

# **Progressing into disaster: The railroad and the spread of cholera in a provincial Ottoman town**

## **Abstract**

The nineteenth century is often remembered as the age in which steamships and steam locomotives connected the globe with a speed and efficiency previously unseen. Although contemporaries frequently equated the use of these rapid-transportation technologies with the progress of civilization, their expansion also had some negative consequences. Among these was the more rapid and widespread diffusion of many diseases along transportation corridors as non-human stowaways on ships and trains. Most infamously, cholera extended its reach globally by appropriating and using modern transportation routes in ways that were unintended and disastrous for their human creators.

This article goes beyond the technological optimism of the time, and its now widely accepted pitfalls, and expands the scope of Anatolian provincial modernization to incorporate a complex web of interactions between human and non-human agents in the context of technological use and non-use. It argues for a complex co-creation of modern conditions between these agents, rather than seeing these conditions as solely produced by human actions or environmental limits. Among the different human agents, interaction greatly increased between Ottomans and European states and their citizens. As the Ottoman Empire became increasingly integrated into global transportation and economic networks, it also experienced the spread of cholera. In the Anatolian interior, cholera epidemics spread along the railroad. I examine the 1893 cholera epidemic in Eskişehir, an important junction town on the Ottoman Anatolian Railroad, which had just begun operation the previous year. The railroad was widely celebrated for its intended uses: tremendously

increasing the speed and transportable volume of cargo and enabling travel for military and non-military purposes. The cholera epidemic, however, also made efficient use of the railroad lines as conveyors of sickness and death. Furthermore, human attempts to stop cholera's spread by interrupting train service undermined the technology's intended uses, but also demonstrated the availability and potential effectiveness of non-use as an option.

## **Keywords**

Cholera, epidemics, Eskişehir, infrastructure, modernization, Ottoman Empire, quarantines, railroad

### **Use and non-use of the Ottoman Anatolian Railroad**

In the autumn of 1893, Eskişehir, a regional center in Ottoman Anatolia, suffered a deadly cholera outbreak. Unknown outside India until the nineteenth century, cholera – a bacterial infection caused by the *Vibrio cholerae* microorganism – swept the world in successive pandemic waves, largely due to the advent of rapid steam-powered travel. Port cities were among the first affected. Istanbul's first cholera epidemic occurred in the summer of 1831, arriving via steamship as part of the second global cholera pandemic.<sup>1</sup> While the Anatolian interior was initially more insulated from cholera's spread, this was changing by the 1890s with the

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<sup>1</sup> Daniel Panzac, *La Peste Dans L'Empire Ottoman 1700-1850* (Leuven: Éditions Peeters, 1985), p. 412. Kotar and Gessler, using contemporary British press sources, claim that cholera reached the Ottoman capital during the first cholera pandemic in 1821. S. L. Kotar and J. E. Gessler, *Cholera: A Worldwide History* (Jefferson, NC: McFarland and Company, 2014), p. 32. Given the consensus evident in the other sources consulted on the first breakout being a decade later, it is likely that the cholera of 1821 was either limited to a small number of cases at sub-epidemic level or that it was, in fact, another malady. This second seems quite likely, given the existing practice of labeling a wide range of digestive ailments as "cholera." For more information about the dates and geographical scopes of the various cholera pandemics, see Christopher Hamlin, *Cholera: The Biography* (New York: Oxford University Press, 2009); Kotar and Gessler; John Aberth, *Plagues in World History* (Lanham: Rowman & Littlefield Publishers, 2011), pp. 101-3.

construction of the Ottoman Anatolian Railroad. Eskişehir became a major junction town, with rail service to and from Istanbul starting in June of 1892 and operating onward to Ankara from November of the same year. While cholera had been affecting port cities and their immediate hinterlands, it took the construction of the railroad to open the interior to widespread cholera outbreaks. While cholera's diffusion into the Anatolian interior affected many localities with a station, together with their hinterlands, this article focuses on Eskişehir due to its prominence as a node of modern transportation.

Once medical experts determined the nature of the outbreak and the railroad's role in its spread, the Ottoman government ordered a quarantine and imposed restrictions on rail service. With the decline in case numbers over the course of the autumn, tensions increased between those who favored caution and wanted to maintain a degree of quarantine and those who wanted to resume their previous business operations. Two of the state-employed doctors sent to Eskişehir disagreed on this question of continued quarantine. Doctor Marko, an assistant professor at the Imperial Medical College in Istanbul (*Mekteb-i Tıbbiye-i Şahane*), favored letting railroad workers leave quarantine. However, the well-known cholera specialist Doctor Süleyman Gazale, sent by the sultan's Health Ministry, wanted to continue the quarantine for a time and then, only gradually, ease it. The German-owned Anatolian Railroad Company favored the resumption of regular service as demonstrated in its correspondence with the Ottoman state.<sup>2</sup> In addition to existing operations, lifting quarantine would allow the railroad company to

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<sup>2</sup> BOA A.MKT.MHM 562/28 (27 Rebiülahir 1311, Hijri Calendar/ November 7, 1893). BOA is the standard abbreviation for the central Ottoman Archive in Istanbul, and will be used for all documents cited from their collections. See also Ayla Efe, "Eskişehir'de 1893 Kolera Salgını," in *Tarihte Eskişehir Sempozyumu - I (2-4 Kasım 1998)*, (Eskişehir: Anadolu Üniversitesi Edebiyat Fakültesi, 2001), pp. 261-74, 269; Mesut Ayar, *Osmanlı Devletinde Kolera: İstanbul Örneği (1802-1895)* (Istanbul: Kitabevi, 2007), p. 129; Metin Menekşe, "Eskişehir'de Kolera Salgını: Etkileri ve Alınan Önlemler (1893)," *Tarih ve Gelecek* 6, no. 1 (2020): 52–88 discusses Marko, Gazale, and various other doctors sent to Eskişehir. Ayar identifies Gazale as a well-known as an expert on cholera who was sent to numerous provinces to help contain outbreaks. Ayar, p. 143.

proceed with construction on two additional lines branching off from Eskişehir, the Konya line of the Anatolian Railroad as well as a spur line to Kütahya.

Apart from illustrating the historically recurring tension between economic activity and the necessity to contain an epidemic, this controversy also highlights debates within the history of technology, environmental history, and other fields that consider the interactions of the non-human with the human. This article investigates the confluence of an epidemiological agent (the cholera bacterium, *Vibrio cholerae*) with a socio-technological practice (the regular functioning of the railroad). Going beyond a critique of the simple equation of modernization with advancement, it argues that a *specifically* modern, human and non-human, network of agents co-created and then reinforced a disaster. If, as Paul Virilio argues, the invention of the train also invents the derailment, then steam travel, including the train, can be said to have invented the cholera pandemic.<sup>3</sup>

With the state and, more grudgingly, the railroad company's reaction being quarantine and service interruptions, this cholera epidemic can be used to examine technological use alongside its necessarily corresponding, yet less studied, counterpart, technological non-use. Non-use can be instrumentalized as well as use, although intentional outcomes are not guaranteed as shutting down all activity is a rather blunt instrument. The extent of the disruption caused by the railroad's non-use indicates the rapidity with which the railroad had made itself indispensable. After only one year in service the railroad company, the state, and other railroad users considered the interruption to be catastrophic. The threat of the epidemic's spread forced the state and railroad company to interrupt their modern transportation network and temporarily negate one of the train's main benefits: its speed, or its "annihilation of time and space," to use a railroad

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<sup>3</sup> Paul Virilio, *The Original Accident*, trans. Julie Rose (Cambridge; Malden, Mass.: Polity, 2007), p. 10.

cliché.<sup>4</sup> Instead, this sickness, the spread of which was enabled by modern transportation, paradoxically did much to disrupt modern transportation for a time. Perhaps cholera led to the re-materialization of time and space.

In recent decades many historians of technology have refocused away from technological invention to give greater consideration to the role of users in defining a technology's story. This approach challenges the idea of simple technology transfer by emphasizing adaptive elements and indigenization processes.<sup>5</sup> Scholars of technology-in-use tell us, "there is no one correct use for a technology."<sup>6</sup> For the most part, however, they limit their scrutiny of use to that accomplished through human agency. Relatively recently established branches of historical study, such as environmental history, exhibit a growing interest in nonhuman actors, as do scholars influenced by actor-network theory.<sup>7</sup> By characterizing cholera epidemics as agents in

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<sup>4</sup> Wolfgang Schivelbusch, *The Railway Journey: Trains and Travel in the 19th Century* (New York: Urizen Books, 1979), p. 41. Some examples of this "frequently used trope" published in the nineteenth century with reference to steam travel are discussed in Valeska Huber, *Channelling Mobilities Migration and Globalisation in the Suez Canal Region and beyond, 1869-1914* (Cambridge; New York: Cambridge University Press, 2013), pp. 10-12.

<sup>5</sup> The reorientation of the history of technology away from inventors and towards users owes a large debt to the works of scholars cited here: Bijker, Hughes, and Pinch; Stephen H Cutcliffe and Robert C Post, *In Context: History and the History of Technology: Essays in Honor of Melvin Kranzberg* (Bethlehem; London: Lehigh University Press ; Associated University Presses, 1989); Wiebe E. Bijker and John Law, eds., *Shaping Technology/Building Society: Studies in Sociotechnical Change* (MIT Press, 1992); Nelly Oudshoorn and T. J Pinch, eds., *How Users Matter: The Co-Construction of Users and Technologies* (Cambridge, Mass.: MIT Press, 2003). Also see David Edgerton, *The Shock of the Old: Technology and Global History Since 1900* (London: Profile Books, 2008); David Edgerton, "From Innovation to Use: Ten Eclectic Theses on the History of Technology," *History and Technology* 16 (1999): 111–36; Ruth Schwartz Cowan, *More Work for Mother: The Ironies of Household Technology from the Open Hearth to the Microwave* (London: Free Association Books, 1989); Hughes, *Networks*. Some of these issues are discussed with relevance to the Ottoman Anatolian Railroad in Alexander Schweig, "Tracking Technology and Society along the Ottoman Anatolian Railroad, 1890-1914." (Ph.D. Diss., University of Arizona, 2019).

<sup>6</sup> Nelly Oudshoorn and Trevor Pinch, "Introduction: How Users and Non-Users Matter," in Oudshoorn and Pinch, pp. 1-25, 1.

<sup>7</sup> "Agency" is a contested term that some would restrict to intentionality. Clearly, nonhuman actors do not have intentionality or, in the case of animals, they may have intentionality that we do not find fully legible. However, if one considers the frequency of unintended consequences of human action, and that this does not ever seem to relegate humans to non-agents, it becomes clear that agency, in the sense of "causing something" and intentionality are not identical phenomena. For some works by some of the most influential scholars of the emerging field of Middle Eastern environmental history, both of whom examine nonhuman agency, see Sam White, *The Climate of Rebellion in the Early Modern Ottoman Empire* (New York: Cambridge University Press, 2011); Alan Mikhail, *The Animal in Ottoman Egypt*: (New York: Oxford University Press, 2014). Actor network theory, which explores the connections and mutual entanglements of human and nonhuman agents would argue against the radical separability of these two. See Bruno Latour, *The Pasteurization of France*, trans. Alan Sheridan and John Law (Cambridge, MA:

their own right, we can consider their spread as an unintended use of technology that proved quite disruptive to its other uses.

Non-use, when addressed, frequently concerns voluntary abstention from a technology.<sup>8</sup>

Often under dramatic circumstances, non-use of technologies can be imposed. In cases of particularly large infrastructural projects, involuntary non-use can have proportionately serious societal impacts. In addition to forfeiting the disused infrastructure's primary utility, its removal from use affects every other infrastructure, technological, and societal network in which it is embedded. The complex networks formed by railroads extend far beyond the track to include the

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Harvard University Press, 1988); Bruno Latour, *We Have Never Been Modern* (Cambridge, Mass.: Harvard University Press, 1993); Bruno Latour, *Reassembling the Social an Introduction to Actor-Network-Theory* (Oxford; New York: Oxford University Press, 2005); John Law, "Technology and Heterogenous Engineering: The Case of Portuguese Expansion," in Wiebe E. Bijker, Thomas P. Hughes, and Trevor Pinch (eds.), *The Social Construction of Technological Systems*, (Cambridge, MA: The MIT Press, 1987), pp. 111–34; John Law, "Notes on the Theory of the Actor-Network: Ordering, Strategy, and Heterogeneity," *Systems Practice* 5, no. 4 (1992): 379–93; John Law, "Actor Network Theory and Material Semiotics," in Bryan S. Turner (ed.), *The New Blackwell Companion to Social Theory* (Malden, MA: Wiley-Blackwell, 2009), pp. 141–58; John Law and John Hassard, (eds.), *Actor-Network Theory and After* (Oxford: Blackwell, 1999); Jonathan Murdoch, "Inhuman/Nonhuman/Human: Actor-Network Theory and the Prospects for a Nondualistic and Symmetrical Perspective on Nature and Society," *Environment and Planning D: Society and Space* 15 (1997): 731–56; Ronen Shamir, *Current Flow: The Electrification of Palestine* (Stanford, CA: Stanford University Press, 2013). For some of the most pertinent discussions of non-human agency see William H. McNeill, *Plagues and Peoples* (Garden City, NY: Anchor Books, 1976); Timothy Mitchell, *Rule of Experts: Egypt, Techno-Politics, Modernity* (Berkeley: University of California Press, 2002), particularly the first chapter, "Can the Mosquito Speak," pp. 19-53.

<sup>8</sup> See Ronald Kline, "Resisting Consumer Technology in Rural America: The Telephone and Electrification," in Oudshoorn and Pinch, pp. 51–66; Sally Wyatt, "Non-Users Also Matter: The Construction of Users and Non-Users of the Internet," in Oudshoorn and Pinch, pp. 67–79; Anne Sofie Laegren, "Escape Vehicles: The Internet and the Automobile in a Global-Local Intersection," in Oudshoorn and Pinch, pp. 81–100. Attempts by states to resist colonial penetration occupy a middle ground. Their non-use is not strictly voluntary- under different circumstances they may well embrace the technology under discussion, but they perceive the loss or potential loss of sovereignty as outweighing advantages. Still, they were not forced to swiftly abandon a technology by an emergency situation such as a cholera epidemic. Examples on technological non-use as resistance to imperialism include Afghan Emir Abdur Rahman's obstruction of British telegraph lines and railroads in the late nineteenth century in order to prevent foreign influence through these technologies, and of the complicated process of railroad-building in Iran in the early twentieth century, for which Russian-British rivalry and difficulty raising capital were partly responsible, but in which Iranian nervousness about those two rivals' ambitions also played a role in delaying railroad construction. Shaista Wahab and Barry Youngerman, *A Brief History of Afghanistan*, 2nd ed. (New York: Infobase, 2010), p. 98; Oliver Bast, "'Sheer Madness' or 'Railway Politics' Iranian Style?-The Controversy over Railway Development Priorities Within the Persian Government in 1919-1920 and British Railway Imperialism," *Iran: Journal of the British Institute of Persian Studies* 55, no. 1 (2017): 62–72; Mikiya Koyagi, "The Vernacular Journey: Railway Travelers in Early Pahlavi Iran, 1925-1950," *International Journal of Middle East Studies* 47 (2015): 745-63, 747–8. Initially, Iranian modernizers had welcomed foreign involvement, but the experiences surrounding the Reuter Concession as well as domestic opposition. Mikiya Koyagi, *Iran in Motion: Mobility, Space, and the Trans-Iranian Railway* (Stanford, CA: Stanford University Press, 2021), pp. 26-8.

workings of railroad companies, the reorientation of cities toward a railroad station, and many other socio-technological components. In their multifaceted complexity, these networks are comparable to “large technological systems.”<sup>9</sup> Technological systems not only influenced society, they became completely intertwined with it. Projects such as the newly-built Anatolian Railroad, in its larger sense as a socio-technological system, went beyond exerting influence and were involved in the co-creation of emerging modernity. While intended to effect significant improvements in the region, the railroad also magnified the harm done by cholera epidemics by easing their spread.

According to some theorists, modern infrastructure is not commonly noticed until it has failed. Paul N. Edwards sees infrastructural function as evidence that “the most salient characteristic of technology in the modern (industrial and postindustrial) world is the degree to which most technology is *not* salient for most people, most of the time.”<sup>10</sup> It is only when the electricity goes out or a train is late or derails that their everyday functions in the background of

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<sup>9</sup> Thomas Parke Hughes, “The Evolution of Large Technological Systems,” in Wiebe E. Bijker, Thomas Parke Hughes, and Trevor Pinch (eds.), *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology* (Cambridge, MA: MIT Press, 1987), pp. 51–82. Despite the great utility of such concepts, the idea of “technological systems” can be critiqued as containing too stable a definition of system versus environment. This argument has been made, in particular, by scholars associated with Actor network theory. Michel Callon, “Society in the Making: The Study of Technology as a Tool for Sociological Analysis” in Bijker, Hughes, and Pinch, pp. 100-1 and John Law, “Technology and Heterogenous Engineering: The Case of Portuguese Expansion” in Bijker, Hughes, and Pinch, pp. 111-34 prefers to conceptualize a more flexible network in place of the system.

<sup>10</sup> Paul N. Edwards, “Infrastructure and Modernity: Force, Time, and Social Organization in the History of Sociotechnical Systems,” in Thomas J. Misa, Philip Brey, and Andrew Feenberg (eds.), *Modernity and Technology* (Cambridge, MA: The MIT Press, 2003), pp. 185-225, 185. This is a common argument in infrastructure studies. Penelope Harvey, using the term “infrastructural inversion,” credits Geoffrey C. Bowker for the concept. Penny Harvey, Caspar Brunn Jensen, and Atsuro Morita, “Introduction: Infrastructural Complications,” in Penelope Harvey, Caspar Brunn Jensen, and Atsuro Morita (eds.), *Infrastructures and Social Complexity: A Companion* (Abingdon, Oxfordshire, UK: Routledge, 2017), pp. 17-30, 18; Geoffrey C. Bowker, “Second Nature, Once Removed: Time, Space, and Representations,” *Time & Society* 4, no. 1 (1995): 47–66. Several works about the creation of electrical systems discuss infrastructural networks and their relationship to the social, thus either implicitly or explicitly engaging with theories of technology-in-use. Thomas Parke Hughes, *Networks of Power: Electrification in Western Society, 1880-1930*, (Baltimore: The Johns Hopkins University Press, 1993); Shamir; Fredrik Meiton, *Electrical Palestine: Capital and Technology from Empire to Nation* (Oakland, CA: University of California Press, 2019).

our lives are realized. Edwards, while generally agreeing with the idea of infrastructure's daily function going unnoticed in the background, posits that the infrastructural conditions may be different in the 'global south,' a category Edwards appears to invoke mainly to distinguish the 'developed west,' from the rest of the world. Infrastructure is more difficult to background when unreliability of function is a chronic feature of use. Brian Larkin also argues that the invisibility of infrastructure model is not universally applicable. He places, instead, invisibility at one end of a spectrum of "a range of visibilities" with "grand spectacles" at the other end. In a manner quite relevant to the Ottoman state's attempts to display its own modernization, Edwards argues that these state displays of infrastructure are meant to symbolically convey social facts, at least as presented by the state, and that this symbolic meaning is put forth independently of technical function (or failure).<sup>11</sup>

Ottoman trains certainly were noticed. They could even be terrifying those unaccustomed to them. The ceremonial pomp marking the completion of the Ankara line in November 1892, inspiring the awe of the crowd that had gathered to witness the arrival of the first train, attests to the significance accorded to this novel technology. The power of their reaction was largely based on the complete unfamiliarity of the experience to those in attendance. Once the railroad was part of the quotidian life of the town it is doubtful that the reactions of its first witnesses would be replicated. The railroad remained a tourist attraction for those visiting Ankara from surrounding villages for at least a couple of decades, however, implying an incomplete routinization. Locals no longer feared it as dangerous but it was still remarkable enough to make a trip to see.<sup>12</sup>

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<sup>11</sup> Edwards, p. 188; Brian Larkin, "The Politics and Poetics of Infrastructure," *Annual Review of Anthropology* 42 (2013): 327-43, 336.

<sup>12</sup> I discuss the early perceptions of the railroad in Ankara in detail in Schweig, pp. 251-61. For particularly striking accounts of local people's reactions, see Suavi Aydın et al., *Küçük Asya'nın Bin Yüzü: Ankara* (Ankara: Dost Yayınları, 2005), p.232, and Ahmed Talat, *Çankırı Şairleri* (Çankırı: Çankırı Matbaası, 1930), pp.284-6. Many in other global regions also found the train to be an intruder into their world. I am grateful to Darina Martykánová for

While infrastructure may never be taken completely for granted, its utility depends upon its reliability. Many people can tolerate chronically late trains or traffic-jammed streets with little more than perfunctory grumbling. At the point of total failure, however, infrastructure ceases to be viable. People use trains or automobiles to cross a bridge predicated on a trust that that bridge will not collapse. While not as drastic as a bridge failure, the stoppage of the trains as a precaution during the 1893 cholera epidemic represented a complete, if temporary, break in the newly-assembled system. As new as the railroad was, the impatient complaints of the merchants and others whose livelihoods depended on the train and the hardships in the lack of travel and communication that ensued from the quarantine demonstrate the rapidity with which the train became indispensable for so many. It had only been operating for one year and already its nonoperation for the duration of the quarantine could completely disrupt the usual functioning of trade.

The ordeal resulting from the entanglement of technological and epidemiological actors caused an instance of what has been referred to as “negative indicator[s] of technological progress.”<sup>13</sup> Conceiving of a negative modernization reframes the drive for progress into a process that inadvertently contained the ingredients for the spread of a destructive force. This article demonstrates the complex interrelationships between technology and modernization, using the example of the measures taken against the spread of cholera, and the debates around these measures, in Eskişehir in 1893.

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the reminder of how the train was seen as the disruptor of an American pastoral ideal as discussed in Leo Marx, *The Machine in the Garden: Technology and the Pastoral Ideal in America* (New York: Oxford University Press, 1964).

<sup>13</sup> Schivelbusch, p. 132.

## **The construction of the Ottoman Anatolian Railroad and the rise of Eskişehir as a railroad town**

Beginning in the mid-nineteenth century, the Ottoman Empire sought to enter the railroad age as part of a wider effort to restore itself among the world's military powers or, failing that, increase its ability to defend itself from these powers. From the 1840s on, both Ottomans and European investors proposed railroad lines. Sultan Abdülmecid, addressing his advisers on June 20, 1855, proclaimed that the Ottoman state must go into debt with European creditors to fund the development of a national railroad company such as other nations possessed.<sup>14</sup> Although debt would cause Ottoman economic dependence, particularly after the partial default of 1875-1876 and the ensuing formation of the foreign-controlled Public Debt Administration, the Ottoman state would not otherwise have had access to the capital needed for the construction of a railroad network as envisioned.<sup>15</sup>

The Ottoman Anatolian Railroad began as an Ottoman project in 1871, but, due to the financial difficulties encountered was sold to a British concern and halted at Izmit, effectively

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<sup>14</sup> As recounted by the eminent nineteenth-century Ottoman intellectual and one-time court historian Cevdet Pasha. Ahmed Cevdet, *Ma'rûzât*, ed. Yusuf Halaçoğlu (Istanbul: Çağrı Yayınları, 1980), p. 7. The 1840s were an unprecedentedly friendly decade for foreign investment due to the 1838 Anglo-Ottoman Trade Agreement, also known as the Treaty of Balta Limanı. Charles Issawi, *The Economic History of Turkey, 1800-1914* (Chicago: University of Chicago Press, 1980), pp. 192-9.

<sup>15</sup> Murat Birdal, *The Political Economy of Ottoman Public Debt: Insolvency and European Financial Control in the Late Nineteenth Century* (London; New York; Tauris Academic Studies, 2010); Şevket Pamuk, *Uneven Centuries: Economic Development of Turkey Since 1820* (Princeton: Princeton University Press, 2018), pp. 109-11. Alliance with Britain and France in the Crimean War helped secure bonds from these world financial powers, with repercussions, however, for the debt crisis later in the century. Darina Martykánová, "Public Debt after a Defeat: Negotiating the French Image of the Ottoman Empire as Debtor in the Aftermath of the Russo-Turkish War of 1877-79," *The Journal of European Economic History* 2 (2019): 58-82; Candan Badem, *The Ottoman Crimean War, 1853-1856* (Boston: Brill, 2010), pp. 289-328; The war helped spur the development of railroads and telegraph systems, the lack of which was felt to have been a weakness by the Ottomans themselves as well as their allies. Ali Akyıldız, "The Modernizing Impact of a Technological Transfer: The Case of the Constanta Railway," in Ekmeleddin İhsanoğlu and Feza Günergun (eds.), *Science in Islamic Civilisation: Proceedings of the International Symposia "Science in Islamic Civilisation" & "Science and Technology in the Turkish and Islamic World"* (Istanbul: IRCICA, 2000), pp. 201-12; Roderic H. Davison, "Effect of the Electric Telegraph on the Conduct of Ottoman Foreign Relations," in Caesar E. Farah (ed.), *Decision Making and Change in the Ottoman Empire* (Kirksville, MO: Thomas Jefferson University Press, 1993), pp. 53-66.

creating a suburban line. When revived in the late 1880s, the Ottoman state awarded the concession to build and operate the line as far as Ankara to a purpose-made consortium named the Ottoman Anatolian Railroad Company. For practical purposes it was owned and financed by Deutsche Bank, which held a 90% stake in the consortium. With the completion of a second branch to Konya in 1896, it was by far the largest Ottoman rail project at the time. It employed a diverse mix of people, from unskilled laborers, many of whom were drawn from the local Muslim population to skilled laborers and managers of various European nationalities.<sup>16</sup> As with most large infrastructural projects of the late Ottoman period, the Anatolian Railroad was built through a process in which the Ottoman state awarded a concession to a foreign company that had bid on its construction and operation in hopes of making a profit. Foreign investment enabled major Ottoman infrastructural projects to be built, but at the price of weakened economic self-determination.<sup>17</sup>

Construction for the Anatolian Railroad adopted familiar paths. Overland trading routes connecting Anatolia, and lands beyond, to the Mediterranean coast have an ancient history, as do the towns along these routes. The region around Eskişehir has been inhabited for millennia, with all the fluctuations in fortunes typical of such long-settled locales. It was at an economic ebb point at the beginning of the nineteenth century. Nonetheless, it had maintained its importance as a caravan crossroads throughout the pre-rail age. To its west and northwest were routes to the sea ports of Izmir and Istanbul, respectively. Caravan routes in the other directions led to important

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<sup>16</sup> Most of the manual labor force was composed of local villagers, although there were also some migrant laborers. In at least one case, someone travelled on foot from as far as Shiraz in Iran for the work. Donald Quataert, *Social Disintegration and Popular Resistance in the Ottoman Empire, 1881-1908: Reactions to European Economic Penetration* (New York: New York University Press, 1983), p. 74.

<sup>17</sup> Jonathan S. McMurray, *Distant Ties: Germany, the Ottoman Empire, and the Construction of the Baghdad Railway* (Westport, CT: Praeger, 2001), pp. 22-23; Herbert Feis, *Europe the World's Banker, 1870-1914: An Account of European Foreign Investment and the Connection of World Finance with Diplomacy before the War*, Reprints of Economic Classics (New Haven: Yale University Press, 1930), p.193; Deutsche Bank Istanbul, *A Century of Deutsche Bank in Turkey* (Istanbul: Deutsche Bank A.Ş., 2010); Schweig, pp.66-75.

inland towns and eventually to more distant lands. To the east, roads led to Ankara and then branched off to the north to Black Sea ports such as Sinop or further east, eventually heading into Iran by way of Erzurum. To the south, caravans would venture to and from Konya and beyond into Syria, particularly the trade hub of Aleppo. While land transport was significantly slower via caravan than sea trade, major caravan towns also served as entry points for goods, ideas, and populations. These caravan towns replicated many of the functions of ports for more remote, insular hinterlands.<sup>18</sup> With the arrival of rapid rail travel, the differences between the speed and importance of land versus sea trade narrowed. Over the last several decades, cholera had established a pattern of spreading to Istanbul and other ports such as Izmir. Its thorough penetration of the Anatolian interior, with Eskişehir as an epicenter, was a newer development. Railroad towns served as onward staging areas for the deadly intertwinement of human and non-human agents that formed the cholera epidemic.

Eskişehir's status as a boomtown created a situation in which many new people arrived at a place that was still growing into the infrastructure needed for a larger town. The arrival and transit of an increased number of people without commensurate improvements in sewage disposal made Eskişehir particularly prone to communicable disease, especially cholera, which spread from person to person via water contaminated by feces. In keeping with late nineteenth-

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<sup>18</sup> The metaphor of inland railroad towns as ports also relies on the metaphor of the railroad as a "giant river system," as has been said about the connection of one of the great railroads of the USA. Richard J Orsi, *Sunset Limited: The Southern Pacific Railroad and the Development of the American West, 1850-1930* (Berkeley: University of California Press, 2005), p. 3. This model is further reinforced when one considers the way that most of the Ottoman Railroads funneled goods toward external ports thus being part of the same transportation network, albeit in a different mode from the ships that would continue the goods onward in their sea journeys. M. Murat Baskıcı, "XIX. Yüzyıl Sonu ve XX. Yüzyıl Başlarında Ankara'nın İktisadi Durumu," in Yılmaz Kurt (ed.), *Tarihte Ankara Uluslar Arası Sempozyumu: Bildiriler* (Ankara: Ankara Üniversitesi, 2012), pp. 193-205, 194-5. Before the railroad, caravan cities played the role of "quasi ports" (in many cases these were the same cities that got railroad stations, at least in the Ottoman example). Karl Polanyi, "Ports of Trade in Early Societies," *The Journal of Economic History* 23, no. 1 (1963): 30-45, 31; Suraiya Faroqhi, "Camels, Wagons, and the Ottoman State in the Sixteenth and Seventeenth Centuries," *International Journal of Middle East Studies* 14 (1982): 523-39, 524.

century Ottoman Anatolian towns, Eskişehir's sewers were likely quite rudimentary.<sup>19</sup> It was already infamous for the type of waterborne illness associated with poor water circulation. It had long suffered from endemic malaria which bred with the mosquitos of the many stagnant swamps on the Porsuk River's banks. A late-Ottoman newspaper referred to Eskişehir as a town in which "even the birds had malaria," to demonstrate its ubiquity.<sup>20</sup> Larger and more economically prosperous cities, such as Istanbul, Cairo, and Aleppo, were struggling, and often failing, to modernize sewer systems during this period.<sup>21</sup> As in Eskişehir, these cities' hygienic deficits resulted in serious, sometimes catastrophic, cholera epidemics. The rapid growth of the city's population included those arriving from distant regions, many of whom came to find work on the railroad, as well as refugees from the Balkans and Caucasus whose resettlement was facilitated through use of the railroad. The combination of mobility, crowding, and an already-insufficient urban infrastructure being unable to keep up with migration eased cholera's spread.

Far from being solely a result of Ottoman underdevelopment, the "cholera years" have been described as "transitory phenomena destined to occupy the world stage for...the period during which public health and medical science were catching up with urbanization and the

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<sup>19</sup> The British engineer Henry C. Barkley, who traveled through the region a decade and a half earlier makes mention of Eskişehir's "numerous dirt-heaps, surrounded by filth and smells." Henry C Barkley, *A Ride through Asia Minor and Armenia: Giving a Sketch of the Characters, Manners, and Customs of Both the Mussulman and Christian Inhabitants*. (London: Murray, 1891), pp. 65-6. Barkley seems to have been unimpressed with the hygienic state of Anatolian towns in general, also referring to the streets of Ankara as "little better than open sewers." Barkley, p. 106.

<sup>20</sup> Suzan Albek, *Dorylaion'dan Eskişehir'e* (Eskişehir: T.C. Anadolu Üniversitesi, 1991), p. 150; Necdet Tunçdilek, "Eskişehir Bölgesinde Yerleşme Tarihine Toplu Bir Bakış," *İstanbul Üniversitesi İktisat Fakültesi Mecmuası* 15, no. 1-4 (1953): 205-7. *Hakikat* no. 54, April 19, 1911, in Ali Şükrü Çoruk, ed., *Eskişehir'de Bir Dönemin Aynası: Hakikat Gazetesi (1911-1912) Çevrimyazı*, vol. 2. (Eskişehir: Eskişehir 2013 Türk Dünyası Kültür Başkenti Ajansı, 2013), p.205.

<sup>21</sup> Koca Mehmet Kentel, "Assembling 'Cosmopolitan' Pera: An Infrastructural History of Late Ottoman Istanbul" (Ph.D., University of Washington, 2018) pp.192-231; Samuel Dolbee, "The Locust and the Starling: People, Insects, and Disease in the Late Ottoman Jazira and After, 1860-1940" (Ph.D. Diss., New York, NYU, 2017), p.242; Shehab Ismail, "Engineering Metropolis: Contagion, Capital, and the Making of British Colonial Cairo, 1882-1922" (Ph.D. Diss., Columbia University, 2017). A regional exception appears to have been the Ottoman Balkans, where some towns were modernizing sewage systems according to Tetsuya Sahara, "The Ottoman City Council and the Beginning of the Modernisation of Urban Space in the Balkans," in Ulrike Freitag et al. (eds.), *The City in the Ottoman Empire: Migration and the Making of Urban Modernity* (London: Routledge, 2011), pp. 26-50, p.40.

transportation revolution.”<sup>22</sup> The combination of demographic and technological transitions with an inadequate public health infrastructure greatly enhanced the chances of the cholera epidemic occurring as it did. These were among the factors came together for a composite agency that created the epidemic in the full severity with which it gripped Eskişehir and the neighboring region. The mix of causal elements was specifically created by the historical moment and its modernizing push.

### The travels of cholera

While the name dates back to ancient Greek sources, the disease now known as cholera, caused by the *Vibrio cholerae* bacterium, has only been widespread outside India’s Ganges plain since 1817.<sup>23</sup> Between 1817 and 1899, however, no fewer than six pandemic waves swept the globe. The timing of cholera’s universalization was no coincidence. It was a modern pandemic in that it was spread through the much-vaunted instruments of modernity, in the form of the nineteenth century’s more rapid, larger-scale transportation infrastructures.<sup>24</sup> As it was transmitted via human feces, *Vibrio cholerae* spread along the transportation routes taken by its hosts. It spread from port to port, station to station, and town to town with its human traveling companions.<sup>25</sup> As a passenger on railroads and steamships, cholera spread with unprecedented speed and scale. As a railroad user, it availed itself of this rapid transportation mode to spread,

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<sup>22</sup> Quoted in Daniel R. Headrick, *The Tentacles of Progress: Technology Transfer in the Age of Imperialism, 1850-1940* (New York: Oxford University Press, 1988), p. 154.

<sup>23</sup> Kotar and Gessler, p. 1; Aberth, p. 102. A minority view holds that there is no definitive proof that the particular diarrhetic illness that broke out in Bengal in 1817 was not also new there, nor that previous outbreaks elsewhere were not caused by *Vibrio cholerae*. Hamlin, 35. Different methods and standards of diagnosis and different theories of parthenogenesis in premodern medicine meant that what was diagnosed as “cholera” referred to a much broader category also including dysentery among a number of other diarrhetic diseases. Kotar and Gessler, pp. 10-13; Aberth, p. 102.

<sup>24</sup> Aberth, p. 107.

<sup>25</sup> Ayar, p. 7.

setting up the need for the other, human, users of the technology to try to stop its use by interrupting their own.

Before steam travel, cholera could only impact a relatively small region. Its victims were incapable of long-distance travel before the disease incapacitated them, and they either succumbed or recovered from it. Cholera's short incubation period, sometimes as brief as a single day, prevented its widespread diffusion before steam-powered travel provided the vehicles for its worldwide transmission.<sup>26</sup> Its victims would develop severe dehydration due to uncontrollable vomiting and diarrhea. Sometimes dehydration would discolor victims' skin, leading to cholera's nickname, "the blue death." Symptoms could strike quite suddenly, meaning that those who developed them while in public often did not have time to go anywhere else, causing unsettling public spectacles. Cholera's rapid onset meant that those who were feeling completely well in the morning might be dead by evening. Others who were luckier would start to recover. Some cases were relatively mild. The severe cases, including the many fatalities, however, caused widespread panic throughout the world.<sup>27</sup> Cholera's connection to drinking water was ascertained by the British physician John Snow in the 1840s and a bacterial cause was discovered in 1854, although not widely accepted until the 1880s due to the durability of older miasmatic theories of pathogenesis as well as logistical problems. Without a robust public health infrastructure or awareness, the Ottoman Empire, like many areas experiencing cholera, was at a disadvantage with the disease.<sup>28</sup>

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<sup>26</sup> Headrick, p. 155.

<sup>27</sup> Kotar and Gessler, p. 6; Mark Harrison argues the fast onset, the unpleasant symptoms and the poor understanding of cholera's pathology caused even greater alarm than the significant amount warranted. Harrison, pp. 139-40.

<sup>28</sup> John Snow, *On the Mode of Communication of Cholera* (London: John Churchill, 1849); Kotar and Gessler, p. 238; Valeska Huber, "The Unification of the Globe by Disease? The International Sanitary Conferences on Cholera, 1851-1894," *The Historical Journal* 48, no. 2 (2006): 465-6; Panzac, pp. 424-6; For more on nineteenth century debates on contagionism see Erwin H. Ackerknecht, "Anticontagionism Between 1821 and 1867: The Fielding H. Garrison Lecture," *International Journal of Epidemiology* 38 (2009): 7-21; Aberth, pp. 102-8; Kotar and Gessler. For works dealing specifically with the colonial and imperial aspects of these debates see David Arnold, "Cholera

## The railroad and the 1893 epidemic

The 1893 outbreak was part of the fifth global cholera pandemic (1881-96). Like previous outbreaks, it arrived via Black Sea shipping, either from Russia or Romania, where a major outbreak had occurred along the Danube. By August dozens had been sickened in Istanbul. Although the epidemic eventually struck over 2,000, of whom a slight majority died, it was considered relatively mild compared to previous incidents and the nightmarish possibilities they conjured. Due to its perceived mildness, many physicians remained unconvinced that it was even cholera at all.<sup>29</sup> Its effects grew more severe when, having boarded the Anatolian Railroad, cholera disembarked in Eskişehir in early September. With fifteen deaths recorded in two days, it quickly established itself as a major health crisis.<sup>30</sup> The epidemic may not have exceeded the fatalities of infamous contemporary outbreaks, although considering Eskişehir's status as a smaller city they were considerable, but the epidemic was very notable for its spread to regions that had, until then, been spared the disease's worst ravages.

By September 11, 1893, Sultan Abdülhamid II, on the advice of his public health council, declared that all preventive measures should be taken to halt the epidemic's spread.<sup>31</sup> Due to the seriousness of the crisis, the state sent both military and medical reinforcements.<sup>32</sup> Doctors sent

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and Colonialism in British India," *Past & Present* 113 (1986): 118-51, 143-7; David Arnold, *Colonizing the Body: State Medicine and Epidemic Disease in Nineteenth-Century India* (Berkeley: University of California Press, 1993), pp.189-97; Ritika Prasad, *Tracks of Change: Railways and Everyday Life in Colonial India* (Delhi: Cambridge University Press, 2015), pp. 165-79; Michael Christopher Low, *Imperial Mecca: Ottoman Arabia and the Indian Ocean Hajj* (New York: Columbia University Press, 2020), pp.117-66.

<sup>29</sup> The figures are from André Chantemesse, "Le Choléra de Constantinople," *Revue Médico-Pharmaceutique* 6, no. 11 (November 30, 1893): 146-49; See also Efe, 263-64; Nuran Yıldırım and Hakan Ertin, "European Physicians/Specialists During the Cholera Epidemic in Istanbul, 1893-1895," in İlhan İlkılıç et al. (eds.), *Health, Culture and the Human Body: Epidemiology, Ethics and History of Medicine, Perspectives from Turkey and Central Europe* (Istanbul: BETİM Center Press, 2014), pp. 189-215, 195.

<sup>30</sup> BOA, Y.A. HUS 282/94 (10 teşrin-i evvel 1309/ October 22, 1893).

<sup>31</sup> Efe, p. 264.

<sup>32</sup> Ayar, p. 96; Efe, p. 267.

from Istanbul ordered the imposition of a quarantine, initially only over a dozen houses. The soldiers' task was to guard the quarantine zone. Some soldiers were reluctant to go into an infected area, however, leading to difficulties in quarantine-enforcement. By October 19, Doctor André Chantemesse, a French cholera specialist sent by the Pasteur Institute on the sultan's request, advised a broader quarantine around the town center.<sup>33</sup> Not knowing the worst of the outbreak had passed, government officials and physicians were in favor of drastic measures to ensure the epidemic did not return to Istanbul now that Eskişehir was so much more directly connected to the capital.<sup>34</sup> Indeed, thanks to the railroad, it was now only one day's journey away. As Istanbul was the largest population center of the empire, home to much of its elite as well as the seat of government and the Ottoman household, including the sultan himself, the prospect of this epidemic returning in deadlier form aboard the Anatolian Railroad was terrifying.<sup>35</sup>

Alarmed at the epidemic's spread, the Ottoman Health Ministry mandated the quarantine of hundreds of railroad workers. Due to limited hospital space, these workers were often housed in wooden huts for the quarantine's ten-day duration.<sup>36</sup> The railroad company's ability to house them all in these makeshift lazarettos, called *tahaffuzhanes*, was grossly inadequate. On average, the proportion of those diagnosed to available space in the *tahaffuzhanes* meant that they had to

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<sup>33</sup> Chantemesse reported on cholera in the Ottoman Empire, as witnessed in his three month stay in Istanbul, for the European medical community in Chantemesse, "Le Choléra"; André Chantemesse, "L'Épidémie Cholérique de Constantinople En 1893," *Bulletins et Mémoires de La Société Médicale Des Hopitaux de Paris*, 3, 11 (1894): 49–60. Chantemesse may have had the ear of Abdülhamid, but he and the restrictions he mandated to control the spread of cholera were not universally popular, and even derided in popular verse of the time. Ayar, pp.217-18.

<sup>34</sup> BOA, Y.A. HUS 282/94; Yıldırım and Ertin.

<sup>35</sup> Mehmet Yerçil, "A History of the Anatolian Railway, 1871-1914" (Ph.D. Diss., University of Cambridge, 2010), p. 70.

<sup>36</sup> The term "quarantine" refers, properly, to a forty-day isolation imposed on ships coming to port in Ragusa in 1797. A similar concept had long been practiced, however, for shorter periods. Mark Harrison, *Contagion: How Commerce Has Spread Disease* (New Haven: Yale University Press, 2012), p. 8. The term "quarantine" has come into common use for any period of isolation to prevent the spread of disease.

stay five to a room, clearly not a sanitary solution to a problem in which sanitation was crucial.<sup>37</sup> Not being able to adequately hold the workers in their specially-constructed facilities, they were not able to keep others at the worksite. There were 900 laborers working on the Kütahya branch line, the most active construction project at that moment. Many local workers simply returned to their villages rather than subjecting themselves to the quarantine.<sup>38</sup> In addition to quarantining people, the mail and other goods were disinfected by fumigation before their onward transportation was permitted. These measures greatly impeded travel to, from, and through Eskişehir. Equally important, they disrupted the town's commerce and its postal communication. The quarantine represented a setback to a region that was rapidly increasing its connections and business with the outside world. In some cases, merchants were among the advocates of fumigation, despite its inconvenience for commerce. Some, then, had the foresight to accept temporary losses in exchange for an end to the epidemic, or, perhaps, they were afraid of contagion themselves.<sup>39</sup>

Quarantine was controversial in many regions. Despite its frequent characterization as a western practice, quarantine was controversial in Europe as well. This was particularly true in Britain, where it was also opposed for its interruption of commerce.<sup>40</sup> British opinion was divided on Ottoman quarantines, with a large faction preferring free trade despite the risks inherent in the relaxation of isolating sanitary measures.<sup>41</sup> Also, with some foreign ports practicing it, quarantine would have been well-known to Ottomans long before the “era of

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<sup>37</sup> BOA, A.MKT.MHM 562/12 (13 Rebiülahîr, 1311/ October 24, 1893).

<sup>38</sup> Efe, p. 268.

<sup>39</sup> BOA, DH.MKT.MHM 164/86 (29 Rebiülahîr, 1311/ November 8, 1893).

<sup>40</sup> Birsen Bulmuş, *Plague, Quarantines and Geopolitics in the Ottoman Empire* (Edinburgh: Edinburgh University Press, 2012), pp. 1–4. Lack of medical consensus was another obstacle among the British and those they ruled over, as demonstrated in the anti-contagionist attitudes of colonial doctors in India. Arnold, “Cholera,” pp. 143–5. The debate among European states and experts over the advisability of quarantine regimes as discussed at length in Huber, “Unification.”

<sup>41</sup> Bulmuş, 97.

westernization.”<sup>42</sup> While Ottomans did not impose a comprehensive quarantine regime until the mid-nineteenth century, *tahaffuzhanes* had been in use since the late eighteenth century in Çanakkale, at the mouth of the Dardanelles.<sup>43</sup> An Italian traveler describes such a facility in Acre as early as 1760.<sup>44</sup> Quarantine was not an idea solely brought in by Europeans to those they perceived as ignorant and “fatalistic” Ottomans. Instead, the Ottoman Empire was one of numerous late nineteenth-century states, including the more “advanced” European nations, striving to balance public health and commerce.

The Ottomans also participated in a related global medical debate of the time, that of contagionism. For centuries, miasmatic theory had been widely accepted in both the Ottoman Empire and Europe. This model laid etiological blame, in general, with pollutants, frequently bad air (the literal meaning of “miasma”). In contrast, contagionists hold that diseases can spread directly from person to person. Contagionism was debated even in ancient times, with a variety of causes posited. By the nineteenth century, germ theory, the belief in tiny living microbes that transmitted diseases, had become the most common explanation among contagionists. The increasing use of the microscope, with which some of these microbes could be made visible, increased the evidence upon which germ theory was based.<sup>45</sup>

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<sup>42</sup> Gülden Sarıyıldız, “Karantina Meclisinin Kuruluşu ve Faaliyetleri,” *Bellekten* 58 (1994): 329-76, 333-4, also cited in Fariba Zarinebaf, *Crime and Punishment in Istanbul, 1700-1800* (Berkeley: University of California Press, 2010), pp.194-5, n.92; Gülden Sarıyıldız, “Karantina,” in Vol. 14 of *İslam Ansiklopedisi* (Istanbul: Türkiye Diyanet Vakfı Yayınları, 2001), pp. 463-5; Miri Shefer-Mossensohn, *Ottoman Medicine Healing and Medical Institutions, 1500-1700* (Albany: SUNY Press, 2009).

<sup>43</sup> Andrew Robarts, *Migration and Disease in the Black Sea Region: Ottoman-Russian Relations in the Late Eighteenth and Early Nineteenth Centuries* (London: Bloomsbury Academic, 2017), p.117.

<sup>44</sup> Yaron Ayalon, *Natural Disasters in the Ottoman Empire: Plague, Famine, and Other Misfortunes* (New York: Cambridge University Press, 2015), p.183.

<sup>45</sup> Although seeing a strict binary opposition between contagionists and miasmists is an oversimplification as convincingly argued by Christopher Hamlin. Hamlin, pp. 152-61. Among copious literature on the debate, see also Ackerknecht; Shefer-Mossensohn, pp.176-9; Vivian Nutton, “Did the Greeks Have a Word for It? Contagion and Contagion Theory in Classical Antiquity,” in Lawrence I. Conrad and Dominik Wujastyk (eds.), *Contagion: Perspectives from Pre-Modern Societies* (London: Routledge, 2017), 137–62; Prasad, pp.165-99.

While germ theory was on the rise by the 1890s, it was not yet universally accepted as an etiological substitute for miasma.<sup>46</sup> Abdülhamid, himself, was a proponent of contagionism. This can be seen in his requests for aid and advice from Louis Pasteur. The institutional impact of a state-endorsed belief in microbial contagionism is evident in the practices of the Imperial Medical School (*Mekteb-i Tıbbiye-yi Şahane*), the Public Health Council (*Meclis-i Umur-ı Sıhhiye*) and the soon to be founded (1894) Imperial Bacteriological Institute (*Bakteriolojihane-i Şahane*).<sup>47</sup> While this imperial policy boosted contagionist theory, it was far from universally accepted by physicians throughout the empire. Many medical practitioners with less exposure to the latest ideas, perhaps those in the provinces most of all, continued to follow miasmatic theory.<sup>48</sup> As for the medical establishment in Istanbul, and certainly those with state connections, the embrace of the theories associated with Pasteur and others, as well as the at least partial integration of foreign, especially French, physicians problematizes ideas of inside and outside medical influences and, in particular, medical westernization. In the Ottoman Empire, as in Europe, many of the same debates were being conducted with similar sides drawn. The Ottoman Empire was an important staging ground for the fight against cholera, and thus for the competition of these theories. The participation of Ottoman doctors, as well as foreign doctors who were employed by the Ottoman state, demonstrate active participation, rather than a more passive attitude of waiting to receive medical knowledge from Europe.

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<sup>46</sup> Even when germ-propagated contagion was accepted, it was fairly common to attempt to fit it into existing miasmatic theory, rather than completely change paradigms. Dolbee, p. 213.

<sup>47</sup> Yıldırım and Ertin; Sümeyye Gider and Zeynep Gül Ünal, "Late Ottoman Period Preventive Health Institutions in Istanbul: An Architectural Approach," *Journal of Cultural Heritage Management and Sustainable Development* 11 (2021): 411-26.

<sup>48</sup> Dolbee, pp. 234–35; Isacar Bolaños, "The Ottomans During the Global Crises of Cholera and Plague: The View from Iraq and the Gulf," *International Journal of Middle East Studies* 51 (2019): 603-20, 619, n.27; The Canadian-American missionary physician Clarence Ussher, working in Harput and Van two decades later, has many criticisms of provincial Ottoman physicians and their ignorance of the latest medical theories. Clarence D. Ussher and Grace H. Knapp, *An American Physician in Turkey: A Narrative of Adventures in Peace and in War* (Boston: Houghton Mifflin, 1917).

While the cholera epidemic was a threat to all, railroad workers were among those most exposed to risk due to their proximity to the primary means of cholera's spread. They were also the most likely spreaders of the disease as a mobile population using the train, whether they were operating already-running trains or working on construction. Ernst Mackensen, the construction manager for the Anatolian Railroad Company subcontractor Philip Holzmann, was on hand to witness the effects of the cholera outbreak on the railroad. He reported on seventy-five cases among construction workers, of whom twenty-eight died. By the end of October, only eighteen workers were still being treated. The Ottoman state continued quarantine in November, to Mackensen's dismay, as he wanted normal operations to resume as soon as possible.<sup>49</sup> Many merchants and some within the state shared this objective with the representatives of the company, suggesting the urgency ascribed to returning to the railroad's full operation and to the continued construction of the spur line to Kütahya.

The company's repeated urgings for the resumption of work reflected its fears for the effects on its profits. Some, such as Mackensen, blamed local workers' refusal to participate and their absconding to their home villages for the quarantine's ineffectiveness. Once they had returned to the infected could further spread the cholera epidemic. While the proportion of locals among affected workers is unknown, the Kütahya spur was seen as requiring fewer outside contractors and foreigners than other railroads.<sup>50</sup> Even on projects requiring the greater involvement of foreign contractors, Ottoman laborers, usually local Muslims, composed the backbone of the workforce. We can infer, therefore, that with its particularly high proportion of inhabitants of the region composing the labor force that they would have borne the brunt of

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<sup>49</sup> Mackensen cited in Yerçil, pp. 69-70.

<sup>50</sup> "General Trade Notes: Railway Construction in Turkey," *The Board of Trade Journal of Tariff and Trade Notices and Miscellaneous Commercial Information*, 15 (1893): 709.

cholera infections among railroad employees. Local workers had already troubled the company by temporarily deserting during religious holidays and agricultural harvests. Given that the locally-hired workforce was willing to occasionally forgo even a few days of paid labor in order to tend to the crops that they clearly considered a vital part of their livelihood, it is hardly surprising that they would be unwilling to stay for ten unpaid days of quarantine.<sup>51</sup> In addition to the inconvenience of construction delays, local and state officials worried about the epidemic's potential spread from the deserting workers to their villages.<sup>52</sup> The railroad company was also greatly concerned about the inconvenience and costs involved in bringing the laborers back after the epidemic had passed.<sup>53</sup> There are similar examples of locally-hired laborers fleeing quarantine for their home villages during Ottoman railroad construction. Another cholera epidemic in 1912, in the Baghdad Railroad construction sites around what is now the Turkish-Syrian border, resulted in many deserting the worksite while other "disgruntled workers blamed the medical staff for holding them prisoner while their crops ruined."<sup>54</sup> Clearly, these laborer-agriculturalists had not pledged their exclusive allegiance to the waged employment they had hired themselves out to. These examples demonstrate that at least some workers, "ordinary" people, and even provincial medical practitioners resisted quarantine. As there are very few first-person accounts by these people, we must infer from their appearances and reported behaviors in documents written by others.

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<sup>51</sup> A parallel can be made with the "miner-cultivators" of the Black Sea coal-mining region of Zonguldak and Ereğli, who would tend their fields for part of the year and mine the rest, demonstrating that the transition from peasant to industrial worker was not as clear-cut as is often thought, and that the same individuals could remain both. Quataert, pp. 41-69.

<sup>52</sup> A large amount of correspondence on this subject can be found in the documents gathered in BOA, A.MKT.MHM 562/12.

<sup>53</sup> Pınar Süt, "The Anatolian Railway Employees (1888-1914)" (MA Thesis, İstanbul Şehir University, 2014), p. 61.

<sup>54</sup> McMurray, p. 106, n.63.

The railroad company was the most vociferous opponent of quarantine. Even an interruption of a few days could be ruinous to the company's profits. Additional economic and political importance rested on the construction of the Konya branch of the Anatolian Railroad and the Baghdad Railroad that would be built onward. The 1893 cholera epidemic led some, including the German archaeologist Alfred Körte, who wrote about his railroad travels in Anatolia, to worry that the Konya branch might never be built.<sup>55</sup> On the other hand, a later account by the engineer Moritz von Hecker commended the speed and success of the work despite the obstacle of the cholera outbreak, which he saw as the most formidable barrier they had overcome.<sup>56</sup> Reporting of cholera's effects on construction could take on more pessimistic or optimistic tones, perhaps depending on one's relationship to the railroad company and, correspondingly, the desirability of portraying it in a positive light. Of course, local traders and other new participants in the emerging railroad-aided export economy were, doubtless, also eager for the resumption of business as (the new) usual.

### **Further spread and other outbreaks**

Ottoman authorities feared that the disease could spread further than Eskişehir and other infected areas. Cholera had already appeared in other parts of Anatolia and threatened to spread to other regions of the empire. These were not all locations with railroad stations and steamship ports. After disembarking from these modern modes of transportation, cholera spread rapidly into interior hinterlands. All who traveled could be suspected of carrying the illness, but railroad employees were scrutinized particularly closely due to the nature of their work. There were

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<sup>55</sup> Alfred Körte, *Anatolische Skizzen*. (Berlin: Julius Springer, 1896), p. 15.

<sup>56</sup> Moritz von Hecker, "Die Eisenbahnen Der Asiatischen Türkei II," *Archiv Für Eisenbahnwesen* 37 (1914), p. 795.

rumors that the railroad workers down the line in Ankara were infected too. Whether true or not, these reports further inhibited rail travel and trade.

Although the 1893 Eskişehir epidemic was notable due to the rising importance of rail commerce and its new one-day proximity to Istanbul, it was one of numerous outbreaks. That same autumn several Ottoman towns and regions experienced serious waves of cholera, including Izmir, Edirne, Iraq, and Kosovo.<sup>57</sup> Other well-connected towns were susceptible, such as Erzurum and Trabzon in eastern Anatolia, trade gateways to Iran and the Black Sea, respectively. These two were newly connected by a modern road, and both suffered cholera outbreaks between 1892 and 1895, roughly contemporary to Eskişehir's.<sup>58</sup> 1894 brought an even more widespread outbreak throughout inland Anatolia, with Eskişehir once again serving as a focal point.<sup>59</sup> The health ministry again imposed quarantines along segments of the railroad.<sup>60</sup> The *Levant Herald and Eastern Express*, Istanbul's English and French language newspaper, kept a daily column on cholera and quarantines during these years, covering both outbreaks in the Ottoman Empire and worldwide. Ottoman newspapers such as *Tercüman-ı Hakikat* also regularly covered appearances of the disease throughout the empire's provinces.<sup>61</sup> Cholera was clearly one of the major problems of the time. Quarantines due to cholera epidemics caused a rotating closure of the nodes of the emerging global transportation system, thus undercutting its

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<sup>57</sup> Efe, p. 270.

<sup>58</sup> Fulya Özkan, "A Road in Rebellion, a History on the Move the Social History of the Trabzon-Bayezid Road and the Formation of the Modern State in the Late Ottoman World" (PhD Diss., State University of New York at Binghamton, 2012), p. 143.

<sup>59</sup> BOA, A.MKT.MHM 552/17 (26 Zilhicce, 1311/ June 29, 1894); Körte, pp. 34-42.

<sup>60</sup> BOA, Y.A. HUS 306/13 (9 Safer 1312/ August 12, 1894); BOA, A.MKT.MHM 553/12 (10 Safer 1312/August 10, 1912).

<sup>61</sup> Cholera coverage was a regular feature of these publications at the time, as it was of many international newspapers. For some examples, see "The Cholera," *Levant Herald and Eastern Express*, 28 August 1893; "The Cholera," *Levant Herald and Eastern Express*, 19 September, 1893; "The Cholera," *Levant Herald and Eastern Express*, 28 September, 1893; "Quarantine," *Levant Herald and Eastern Express*, 28 September, 1893; "Tebliğat-i Resmîyye," *Tercüman-ı Hakikat*, 9 Teşrin-i Sani 1309 [21 November, 1893].

potential for speed and efficiency. Rather than forming a single “progress” under human control, two forces frequently considered signs of progress, capitalist-driven economic development and emerging public health regimes, were frequently at odds with each other. Cholera itself was a non-human agent, yet it was human-transported, facilitated by the powerful new technology of the railroad. None of these factors alone formed the environment that resulted from their combination. It was formed by interactions not just between the human and non-human, nor actors internal to each category, but a wide range of actors that were, to a great extent, intertwined.

### **Debates about the resumption of service**

By late October, Ottoman officials had relaxed the town-wide quarantine of Eskişehir. The railroad had not returned to normal, however. Trains were still being held at İnönü, the next station in the direction of Istanbul, for ten days, and at Biçer, to the east in the direction of Ankara, for five.<sup>62</sup> This delay effectively negated the railroad’s time advantage, with the one-day voyage between Eskişehir and Istanbul reverting to nearly two weeks, and the two-day journey from Istanbul to Ankara becoming one of seventeen days. In addition, three-day quarantines were imposed on trains departing Istanbul. These trains were held at stations just outside the city in various directions, Tuzla, Kalikratya, and Çekmece.<sup>63</sup>

In early November, just when the region appeared on the brink of reclaiming normalcy, several patients presented some worrisome symptoms. Doctors suspected three new cholera cases on November 8 and 9, which greatly alarmed state officials, railroad company

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<sup>62</sup> BOA, Y.A. HUS 282/94; Efe, *Kolera*, pp. 265-6.

<sup>63</sup> BOA, DH.MKT 2064/12 (16 Rebiülahir, 1311/ October 26, 1893).

representatives, and local residents alike as the preceding week had not seen any. The newly symptomatic patients were being examined by Doctor Wutz, a European physician employed by the Ottoman Anatolian Railroad Company. Charged with determining whether or not some recent illnesses were indeed cholera, he concluded that two cases were unlikely to be, as the patients recovered fully within two days, and that a third, which had proved fatal, had instead been typhoid fever. This finding inspired relief on the part of the Ottoman state, in particular the Commerce and Public Works ministry (*Ticaret ve Nafia Nezareti*), which supervised the railroads. A ministry representative in Eskişehir reported on Wutz's news and called it "fortunate" that this was a false alarm, and there were no new cases of cholera. Doctor Wutz, himself, recommended ending the work stoppage on Kütahya spur line and lifting the quarantine, which was well into its second month.<sup>64</sup>

Nonetheless, quarantine measures remained in place throughout the month. By mid-November, fewer than two percent of the workforce remained quarantined. The same letter from the Commerce and Public Works Ministry representative that discussed Doctor Wutz's patients also argued for easing the quarantine, stating that the workers were eager to return to their work sites. They also wished for the cessation of the hiring of new workers. The displacement of the earlier workers due to the disease was, now that they were no longer quarantined, itself causing misery. The ministry representative worried that their continued unemployment could cause a threat to public health as they wallowed in poverty and the bleak conditions associated with it.<sup>65</sup>

The Anatolian Railroad Company, not surprisingly, was the most ardent supporter of the quick resumption of service and, consequently, profit. In mid-November Edouard Huguenin, the Swiss national who served as the company's Assistant Director General (later Director General),

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<sup>64</sup> BOA, A.MKT.MHM 562/12.

<sup>65</sup> BOA, A.MKT.MHM 562/12.

wrote to the Ministry of Commerce and Public Works, Hüseyin Tevfik Pasha, in response to a letter from the grand vizier. Huguenin, also, expressed opposition to laying off locally-hired workers for fear that they could cause the disease to spread. Huguenin argued that the relatively small number of cases and deaths as compared to a few months previously (only three dead in the past week) meant that the outbreak was effectively over and the company could get back to business.<sup>66</sup>

On November 27, Doctor Gazale, who had advocated caution throughout the crisis, recommended shortening the quarantine period from ten to five days in the lazarettos, but still opposed fully lifting the quarantine in the town center. Throughout the outbreak, over 1,000 railroad travelers had been isolated in the lazarettos in İnönü and Biçer, in addition to those railroad laborers who had been unable to escape the shacks erected for them and the population of the quarantined portion of the center of Eskişehir.<sup>67</sup> Finally, by December 7, 1893 the Public Health Ministry (*Sıhhiye Nezareti*) declared the quarantine over, except in specific cases upon medical inspection.<sup>68</sup> As the full period of the regulations was well over two months, the quarantine and service interruption would have caused significant disruptions to commerce and to people's lives. The inconveniences and economic damage done by technological non-use were once again replaced by the potential health risks that were brought on specifically by technological use.

### **Quarantines and countermeasures**

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<sup>66</sup> BOA A.MKT.MHM 562/28. While not mentioned by name in the letter, the minister of Commerce and Public works at the time was the Ottoman statesman and noted mathematician Hüseyin Tevfik Pasha. Kâzım Çeçen "Hüseyin Tevfik Paşa," in *TDV İslam Ansiklopedisi* v.19 (Ankara: Türkiye Diyanet Vakfı Yayınları, 1999), pp. 14-15. Ahmed Cevat Pasha was Grand Vizier at this time.

<sup>67</sup> Efe, p. 269.

<sup>68</sup> Menekşe, p.76.

Quarantine has always been a controversial tactic for fighting the spread of disease. Long before steam transportation and the speeding up of epidemic transmission along its routes, merchants were already associated with the spread of plague. Merchants, for their part, came to regard quarantines as not only imposed economic hardships but as infringements of liberty. Some thus considered quarantine to be a “backward” practice according to Enlightenment principles equating personal and commercial freedoms.<sup>69</sup> On the other hand, with the ascendance of germ theory, scientific knowledge seemed to confirm the potential usefulness of quarantine. With medical opinions mixed, Abdülhamid’s support for contagionism, as demonstrated by his correspondence with Pasteur and reliance on Chantemesse and like-minded doctors, meant that the Ottoman state generally accepted quarantine as a health measure.

Quarantines were increasingly important components of international disease control regimes.<sup>70</sup> International conferences on cholera prevention convened, including one in Istanbul.<sup>71</sup> These conferences also served as fields of negotiation between the Ottoman state and European nations, which pitted Ottoman sovereignty against the desires of colonial powers to regulate the movement of their subjects, now that steam transportation had facilitated their mobility. This was particularly the case regarding the Hajj. As the numbers of those able to travel to Mecca to perform this pilgrimage rose dramatically, and as the proportion that had traveled a greater distance rose, cholera became a major threat, with several major outbreaks during the Hajj in the nineteenth century.<sup>72</sup>

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<sup>69</sup> Harrison, p. 50.

<sup>70</sup> Harrison, p. 24; Robarts, p. 178.

<sup>71</sup> Huber, “Unification”; Ayşegül Demirhan Erdemir and Öztan Öncel, “Development of the Foundations of Quarantine in Turkey in the Nineteenth Century and Its Place in the Public Health,” *Journal of the International Society for the History of Islamic Medicine* 2 (2003): 42–4.

<sup>72</sup> Gülden Sarıyıldız and Oya Dağlar Macar, “Cholera, Pilgrimage, and International Politics of Sanitation: The Quarantine Station on the Island of Kamaran,” in Nükhet Varlık (ed.), *Plague and Contagion in the Islamic Mediterranean* (Kalamazoo: Arc Humanities Press, 2017), pp. 243–73; William Ochsenwald, *Religion, Society and the State in Arabia: The Hijaz Under Ottoman Control, 1840-1908* (Columbus: Ohio State U. Press, 1984); Firoozeh

A U.S. diplomatic dispatch from Beirut tells of cholera entering greater Syria through this port city in 1865, having been “introduced from Egypt, by steamers.” The writer, by the name of Johnson, also mentioned its spread to Mecca via pilgrims who had started arriving “through rapid steam communication” and suggested quarantine stations for pilgrims in Jeddah, Suez, and Basra could help contain the problem.<sup>73</sup> The Iraqi provinces were able to cut down on the incidence of cholera once quarantine was imposed on river traffic.<sup>74</sup> Two additional examples that were more directly related to the Eskişehir outbreak of 1893 in that they involved railroads, were the aggravation of the recurrent problem of cholera on the Hajj by the rapid transportation provided by the Hijaz Railroad, and the quarantine and other measures taken along the Salonika-Manastir Railroad during a cholera epidemic in the Balkans in late 1911.<sup>75</sup> This overall pattern, involving both the spread of the illness by means of a modern conveyance and the attempts to arrest its spread by setting up a quarantine, continued throughout the remainder of the Ottoman era.

## Conclusion

As a centerpiece of Ottoman modernization, the construction of the Ottoman Anatolian Railroad was widely celebrated for drastically increasing the speed and volume of commerce, the personal mobility of travelers, and enabling the deployment of large numbers of troops and military equipment. As was the case in much of the world, many considered the train a miracle of modern

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Kashani-Sabet, “‘City of the Dead’: The Frontier Polemics of Quarantines in the Ottoman Empire and Iran,” *Comparative Studies of South Asia, Africa and the Middle East* 18, no. 2 (August 1, 1998): 51–8; Low, pp. 117-66.

<sup>73</sup> “From Johnson to Seward, 28 July, 1866,” US GR 84, Miscellaneous Correspondence, Beirut, 1864-1867.

Document published in Charles Issawi, *The Fertile Crescent 1800-1904: A Documentary History* (New York: Oxford University Press, 1988), pp. 51-4.

<sup>74</sup> Roger Owen, *The Middle East in the World Economy, 1800-1914* (London: Methuen, 1987), p. 273.

<sup>75</sup> Ochsenswald, *Religion, Society*, p. 70; Basil C. Gounaris, *Steam Over Macedonia, 1870-1912: Socio-Economic Change and the Railway Factor* (Boulder: East European Monographs, 1993), p. 241.

technology. While some controversy arose over the German-built railroad's role in the foreign economic penetration of Anatolia, both Ottoman state and foreign observers regarded it in a positive light as a modernizing advance.

As the Eskişehir cholera outbreak of 1893 demonstrated, however, the train could also bring devastating consequences. It was precisely the railroads attributes of speed and efficiency that enabled the railroad to serve as a powerful conveyor of cholera along its network. In addition to lives, the cholera outbreak also threatened Eskişehir's growth and development in the 1890s. This town, which had been steadily gaining importance, became a location associated with peril. Its increasing commercial and cultural connection with Istanbul was temporarily halted due to the enforcement of the quarantine, a measure that met with resistance by those unhappy with the disruption to their livelihoods and profits. This cholera outbreak demonstrates how the railroad was an infrastructure of development as well as one that fostered fear, spread disease and death, reinforced fears of outsiders, and blocked new connections and influences from the capital and the world beyond. It also challenges the idea that human projects guarantee human control of the result of those projects and thus impose progress (or other desired outcomes) at the outcome. Human agency is important, humans have a unique degree of impact on their surroundings, but this neither means that they are free from contention with other human and nonhuman actors nor that their desired outcomes are the ones that will manifest. The final products of human projects, therefore, are formed not through the planners' actions alone according to their idea of progress, but in a complex and often difficult to predict series of interactions and intertwinements with other human and non-human actors. The relative severity of the epidemic can be seen as the result of a compound agency of human and non-human actors. Trains penetrate formerly difficult to access interior regions. Of course, *vibrio cholerae* cannot

travel the rails without a human host. In addition to the enabling effect of this rapid transit, poor sanitation and a now more transient population provided a welcoming environment for the epidemic's spread. The sum of these elements created a far greater effect than any one.

The compound negative effect was a result of the efforts to bring progress into the Anatolian interior. The role of cholera complicates the image of modernization as progress. Without the rapid transportation afforded by steam engines, whether on ships or trains, coupled with the widespread diffusion of people created largely as a result of colonialism and imperialism, the disease may well have remained in its endemic territory. The spread of cholera as part of the modernization package de-couples the idea of progress from that of modernization. The spread of cholera along the Anatolian Railroad to Eskişehir during the 1893 epidemic demonstrates that, whatever benefits it might bring, the railroad could also be used as an efficient conduit for the spread of cholera. The consequences of the railroad's stoppage indicate the speed with which commerce was already dependent on the new transportation infrastructure as the local economy became secondary to more distant internal and external markets. Any examination of modernization must also consider forms of negative progress and negative modernization while simultaneously examining how technologies-in-use as well as technologies-not-in-use contribute to them.