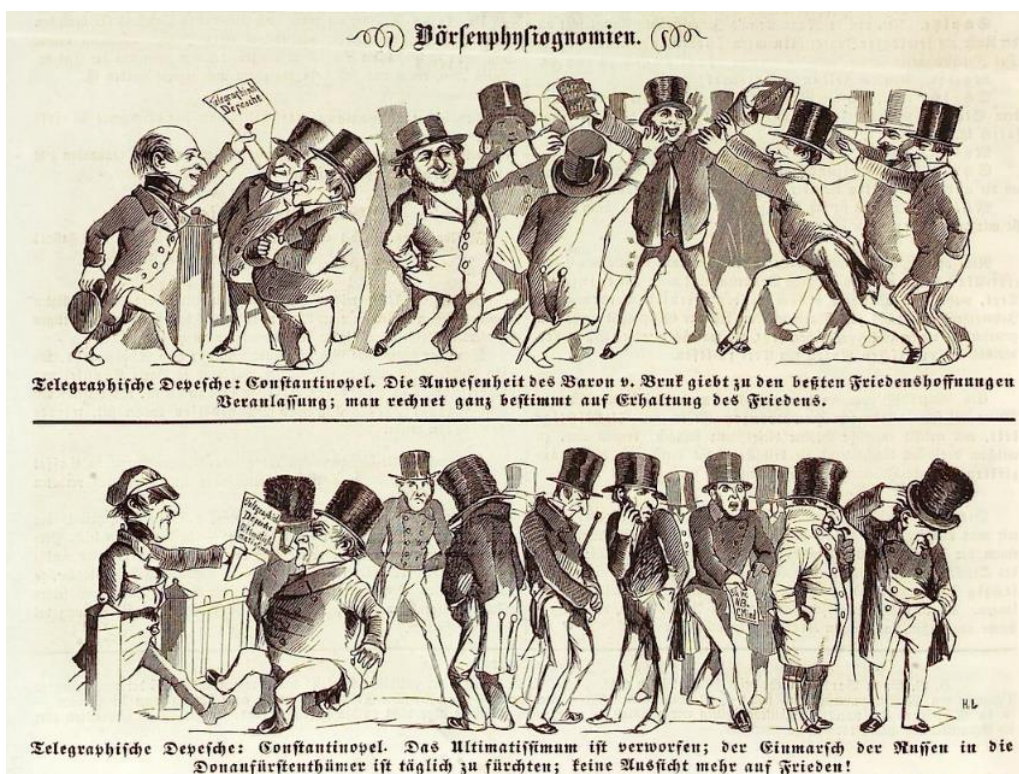
Depictions of the telegraph's primary users as victims of communicative speed therefore prefigured the literary trope of the nervous entrepreneur who would later come to embody the ambiguities of modernity across Europe, from Thomas Mann's *Buddenbrooks* to Emile Zola's *Money*.[155] As early as 1853, for instance, a cartoon in *Kladderadatsch* showed a businessman clutching a copy of the latest stock prices and holding his ear to a telegraph wire leading into town, the caption stating: 'The latest stock exchange technique to receive telegraphic dispatches yet another hour earlier than the others'. The fluctuations of the stock market, indeed, were at the heart of businessmen's anxieties. The value of shares increasingly depended upon the quasi-instantaneous diffusion of news through a network which spanned the European continent, and eventually the globe, binding economic stability ever closer to geopolitical developments. 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. Crucially, in both cases the news to which the businessmen reacted so vividly remained uncertain: neither had peace been guaranteed, nor had the Russians in fact begun their offensive. The telegraph appeared to bring news of probable, not real events.[159]

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[155] On the nervous entrepreneur in German literature, see Michael Cowan, *Cult of the Will: Nervousness and German Modernity* (University Park, PA, 2008), pp. 24-31.

[159] Universitätsbibliothek Heidelberg, https://digi.ub.uni-heidelberg.de/diglit/kla (accessed 03/06/2019), *Kladderadatsch*, 3 Jul. 1853.

Neuestes Börsenmanöver um die telegraphischen Depeschen noch eine Stunde früher als die Anderen zu erhalten. —

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Börsenphysiognomien.

Telegraphische Depesche: Constantinopel. Die Anwesenheit des Baron v. Bruk giebt zu den beßten Friedenshoffnungen Veranlassung; man rechnet ganz bestimmt auf Erhaltung des Friedens.

Telegraphische Depesche: Constantinopel. Das Ultimatissimum ist verworfen; der Einmarsch der Russen in die Donaufürstenthümer ist täglich zu fürchten; keine Aussicht mehr auf Frieden!

Beyond business, 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 traditional conduct of warfare, journalism and international relations.[161] 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, and often producing bewildering consequences.[162] War correspondents 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 public perception of events.[163]

On one hand, the to-and-fro of diplomatic telegrams across Europe during the war resulted in delays for the general public, slowing down communication. On the other hand, the speed of information circulation also sparked concerns as to the quality of the news which was transmitted. The spread of 'fake news', in particular, became a subject of satire in *Kladderadatsch* when a 'telegraphic hoax' wrongly announced the fall of Sebastopol in 1854 and the news was diffused in the press.[164] In both the conduct and the representation of the Crimean War, the purported and desired simultaneity of telegraphic communication often

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[161] Ken Beauchamp, *History of Telegraphy* (London, 2001), pp. 103-8; Roderic 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 relationship between telegraphy and international relations, see Daniel R. Headrick, *The Invisible Weapon: Telecommunications and International Politics, 1851-1945* (Oxford, 1991).

[162] David Paul Nickles, *Under the Wire: How the Telegraph Changed Diplomacy* (Cambridge, Mass., 2001), 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 Stefan Kaufmann, *Kommunikationstechnik und Kriegsführung 1815-1945: Stufen telemedialer Rüstung* (Munich, 1996), esp. pp. 69-169.

[163] Phillip Knightley, *The First Casualty: The War Correspondent as Hero and Myth-Maker from the Crimea to Kosovo* (London, 2000), esp. pp. 1-17; Andrew Lambert and Stephen Badsey, *The War Correspondents: The Crimean War* (Stroud, 1994).

[164] *Kladderadatsch*, 8 Oct. 1854.

proved illusory, and highlighted the distinct temporalities in which events and their reporting took place.[165]

The 'lies' spread by the telegraph were referred to in 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-borne lies, this mendacious hoax-post […] these couriers of reprehensible curiosity, which hurry faster than the winds and often are nothing more than wind'.[166] Yet businessmen were both dependent and acutely sensitive to such news, which always bore the potential to dramatically enhance or damage their financial situation, earning them the title of the 'Pharisees of the Stock Exchange', who lent too much credence to the 'treacherous' telegraph.[167]

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.[168] This fact was not lost on Marx, whose *Grundrisse*, written in response to these events, highlighted the scramble that crises provoked among individuals to gain access to new, faster

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[165] Georg Maag, Wolfram Pyta and Martin 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 Edward S. Cutler, *Recovering the New: Transatlantic Roots of Modernism* (Hanover, NH, 2003), 65-93.

[166] *Kladderadatsch*, 19 Nov. 1854.

[167] *Kladderadatsch*, 2 Dec. 1855

[168] Hans Rosenberg, *Die Wirtschaftskrise von 1857*, p.8; Most historians emphasise Germany's rapid economic recovery from the 1857 crisis: Wehler, *Gesellschaftsgeschichte*, iii., 94-5; Blackbourn, *History of Germany*, 190-1; Hubert Kiesewetter, *Industrielle Revolution in Deutschland: Regionen als Wachstumsmotoren* (Stuttgart, 2004), 73-5.

sources of information, which in turn played into the fluctuations of the market.[169] The technology's role in spreading news of the impending disaster was illustrated by means of 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'.[170]

Over time, the pace of geopolitical developments themselves was believed to be accelerating. As the same journal admonished its readers in 1861: 'Do not forget that Louis Napoleon too may one day wake up in a grumpy mood and, at a quiet click of his private telegraph, the underground wires of which go just as well to Warsaw, Prague, Pest, Lemberg and Stockholm as to Hannover, Dresden, Stuttgart, Munich, Rome and Naples, can put an end to the entire global status quo'.[171] A few months later, *Kladderadatsch* referred to the role of the technology in the deposition of King Otto of Greece: 'Telegrams here, telegrams there / from the cheery skies sharp lightning is thrown / And once again stands empty in Europe / Another monarch's throne!'[172] The potential for a single dispatch to alter the course of international relations would of course find enduring expression in the publication—and subsequent mythical status—of the 'Ems Telegram' which contributed to the outbreak of the Franco-Prussian war of 1870.[173]

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[169] Marx, *Grundrisse*, 161: '[I]nstitutions emerge whereby each individual can acquire information about the activity of all others and attempt to adjust his own accordingly, e.g. lists of current prices, rates of exchange, interconnections between those active in commerce through the mails, telegraphs etc. (the means of communication of course grow at the same time). (This means that, although the total supply and demand are independent of the actions of each individual, everyone attempts to inform himself about them, and this knowledge then reacts back in practice on the total supply and demand…'

[170] *Kladderadatsch*, 29 Nov. 1857.

[171] *Kladderadatsch*, 25 Aug. 1861.

[172] *Kladderadatsch*, 2 Oct. 1861.

[173] Jonathan Steinberg, *Bismarck: A Life* (Oxford, 2011), 288-9.

By the 1870s, the stories printed in *Kladderadatsch* had come to caricature the desire for frequent news updates as a much wider social phenomenon. It warned of the dangers of an addiction to 'fast news': 'This constant agitation, these morning- and evening-dispatches have allure. Certainly! But we must not pay for it too steeply with the necessity which it threatens to become for us'.[174] During the Franco-Prussian war in the summer of 1870, telegrams carrying news of current affairs were no longer simply spread in the press. In Berlin, 'war dispatches' were affixed to public advertisement columns (*Litfaßsäulen*) in the streets, promoting this widespread 'addiction'.[175] One story in *Kladderadatsch* described a mother's concern that 'our son Karl neglects all his school homework and constantly runs to the column to see if the seventy-seventh telegram has been affixed yet'.[176]

But the speed of news dissemination was not merely an object of satire, and had begun to define a new 'culture of timeliness' among both journalists and newspaper readers which could be perceived as overwhelming.[177] In 1872, the journal *Die Gegenwart* commented that '[o]ne has by now had enough of these verbose productions of the press, which the telegraph overtakes. Should the newspaper subscriber conscientiously work his way through the prescribed columns, sometimes, at the end, he is surprised by an editorial note, which says something along the lines of: "As we have learnt from a telegram just arrived, not a word of the whole story regarding which we have just expressed ourselves in great detail turns out to be true!"'.[178]

As telegraph networks extended across Germany, drawing in ever growing numbers of manufacturers and agriculturalists, the dependency and sensitivity to economic fluctuations

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[174] *Kladderadatsch*, 24 Jan. 1864.
[175] Frank Becker, *Bilder von Krieg und Nation: die Einigungskriege in der bürgerlichen Öffentlichkeit Deutschlands, 1864-1913* (Munich, 2001), 75
[176] *Kladderadatsch*, 30 Oct. 1870.
[177] Richard B. Kielbowicz, 'Electrifying news! Journalists, audiences, and the culture of timeliness in the United States', *Time & Society* (2016), pp. 1-31.
[178] *Die Gegenwart*, 18 Oct. 1873.

previously associated with trading businessmen was increasingly perceived as a widespread phenomenon. Another article in *Die Gegenwart* claimed that '[n]ow every grocer in his cellar in Berlin demands that his morning paper provide him with telegraphic notice of the fire which took place in Chicago that very same night. If the telegram arrives a few hours late, he reasons and claims that the newspaper is not worth the paper it is printed on'.[179] Nor were such beliefs entirely unfounded. In 1870, in the remote village of Unterrodach in northern Bavaria, the local postal official asserted that, whilst only a small proportion of the local population would make use of the telegraph, it would be of crucial significance to those engaged in the wood trade. These villagers were experiencing the effect of constant market fluctuations, he explained: 'the value of paper money often suddenly increases or falls as a result of apparently insignificant incidents, and the wood merchants can be very negatively affected if they have to wait until the news is brought by a post messenger or a newspaper'.[180]

As the latter example suggests, much of the anxiety surrounding the speed of telegraphy stemmed from its juxtaposition with other modes of communication, each possessing a rhythm of its own. An article in *Kladderadatsch* joked that '[t]elegrams are often sent with a speed for which no valid reason can be established. Not rarely, the addressee suffers a stroke or faints as result of this speed. It should be absolutely sufficient, and would produce considerable savings, if incoming telegrams were delivered only once a week. The addressee, having been forewarned of the event by letter, would thereby be less alarmed by the arrival of the telegram. Whoever is in a particular hurry may well, instead of telegraphing, have his message delivered by a mounted messenger'. The absurdity of the article derived from the modern association made between telegraphy and unpredictability, which conferred upon older means of communication an apparent slowness and calmness only evident with the benefit of hindsight.

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[179] *Die Gegenwart* 23 Mar. 1872.
[180] BHStA, MH 16873, Postexpeditor Unterrodach to HM, 24 Oct. 1870.

By the early 1870s, a direct link had thus been established between telegraphy and the perceived instability of modern life. When the global economic crisis of 1873 struck, therefore, whether the telegraph had indeed contributed to the dissemination of the panic or in fact helped investors to react swiftly and stabilise the situation, the technology was easily identified as a culprit.[181] In its aftermath, Reichstag deputy Behr-Schmoldow evoked the dire straits in which his class of Prussian agricultural estate owners now found itself as a consequence of the cheap American and Russian grain flooding European markets. He blamed the international cable companies which had promoted the globalisation of the market, thanks to which 'Europe is used to finding out about every tremor in the gold securities [market] in New York […] as we recently discovered, the price of wheat in Chicago can suddenly rise when General Ignatieff [the Russian ambassador to Constantinople] has some boxes packed up'.[182] The National-Liberal August Grumbrecht, for his part, was convinced that the technology had caused the crisis by encouraging speculation among sections of the population who had no place or experience dealing in financial matters.[183] The facile connection which Grumbrecht established between the technology and the recent economic crash did not go unnoticed by the editors of *Kladderadatsch*. Caricaturing his accusation in a section entitled 'Sayings à la Grumbrecht', it asserted: 'If we had no post and no telegraphs, it would not have been possible for traders to correspond and thereby to upset the course of papers; Herr Stephan [the Postmaster General] is therefore primarily responsible for the stock market crash, and must be held to account'.[184]

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[181] On the contested role of the telegraph in spreading or allaying fears during the 1873 crisis, see Hannah Catherine Davies, 'Spreading Fear, Communicating Trust: Writing Letters and Sending Telegrams during the Panic of 1873', *History and Technology*, 32, no. 2 (2016), pp. 159-77.

[182] ibid., p. 85

[183] *VDR* (1875), 26 Nov. 1875, 328.

[184] *Kladderadatsch*, 28 Nov. 1875.

By the 1870s, the cultural symptoms of Germany's struggle with modernity were apparent. Across Europe, it seemed, telegraphy was supporting capitalism's upheaval of the foundations of social life—'all that is solid melts into air', as Marx had prophesied.[185] Already, contemporaries worried about the new risks and unpredictability of their world, the intangibility of a 'liquid modernity' which Zygmunt Bauman attributed to the late twentieth and twenty-first century.[186] Well before the *Gründerkrach* of 1873, the speed of telegraphic communication had become closely associated with the instability of modern capitalism, further undermining an already tentative faith in the stabilising force of a free market. When crisis struck, many an accusatory look fell upon the technology.

This seemingly generalised anxiety, however, belied the profoundly variegated effects which new means of communication had produced across society. The much-vaunted 'annihilation of space by time' which the telegraph had promised remained an illusion, and users' relationship to their environment was instead placed in a state of flux. Perceptions of space and time came to reflect the divisions between town and country, between trade, finance, industry and agriculture which new technologies were promoting across Germany, and which were under continuous transformation. Emerging networks of regional, national, and global communication repeatedly altered the meaning and distribution of local space, conceptions of distance, and the value of time for people and places of different socio-economic status. These constant shifts in the fundamental dimensions of everyday life sharpened individuals' awareness of their changing place in a new world economic order. In these fluctuations, these oscillations in the perception of space and time, it may be argued, lay the volatility of modern life.

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[185] Marshall Berman, *All that is solid melts into Air: The Experience of Modernity* (New York, 1982).
[186] Zygmunt Bauman, *Liquid Modernity* (Cambridge, 2000); Ulrich Beck, *Risk Society: Towards a New Modernity* (London, 1992).