

An Atlas of Maladies, Microbes, and Morals: Tropes of Scientism in Early Turkey's Public Health Education

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ABSTRACT: Like many countries of the early 1920s, Turkey transitioned from empire to nation-state, a development in which scholars have identified modern, nationalistic, secular, Western, and even authoritarian agendas. Integral to each of these orientations were distinct prioritizations of hygiene, medicine, and public health. The universal scope of this mission to achieve national wellbeing posed particular challenges in a predominantly rural country comprising traditional communities with their own curative practices, and it was complicated further by widespread illiteracy, shortcomings in personnel and finances, and geography. Interrogating the ways in which officials and physicians initiated programs for schooling the citizenry in medical science and its virtues, this article identifies how the republic utilized a broad narrative of scientism to achieve its ends in its associated curriculum. Developing a straightforward and portable program for teaching public health personnel and citizens alike, public health authorities distilled the content of the republic's medical museum exhibits into an atlas for broad distribution. Through mutually-reinforcing tropes of maladies, microbes, and morality, this atlas was intended as a key implement of governance designed to convey the scientific state's biopolitical goals to throughout the nation.

The atlas, the census, and the museum: concluding his examination of the emergence of nationalism, Benedict Anderson identified these "institutions of power" as fundamental to the administration of late empires and modern nation-states.¹ Rooted in spatial practices of surveying and surveilling, of classifying and analyzing, and of exhibiting and educating, these implements of governance convey authority and objectivity as much as they do any actual information. Essential to fashioning citizens, these devices are foundational to core state initiatives, too, such as public health schemes. In turn, these projects typically rely upon arrays of truisms and mutually-fortifying tropes to propagate dominant narratives of authority and identity. In this article, we employ the question of scientism, as articulated by David Livingstone,² to (1) examine how this concept informs historical geographies of the early Turkish republic's discursive efforts to connect with and educate its population in both public health and citizenship and (2) establish public health education schemes as a focus for research in historical and health geographies. In the nation-state era, we contend more generally, this vernacular of apparent facts, reason, and science has proven indispensable to modern statecraft.

Scrutinizing primary sources pertinent to the emergent nation-state's predicaments of diverse maladies and demographic anxieties, we discern an abundance of scientized depictions of

pestilence and population intended for general dissemination. To analyze this rhetoric, we focus here on tropes of scientism that pervaded the republic's public health curriculum. In doing so, we observe that, just as exercises of "power, politics, and ideology in art exhibitions"³ feature routinely in the typical museum or atlas, comparable practices are manifest in the pictorial imagery and texts that represent disease and public health. Positioning graphic narratives alongside nationalist rhetoric, the Turkish state portrayed diseases as "enemies"⁴ menacing the nation, just as it depicted particular ailments attacking the health and productivity of individual citizens. Predictably, amid these figurative struggles, the science-endowed republic and its leaders performed heroically as the ultimate protectors of the nation, analogous to either a diligent scientist realizing a cure or a dedicated physician saving a patient.

Central to overcoming social and political obstacles to achieving a healthy population, the early Turkish nation-state developed an ambitious public health system with universal outcomes in mind. Like other modernist states, it relied heavily on this rhetoric of scientism to achieve its goals. In the lessons it fashioned to educate the public, it emphasized not only objective facts but a culture of science. To confront this deployment of scientism, we focus on one of the country's first publications for training health workers and the general population alike: a public health atlas that officials hoped would distill essential information and images from its early medical museums in an accessible medium. To better analyze the atlas in this article, we begin by surveying the place of science and public health education as matters of governance and biopolitics in historical geography, and we introduce the context of early republican Turkey and its public health challenges. Engaging with the atlas itself, we then account for and interrogate distinctive components—or tropes—of the document as narrative: (1) the science of particular diseases and difficulties; (2) modern medical science and public health as the nation's keys to salvation; and (3) the scientific state's lessons in citizenship, as nested in secular expressions of modern morality. As much as the republic's projects alleviated sickness and mortality, its scientized curriculum also served to confirm its own power and legitimacy as the singular provider of this modern knowledge and its blessings.

Situating public health education in historical geography

Both historical geography and histories of geography have long encompassed histories of science and medicine. Traditionally, much of the scholarship of these latter fields emphasized inquiry about the ideas and education of physicians and nurses, bacteriologists and epidemiologists, and other health professionals. To better assess and integrate this knowledge in historical geography, however, it also is essential to interrogate dynamics of awareness, informational diffusion, and learning among not only specialists but entire populations. In addition, doing so enables engagement with two of the general thematic questions both in science and technology studies (STS) and in the histories of medicine and science,⁵ namely, how scientific/medical knowledge is constructed, and how such knowledge is implicated in practices of governance.⁶ Contributing to these wider inquiries, historical geographies of public health education engender both practical and theoretical insights as to the respective roles of science, society, and state.⁷ Scientists, physicians, and public health officials typically play allied yet dissimilar roles. Geographic research on public health education thus promotes understanding of the spatial circumstances that contextualize the pursuit of facts, treatments, and policies, on the one hand, and the geographic extent of a society's comprehension and acceptance of existing findings, proposed therapies, and associated regulations, on the other hand. These processes of conveying, at times mandating, and at other times resisting ideas of disease, wellness, and associated health programs can elucidate both the biopolitical circumstances of populations and

how the enterprise of public health (including public health education) functions as a distinct mode of scientific governance.

As historical geographers, however, there exist distinct constraints to our capacities to explore early public health education. In particular, it is not possible to measure past populations' receptiveness to new discoveries in medical science, regimes of treatment, or policies regulating social behavior, as can be done among contemporary populations through surveys, focus groups, ethnography, and oral history. Other information must serve as proxy data. For example, our knowledge concerning subpopulations treated, registered, instructed, or otherwise engaged with by a state's public health apparatus may be informed by consulting statistics from hospitals and clinics or the brochures, posters, and other media distributed.⁸ Likewise, compulsory health education curricula in schools and military units, for example, or the number of performances of educational plays or screenings of instructional films, help in estimating the geographic and demographic range of such lessons. Qualitatively, memoirs, editorials, and other recorded testimonies reflecting the perspectives of providers or of the populations targeted for instruction can document delivered content, audiences' receptiveness and reactions, and consequent changes in behavior. When only sparse data survive (e.g., the absence of memoirs from illiterate populations), research depends upon qualitative analysis of programmatic and curricular records. This research, regardless of theoretical approach, enables reconstruction of how states (1) framed demographic concerns, particular diseases, and schemes for prevention and treatment,⁹ and (2) implemented public health programs as procedures integral to statecraft. Through the course of this article, our inquiry is guided generally by the Foucauldian concepts of governmentality and biopolitics.

Concisely, this idea of governance derives from Foucault's 1977-1978 lectures on security, territory, and population at the Collège de France.¹⁰ Focused on the modern state's creation of spheres of services for enhancing the lives of its citizens (e.g., public health), this concept maintains that conditions of governmentality began to emerge as the state strived to surveil and scrutinize its population, on the one hand, and as the population became conditioned to self-regulation, on the other hand.¹¹ In this regard, Foucault's governmentality is quite similar to a population's consent to state hegemony under systems of capitalism, per Gramsci.¹² Also integral to Foucault's conceptualization of this process was the centrality of population, with the modern state relying upon both it and its economy. Amid the modern state's evolution, he maintained, the premodern primacy of territory was supplanted by this overruling concern for population. While most geographers—even those who follow closely Foucault's conceptual lead—would reject what might be read in his works as a relegation of territory's prominence to the past, few would dismiss his observation regarding a modern ascendancy of population, as reflected over time in the state's enhanced scale of interventions in its citizens' lives. In both this regard and with respect to the changing dimensions of how territory may be construed to include the individual, Foucault's concept of biopolitics is also of particular importance.¹³ This notion encompasses essentially all that may define and be connected to a person's life (e.g., health, sustenance, family, work, environment, and so forth) and how modern (or "liberal") states impose increasingly what Nikolas Rose defines as "biological citizenship."¹⁴ As a condition, biological citizenship is mediated by states' capabilities to achieve conditions of governmentality, partly through citizens' own acts of self-regulation (or consent, per Gramsci). Given states' imperatives to condition their populations to self-regulate (and to consent to being ruled), education and schooling—whether in literacy or hygiene/public health—appeared more than ever to be both vital tools of and objectives for modern states.

This shift towards governance as mediated through interventions in the biopolitics of a citizenry was especially notable in Western states by the modern era, but it also emerged within others that followed—or sought to effectively resist—the West’s example.¹⁵ While measures of quarantine, sanitation, and hygiene characterized most public health initiatives prior to the twentieth century,¹⁶ actual engagements with the general population started in the 1900s to move beyond the distribution of leaflets, the mandating of hygiene classes in schools, and the prioritization of public health by advocates of temperance. Enabled by bacteriological and epidemiological discoveries of the past two decades, both states and nongovernmental organizations began early in the century to target specific concerns and develop focused educational programs. America’s anti-tuberculosis movement was a “trail blazer,”¹⁷ with a public exhibit in Baltimore in 1904, a follow-up in New York, and traveling events thereafter at fairs and other venues. Medical museums, including simple exhibits and traveling displays, became vehicles for public edification. Although they had emerged centuries earlier as sites for the training of physicians, the experiments of researchers, and the curiosity of early collectors,¹⁸ medical museums, operating under an expanded notion of benefit to the general public, suited the aspirations of the modern “welfare or therapeutic state.”¹⁹ As the nascent Turkish republic coalesced in Ankara in the early 1920s, we argue, its leadership embraced this biopolitical dimension of governance and the promise of museums, atlases, and other institutions.

Situating public health education in Turkey’s historical geographies

Leaders of both the late Ottoman Empire and the Turkish republic adopted ambitious policies for governance in their modernizing states.²⁰ Indeed, there were profound continuities in the paths charted for modernization by the empire and its successor²¹—and in the narratives of scientism that thusly flourished.²² These agendas encompassed not only traditional domains like economics, infrastructure, and security but also universal education²³ and public health, and extended down to the scale of the individual citizen and the most fundamental aspects of everyday lives—envisioning what we know as biopolitics. However, the capacities of each polity to effect such initiatives were limited by the circumstances of their times and their respective resources. While imperial officials envisioned modernist reforms in public health, for example, their realization was curbed by financial, logistical, and institutional shortcomings, as well as the limits of contemporary medical science (e.g., as with malaria and syphilis²⁴—two of the republic’s principal foes). Emerging amid both foreign occupation and ongoing conflict,²⁵ the Ankara-based republic experienced similar material and geographic constraints on its capacity to diagnose, treat, and prevent outbreaks of disease, despite significant scientific and medical advances in the preceding decades in other countries. In Turkey, therefore, the comprehensive governance—as attainable through the sciences of medicine and public health—that was aspired to by the republic’s leadership was not immediate; amid scarcities, ambitions regularly outpaced outcomes.²⁶ Nonetheless, Turkey’s attempts to realize the biopolitical state can still be evaluated through one of its principal means of engaging with its populace: public health education policies, programs, and curriculum.

Nonetheless, in studies of the Turkish republic published prior to this century,²⁷ medicine, science, and technology did not appear as particular research concerns. Rather, emphasis typically rested on modernization and identity politics, articulated especially in terms of ethno-nationalism, secularism, Islam, and economic and institutional development. Though critical reassessments of these preoccupations in Turkish historiography emerged by the late 1990s,²⁸ with inquiries into the meanings of modernity, critiques of secularism, and analyses of the built environment,²⁹ critical histories of science, medicine, and STS scholarship did not emerge until this century.³⁰

The rise of new political identities and institutions, and international conflicts during the time of the Turkish republic's establishment, have naturally attracted attention to traditional topics of political inquiry.³¹ It is true nonetheless that many histories of disease, medicine, and science and technology in other countries underscore the profound influences of unrest and war on public health initiatives.³² In Turkey, these conflicts drove population politics, which reacted to deaths from violence, sickness, and hunger³³ and episodes of migration and population exchange.³⁴ Fearful of demographic decline and even collapse, not unlike many European states of the time,³⁵ leaders of both the late empire and the emergent republic resorted to pronatalist policies³⁶ and other responses rooted in contemporary ideas of sanitation, hygiene, and public health.³⁷ The urgency of such measures stemmed not merely from officials' administrative responsibilities for citizens' lives, but from profound anxieties both economic and geopolitical, articulated in a "demographic discourse" of the early 1920s articulated by physicians and politicians.³⁸ To confront these fears, the nascent state created a public health infrastructure, establishing a ministry of public health on 20 May 1920, three years before the republic itself was declared.

The new Ministry of Health and Social Assistance of the Republic of Turkey (or *T.C. Sıhhiye ve Muavenet-i İçtimâîye Vekaleti*) was based in Ankara, the nation's burgeoning capital. Its first minister, Dr. Adnan Adıvar, and other officials identified key maladies—among them malaria, syphilis, trachoma, tuberculosis, and typhoid—as enemies of the Turkish people and prioritized them for engagement.³⁹ In most instances, these were diseases that officials linked with reproductive problems or infant mortality.⁴⁰ Additionally, aspects of behavior, for example, drinking alcohol, even wearing high heel shoes, were scrutinized as threats to health and safety. These elective decisions and conduct also merited confrontation, in the view of public health authorities.⁴¹ Though Adıvar was soon replaced by Dr. Refik Saydam—a later prime minister—the initial policy orientation persisted.

The republic's new public health institutions and its parliament emphasized both professional development and preventive medicine as they moved beyond simply enumerating and prioritizing the diseases that were necessary to overcome. To professionalize the country's physicians and public health personnel and standardize training and practice, the ministry relied heavily on the propaganda branch of its general directorate. This branch drew upon initiatives charted by the Ottomans in 1913, sustaining production and circulation of the journal *Sıhhiye Mecmuası* (later titled as *Sağlık Dergisi*) and sponsoring new medical texts and the translation of key titles from foreign languages, along with publication and distribution.⁴² Additionally, the ministry commissioned the acquisition and availability of data about Turkey, its peoples, and their ailments, as a basis for formulating state policies and medical practices. Production of volumes titled *Türkiye'nin Sıhhi-i İçtimâî Coğrafyası* ("The Medical-Social Geography of Turkey," with particular subtitles denoting specific provinces investigated) commenced in 1922, with four separate surveys of individual provinces, and continued sporadically thereafter until 1932.⁴³ As sources for historical analysis, these state-published texts focus on the country's citizens as patients and targets, revealing efforts by the ministry's administrators and physicians to apply (especially to the peasantry) medical science and technology as both curative and "civilization."⁴⁴ Here legislation and regimes of policing the population were only the most obvious outcomes.

Training its physicians and public health cadre, and instilling the ideal of service to the wider population in small towns and rural areas,⁴⁵ the ministry prioritized what we would today describe as preventive medicine. These preventive measures, consistent with contemporary trends in medical science and practice,⁴⁶ were pronounced in the early republic, although the state faced profound fiscal limitations that persisted even after the Treaty of Lausanne in 1923 effectively eliminated the republic's payment of World War I reparations. In addition to other material concerns—supplies of particular medicines, for example, were inadequate—Turkey's

demographic geography complicated provision of healthcare to most citizens. The population itself was largely rural and illiterate, limited opportunities for transportation made many areas inaccessible, and diverse spatial factors presented unique local risks, as with the occurrence of malaria in sites of wetlands or rice production.⁴⁷ In addition to schemes to extend the ministry's reach to remote communities, programs to mitigate the severity of particular diseases were sought as among the most feasible measures. In this context, the distribution of an atlas—a portable medical museum that included comprehensible visual information and guidelines—was among the first and most expedient of developments. Constituting a weapon to confront the nation's epidemiological enemies, it was a means to educate a broad segment of the populace, recruiting each citizen to regulate his or her own conduct and health.

The *Sıhî Müze Atlası*

The inspiration for a medical museum (sometimes called a *hıfzıssıhha müzesi*, or hygiene museum) may be attributed to Dr. Adnan Adivar and his desire in the late Ottoman era to foster “practical hygiene lessons” for students of medicine. Employed by the empire's General Directorate of Health in 1917, Adivar had observed such a museum in Germany⁴⁸ and anticipated establishing a similar venue in Istanbul. This goal was realized through the activities of another functionary of the directorate, Dr. Hikmet Hamdi. Touring several German museums over a period of four months in 1917, Hamdi returned to Istanbul with a number of paintings that were reproduced at a 1917 exhibition facilitated by the Red Crescent foundation.⁴⁹ Pleased with responses to the exhibition, Ottoman authorities commissioned Hamdi to create the empire's first medical museum.⁵⁰

Later republican accounts of the museum accentuated its shortcomings, attributable largely to World War I and its aftermath.⁵¹ Nonetheless, the museum boasted over 100,000 visitors from the summer of 1918 through 1926.⁵² Featuring a variety of moulage and other models, paintings, graphs and charts, and mobile displays that could be presented in other quarters of the city, it functioned into the 1980s, hosting conferences and screening films.⁵³ Though the administrative center of public health efforts shifted from the imperial seat of Istanbul to the republic's forward capital of Ankara, the museum's role as a precursor to subsequent nationwide efforts was appreciable—a medium that engaged and educated the medical community, state employees, soldiers, students, and other members of the public.⁵⁴

To achieve its goals of reaching the wider population, not only for purposes of public health but for nation-building and modernization, early republican leaders established institutions in villages, towns, and other cities known as *Halkodası* (“People's Room”) and *Halkevleri* (“People's Houses”)⁵⁵ that propagated health-related messages; similar efforts occurred in schools, workplaces, the military, and elsewhere.⁵⁶ The content of the propaganda was prepared by the Ministry of Health and Social Assistance and often took the form of posters, brochures, flyers, and films (however, many of these latter were produced in Europe or the United States). Further public health museums were opened in Ankara and Izmir, and materials from the Istanbul site were lent to these exhibits.⁵⁷ Mobile museums were also planned,⁵⁸ but visits by traveling exhibits to many of the remote towns and villages were not practicable. With these communities in mind, 1,000 copies of the *Sıhî Müze Atlası* (“Medical Museum Atlas”) were published in 1926 as a medium to instruct both public health workers and citizens.⁵⁹

The minister of health, Dr. Refik Saydam, authored an introduction to the atlas that conveyed its biopolitical purpose and goals:

One of the duties of the Ministry of Health and Social Assistance is to provide resources that can assist our people in possessing sufficient knowledge about the contagious and social diseases of our country. Consequently, the people will know how to avoid

these diseases, will perceive the damage and the terrible outcomes that they bring about, and will acquire great benefits in their lives and health. From this standpoint, therefore, we seek to increase the number of Health Museums and to pursue a path that demonstrates to the people how [they can] protect themselves from contagious and social diseases and learn guidelines for personal healthcare, by publishing and publicizing them with the benefit of pictures... that everybody can comprehend.

Currently we are unable to open these types of museums everywhere, thus I found it constructive to combine pictures of these images and other items displayed in our health museums and publish them as an album until we reach our goals.

I strongly hope that this album, prepared by Ministry of Health and Social Assistance, will assist us in attaining these goals.⁶⁰

As a distillation of the republic's medical museums and health exhibits, the atlas was a single portable volume that could be delivered throughout the country, even the nation's most remote communities. Like all state documents at that time, it was published in Ottoman Turkish. Though the book is an atlas, the tome itself is devoid of maps or other cartographic references. However, it does feature colorful illustrations intended to convey not simply the epidemiological and therapeutic aspects of particular diseases but also their social, environmental, and spatial contexts. In doing so, it articulates unambiguously specific geographies of risk; sites the responsible citizen should avoid. These spatial depictions are but some of the scientized tropes of disease and public health conveyed by the atlas.⁶¹

This article identifies three of the narrative themes woven through the book: (1) a survey of the diseases afflicting the Turkish nation, along with their roots in citizens' biologies and behavior, (2) a presentation of modern medical science and the state's ability to diagnose, treat, and defeat disease, and (3) the scientific state's lessons in a new modernist morality for citizens, who may emulate ideal examples in order to be happy, healthy, and productive. Training its populace with a scientized narrative to self-govern their biopolitical affairs so that they would be socially (and economically) viable actors in the new society, Turkey was consistent with most contemporary nation-states.⁶² As detailed in the following sections, these lessons were mutually-reinforcing narratives that collectively served both to explain and legitimate the objectivity and authority of modern medicine, on the one hand, and to establish and perpetuate the idea that the state was the sole arbiter and benefactor of this scientific power, on the other hand.

Maladies of the new republic

Emerging as a "positive and systematic enterprise" of the modern state,⁶³ medical science relied upon cataloging and classifying information. This categorization made the assembled knowledge not only more functional for practitioners, but more teachable (i.e., "legible")⁶⁴ for the wider population. In line with this compulsion to both order and instruct, the atlas itself is organized in a manner that is quite accessible—grouping afflictions by source or cause (those associated with waterborne bacteria, those resulting from unwise behavior, and so forth). Following Dr. Saydam's prefatory remarks, the book proceeds to separately detail every affliction of concern by providing a summary of each one's etiologies and epidemiologies, associated symptoms and outcomes, and opportunities for therapeutic and preventive measures. The scientific authority of both the modern physician and the nation-state is conferred through exacting and unassailable explication, relating a rational description and prescription for each malady.

Beyond conveying information that was practical (i.e., the causes and cures of disease) and political (i.e., the emphasis on the state, ministry, and physician/official), this systematic survey was part of a broader effort to displace the traditional curatives of rural Anatolia,

centuries old and bound up with religion or superstition or both. Presenting evidence-based accounts of each malady followed by prescriptive measures to achieve therapeutic remedies or outright prevention, the ministry aspired to impart a modernist logic that could inoculate the citizenry not only against diseases but against doubt. Indeed, though this agenda did not feature explicitly in the atlas, teaching against tradition was one of the priorities of the state.⁶⁵ While lessons that, for example, dispelled miasmatic notions of malaria were integral to educating people about the role of mosquitoes and thus the virtue of both therapies and preventive measures (e.g., draining wetlands, installing screens in homes, and avoiding sites, like rice paddies), eradication of traditional notions of sickness and treatment was also imperative in order to condition the populace to trust the state and its public health schemes and to assume measures of community and individual responsibility, that is, to self-regulate.

Self-governing against illness and infirmity required rudimentary awareness of the most common diseases, appropriate remedies, and the preventive measures provided by modern medical science and public health. Implementing these measures outside the clinic entailed discipline at the scale of the individual citizen and community. To this end, the atlas was easy for the literate citizen to read, and certain concise passages could be read aloud to the illiterate. Moreover, illustrations emphasize key aspects of diseases, recommend treatments, and caution against social and environmental risks. The biological and/or behavioral origins of each malady are also emphasized, accentuating the need for an involved and vigilant citizenry. Just as women ought to refrain from wearing high-heeled shoes in order to prevent orthopedic impairments, the responsible citizen should avoid practices and places that raise the risk of contracting diseases. Describing smallpox with associated illustrations to facilitate recognition of the disease in its various stages and its potential impacts, for example, the atlas underscores that the disease was once quite devastating, resulting in widespread and rapid epidemics and once accounted for up to a quarter of all deaths.⁶⁶ Though still dangerous—even sometimes resulting in severe scars or blindness (as in Figures 1 and 2), thanks to modern science and a dependable state the disease is now manageable with a vaccinated and watchful populace (Figure 3). According to the concluding sentences of the text on smallpox (printed in a bold and enlarged Ottoman script), the disease itself is terrible, but inoculations against it are safe, and vaccination is among “the greatest tools in our hands.”⁶⁷ In this instance, prevention and vigilance were the stipulated courses of action. In addressing sexually transmitted infections (STIs) or alcoholism, restraint was also a crucial directive. Detailed further in the subsequent sections, this definitional and diagnostic narrative merged with both scientific and moralistic discourse to create a scientized metanarrative of good health and citizenship in the modern republic.

Microbes and X-rays

Authoritative and comprehensible lessons in biology, medicine, and the responsibilities of the modern nation-state’s citizenry were supported through an additional strategy: graphic demonstrations of the scientific gaze. Making evident the perceptibility and soundness of modern medicine, the vantages of the microscope and x-ray—the virtual eyes of an emerging scientific state—were revealed to the nation in ways that supported the republic’s public health agenda. Beyond simply speaking of the biologies of particular diseases or the impacts of activities deemed unsuitable and unsafe, the trope of presenting images of both microorganisms and radiographs encouraged citizens to view for themselves the fundamental realities of the nation’s foes—and to reject superstition, the customary healer (often referred to as an *ocak*), and unfounded therapeutic traditions.⁶⁸ That the state would employ these instruments of research and diagnosis in educating the wider public should not be surprising. Indeed, such displays of innovation in

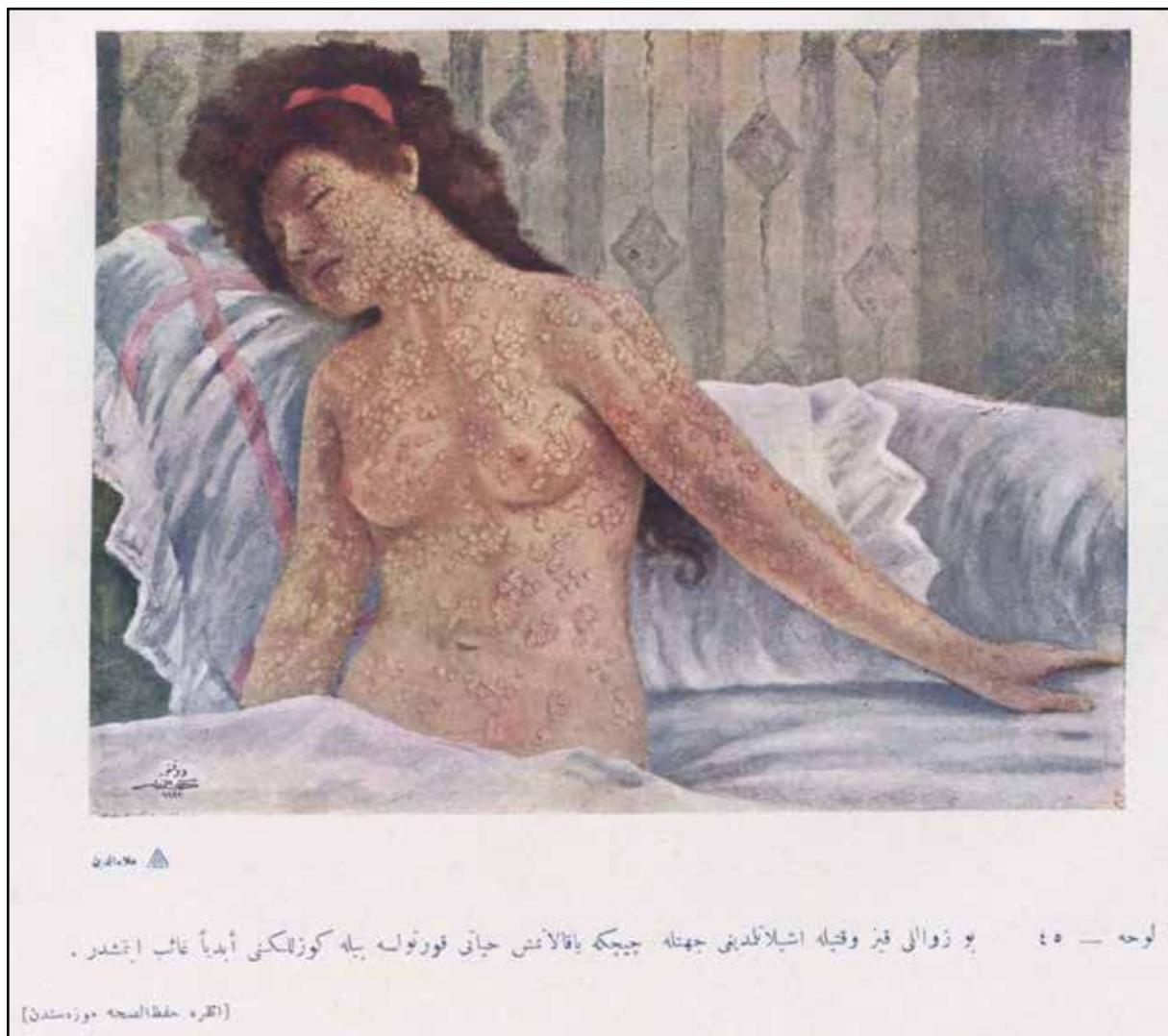


Figure 1. Among the portraits of individuals suffering from the various stages of smallpox, one depicted a young woman stricken by the disease. In the accompanying text, the consequences of failing to observe the state's guidance was stated gravely. As it read, "This poor girl was not vaccinated in time and contracted smallpox. Even if her life is saved she forever lost her beauty" (image attributed to the Ankara Public Health Museum, T.C. Sıhhiye ve Muavenet-i İçtimaîye Vekaleti, *Sıhhi Müze Atlası*, 44).

medical technology that revealed the body's inner workings were quite common in effecting conceptual shifts within Europe's own medical and scientific communities (and later among the general public) in the preceding centuries.⁶⁹

Employing the image of the microbe as framed by the microscope's slide, the atlas underscores the complex and scientific basis of effective diagnosis and therapy, on the one hand, and shares basic evidence with patients and the public, on the other hand. This elementary disclosure of modern medical science and practice was essential in the eyes of Turkey's officials and practitioners. In the minutes of parliamentary deliberations over public health, the documents of the health ministry, and proceedings of the republic's early medical conferences, the anxieties of physicians are apparent. Some had had experiences in peasant communities where villagers expected immediate and visible outcomes. In the absence of evident surgical procedures (or at

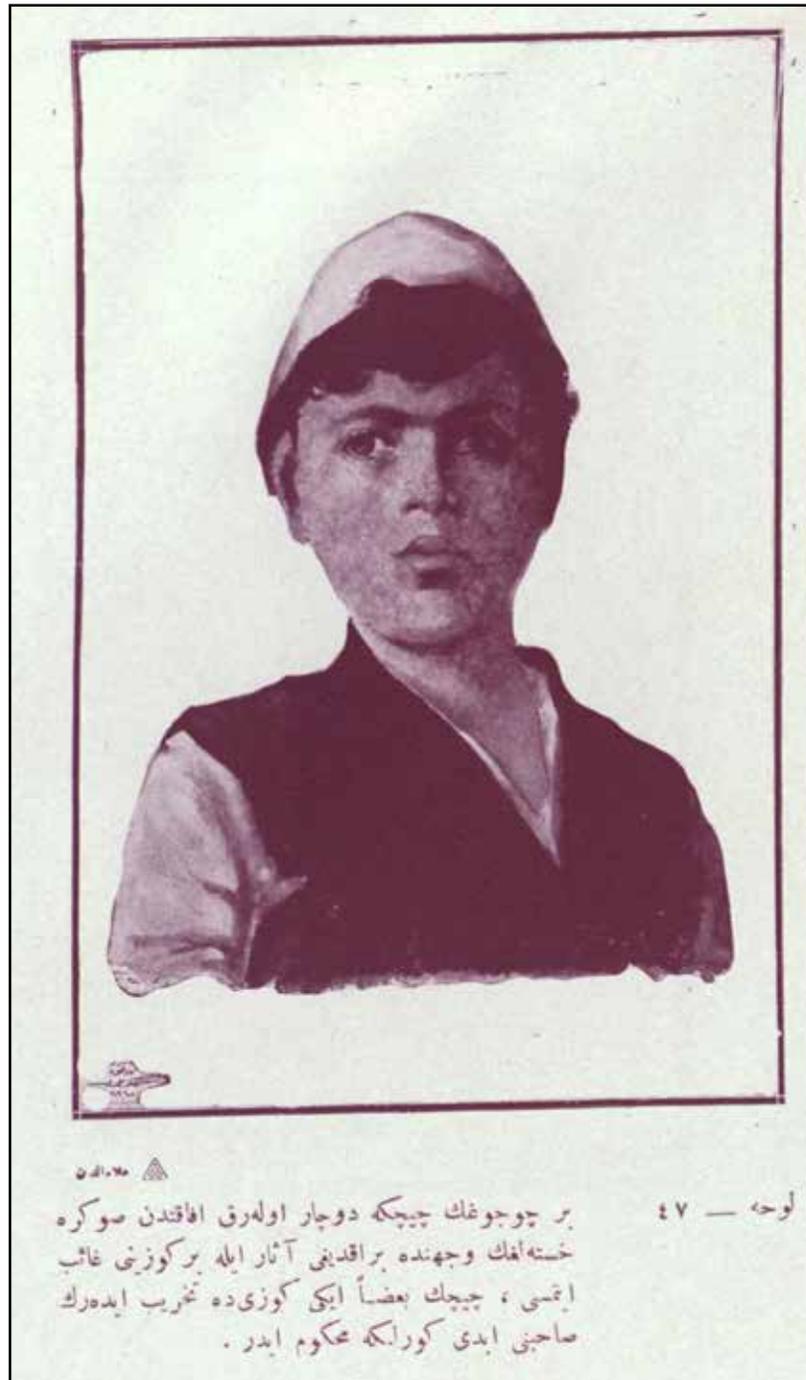


Figure 2. “A child who after smallpox bears the scars and lost one eye. Smallpox sometimes destroys both eyes, forever imprisoning the person in blindness” (image attributed to the Ankara Public Health Museum, T.C. Sıhhiye ve Muavenet-i İçtimaîye Vekaleti, *Sıhî Müze Atlası*, 45).

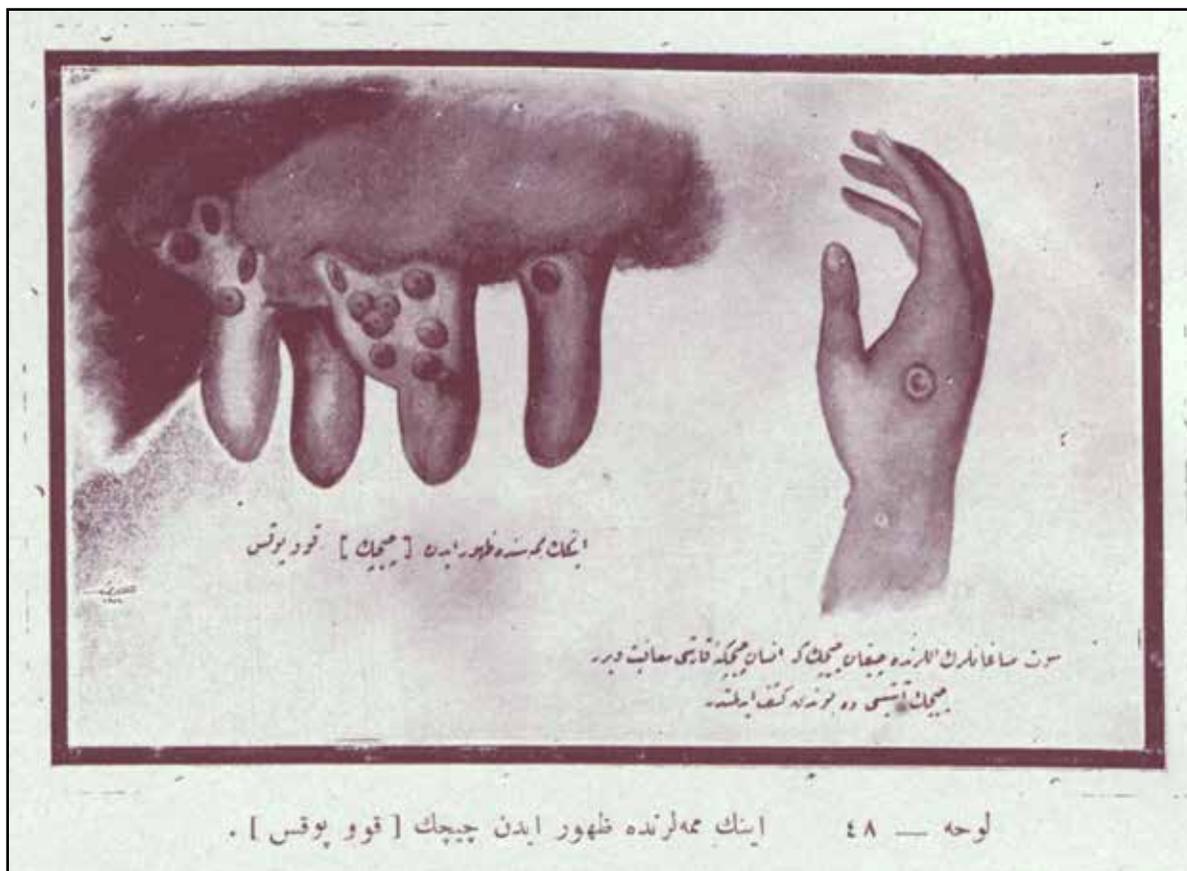


Figure 3. Explaining briefly the disease and the science of vaccinations, the atlas depicted a cow's udder afflicted with cowpox and the appearance of smallpox on a human hand (image attributed to the Izmir Public Health Museum, T.C. Sıhhiye ve Muavenet-i İctimaîye Vekaleti, *Sıhhi Müze Atlası*, 46). Perhaps one of the most striking aspects of this image, however, is the remarkable similarity between this illustrated udder and the style and presentation of near identical ones common in earlier medical texts and illustrations in Europe (e.g., illustration attributed to J. Pass, London, 1811; maintained online by Wellcome Images, Library reference no. ICV No 17194, at: <http://wellcomeimages.org/indexplus/result.html>)—indicating Turkish officials' possible borrowing of images and knowledge beyond (or perhaps simply by way of) Germany, to include England, among other countries.

least the sight of related scars, dressings, or casts) or instant results from medications, it was contended, locals would not accept the logic of modern medicine's practices and curatives, leaving the largely illiterate populace with considerable doubts.⁷⁰ Consequently, some of the medical propaganda that the ministry employed tried to frighten people more than educate them. Posters used in campaigns to eradicate malaria in the countryside, for example, depicted gigantic mosquitoes descending upon rural communities and fleeing townsfolk.⁷¹ However, education-oriented efforts to convey the microscopic workings of disease were also a common motif in the republic's public health curricula—one of the scientized narrative tropes upon which the atlas fully relies.

Though some officials deemed even basic lessons in disease and public health too complex for the general population, the atlas fostered a basic comprehension of the microbial basis of diseases in order to convey vital facts about social circumstances and physical environments that facilitated transmission. The ministry illustrated this microbial perspective and the epidemiology of diseases in text and images, as in the case of plague and the chain of infection that brought the disease to people.⁷² Though it was a greater threat in the Ottoman era, and even constituted

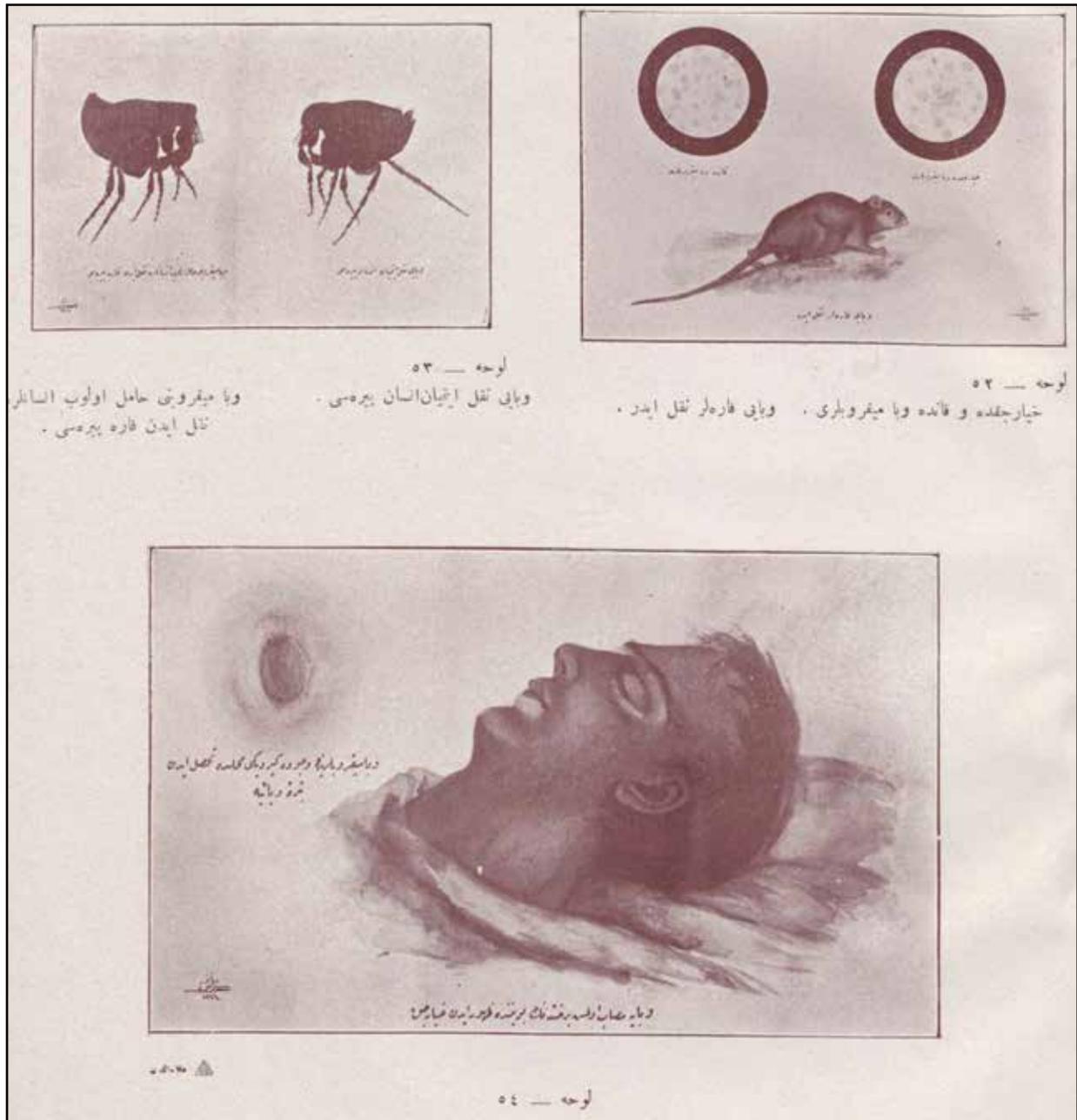


Figure 4. Depicting plague and its chain of infection (from right-to-left, and then on the bottom), the atlas presented the links between bacteria, rodents, fleas, and humans (along with the type of fleas that do *not* spread the disease—as it did with illustrations of mosquitoes that did and did *not* transmit malaria). Bed-ridden with blackened skin and swollen lymph nodes, the atlas also displayed a glimpse of the typical patient’s infected buboes (i.e., the lymph nodes) from where the disease multiplied and spread through the blood (T.C. Sıhhiye ve Muavenet-i İctimaîye Vekaleti, *Sıhhi Müze Atlası*, 57).

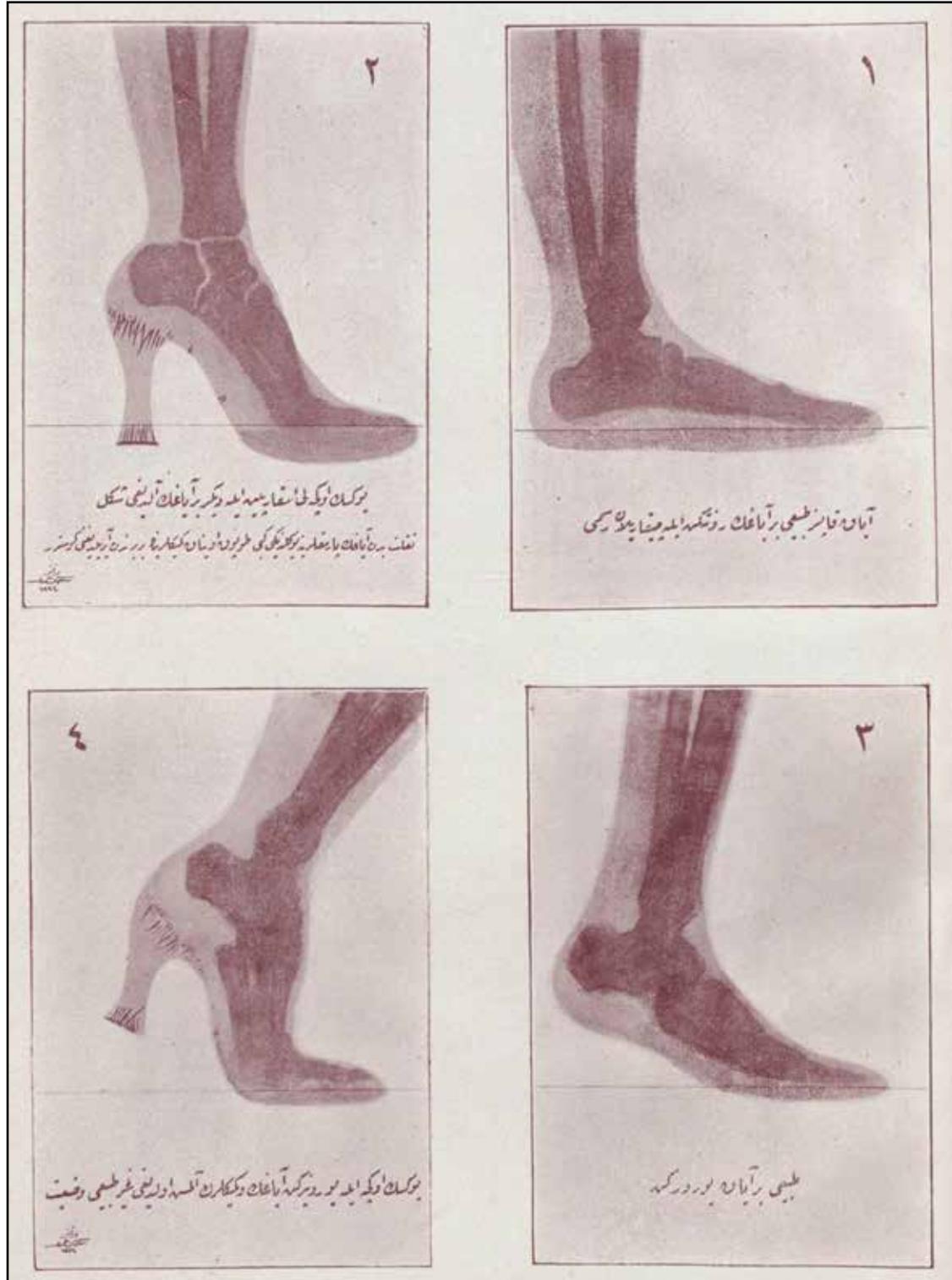


Figure 5. X-ray enabled views of the “unnatural” positioning of the foot, ankle, and leg as inflicted by high-heeled shoes (T.C. Sıhhiye ve Muavenet-i İçtimaîye Vekaleti, *Sıhî Müze Atlası*, 66; this image and others from this section of the atlas were also included and evaluated in Tokaç and Topçu, ‘Cumhuriyetin İlk Yıllarına Ait Bir Halk Sağlığı Sorunu’).



Figure 6. Depicting the consequences of poor public health standards and discipline, the last remaining member of a family slain by a 1920 cholera outbreak in Tuzla is himself found deceased by Dr. Hikmet Hamdi (T.C. Sıhhiye ve Muavenet-i İçtimaiye Vekaleti, *Sıhhi Müze Atlası*, 27).

a pretext for the geopolitical interventions of foreign powers (e.g., through the imposition of quarantines of imperial ports), plague still constituted a public health concern into the 1920s, when it was limited geographically to certain areas of the country. Noting that a vaccine and serum are beneficial, the atlas nonetheless indicated that the best course was prevention. The ministry's lesson on plague presented the disease's chain of infection as it extends from the bacterium *Yersinia pestis* among rodents to people via the flea. The ministry's sanitation thus targeted both pests (Figure 4) in ways that compelled the public's participation. Encouraging citizens to maintain homes that were clean and sanitary and thus free of rodents and fleas, the text also cautioned against contact with persons who were infected.⁷³

In addition to its displays of magnification, the atlas conveys the powers of the scientific gaze through probing and imaging the interior of bodies without resorting to any surgical or postmortem incisions. Just as it traces the paths of infections from specific environments and

vectors to afflicted bodies with the aid of the microscope, it uses the x-ray to reveal the impact of imprudent and injurious behaviors—like following the latest trends of fashion. For the Turkish ministry, the perils of high-heeled shoes warrant inclusion in the atlas along with malaria, syphilis, and plague. Commenting on the epidemic spread of this new and stylish footwear, the atlas surmises that if women learned of the ultimate cost of modern conventions of beauty, they would never contemplate setting foot in such shoes. Warning women not to be “fooled by fashion,”⁷⁴ the atlas includes images of a woman’s foot, ankle, and lower leg, as viewed together standing still and walking both barefoot and in high-heeled shoes (Figure 5). These performative perceptions/depictions of the body were also contextualized in objective, clinical terms.

Additional radiographs of the woman in various types of heeled footwear are employed to illustrate the most perilous styles, as are images of her knee and kneecap in “normal” and in heeled positions.⁷⁵ Indeed, the text and captions juxtapose the “normal” and “natural” with the “unnatural,” uncomfortable, and ultimately unhealthy. Highlighting healthy and unhealthy behavioral choices, the atlas’s final illustrations show women walking “unnaturally,” agonizingly, and precariously in modern dress and footwear.⁷⁶ With the presumably unassailable logic of experts and x-rays, the atlas not only reveals the dangers faced by citizens but also makes obvious their own responsibility to police unhealthy decisions, both their own and others’. In this way, spectacles of scientific technology reinforced the scientized and modernist morality lessons that were scripted by the state.

Morals and the scientific state

Complementing the state’s authoritative descriptions and categorizations of maladies, on the one hand, and its displays of scientific and technological imagery of microbes and bodies, on the other hand, each of the atlas’s lessons about particular ailments and injuries is replete with narratives and pictures that depict the consequences of neglecting preventive guidelines and prescribed therapies. Fusing the ideals of good health, good citizenship, and good governance (and self-governance), this early public health propaganda conveys clear codes of conduct in words and images that are both moralistic and melodramatic. Not unlike examples from the posters, brochures and flyers, mosque sermons, plays, and films that followed, the atlas depicts dualistic paths that are either good (educated, enlightened, civilized, responsible, healthy, and productive) or bad (uneducated, ignorant, primitive, reckless, unfit, and wasteful). These paths carry citizens to futures that are respectively fruitful or futile. Recalling the encouragement given to physicians to go to live and work among the people of the largely rural country, the messages of such morality tales could apply to doctors and officials of the state, as well.

Some of the consequences of bad behavioral choices were quite obvious, such as those of women hobbled by high heels or of drinkers who destroyed their homes and families or who descended into alcohol-induced insanity. In the case of STIs (i.e., syphilis and gonorrhea), regretful decisions were only a part of the problem; other factors also played roles. In other instances, and coupled with the bad decisions associated with STIs, public health calamities were depicted as the consequence of inaction, inattention, or neglect. Human failures to heed warnings (e.g., of malarial environments), to notice particular symptoms, or to follow assigned regimes of treatment and therapy all resulted in grave outcomes. In the morality tale trope of public health curriculum, the atlas conveys the constant imperative to self-regulate, self-police, and self-govern the behavior and the health of oneself and of one’s family.

Failures to heed these warnings led to consequences that were visited not only upon the individual but upon his or her family and community. Succumbing to the temptation to settle near easily farmable fields adjacent to wetlands, people perished or became enfeebled by malaria,

according to the text and illustrations. Children's stomachs were painfully distended from enlarged spleens. Entire villages were consumed by disease, still births, and infant mortality. Failing to abide by sanitary precautions, for example, could result in a man bringing tuberculosis into his home from public spaces.⁷⁷ Consequent transmissions would lead to tragic consequences, particularly for the most vulnerable; children and the elderly. In a similar fashion, not following medical advice about treatment, convalescence, and other aspects of care would squander one's chance for recovery.

The paintings and other images accompanying these parables of public health are oftentimes disquieting. Dealing with cholera infections, the atlas situates its coverage in sections focused on other waterborne illnesses. Following a brief summary of the bacterial basis of the disease, its rapidity in infecting an individual, and suggestions on how to protect oneself and one's family from contracting it (i.e., boiling all water for drinking, cooking, and cleaning), the atlas includes a page illustrating microscopic slides that display the cholera bacterium (*Vibrio cholerae*) along with representations of its impact on a patient's small intestines.⁷⁸ The following page, however, shares one of Dr. Hikmet Hamdi's personal experiences as a physician. Describing his inspections of the town of Tuzla during a 1920 cholera outbreak, he discovered that one household that was ravaged by the disease, as four people in a family died in rapid succession, with the family's sole survivor now displaying symptoms. Rushing to the stricken home, Dr. Hamdi is shocked to find the remaining family member already deceased; this image is included in a detailed painting as well (Figure 6).⁷⁹ Relying upon sensational stories, oftentimes with tragic conclusions, to teach public health lessons, these melodramatic morality tales figured prominently in the education fostered by the atlas and in most of the subsequent public health media generated by the republic.⁸⁰

Conclusions

Though omitted routinely from scholarship⁸¹ or dismissed outright as menageries of oddities,⁸² museums of medical science are sites steeped in the politics of modernity and the nation-state—just as they oftentimes had been institutions of imperial consequence for past generations. Identifying a range of epidemiological enemies, mobilizing citizens to wage war on these threats to population and productivity, revealing strategies for engagement, or evasion (as with preventive guidelines), and projecting images of future victory, public health exhibits functioned as “institutions of power” for nation-states. Like the atlas, the census, and the museum,⁸³ we argue that the various displays created to promote public health were crucial to the processes of nation-building and modernization that defined the Kemalist republic. Indeed, they were foundational to the missions of all modernist states with regard to governance and hegemony over the biopolitics of citizens.

While programs of nation-building routinely relied upon achieving literacy among sometimes sundry peoples,⁸⁴ many states were compelled to engage their populations with more than newspapers and the like. In addition to future deployments of electronic media (e.g., radio, and later television and the Internet), the use of imagery was often a vital part of such schemes.⁸⁵ Viewing its public health and population circumstances as urgent, Turkey's ministry of health arranged for its own mechanism to engage straightaway a population that was largely rural and commonly illiterate. The *Sihhi Müze Atlası* (“Medical Museum Atlas”), though containing text for physicians, officials, and others who could read, was produced in order to convey to the general populace the urgency and consequences of the country's health challenges, as did the museum exhibits in Turkey's larger cities. The text and pictures of the atlas did not simply assert the state's presumed authority over its subjects. Rather, scientized tropes—both authored and illustrated—

were employed to exhibit authority and knowledge, convey scientific and technological mastery over the ailments confronted, and relate harsh morality tales for the citizen of the modern state. Shortcutting not only science and biology classes but basic lessons to achieve literacy, the atlas was one of the state's first engagements in the field of public health education, and the lessons that it conveyed became enduring themes in schooling citizens as to the benefits both of modern medical science and of the scientific state itself.

NOTES

1. Benedict Anderson, *Imagined Communities: Reflections on the Origin and Spread of Nationalism*, revised edn (London: Verso, 1991), 163-185.
2. David N. Livingstone, *Putting Science in Its Place: Geographies of Scientific Knowledge* (Chicago: University of Chicago Press, 2003).
3. Timothy W. Luke, *Shows of Force: Power, Politics, and Ideology in Art Exhibitions* (Durham: Duke University Press, 1992).
4. Regarding early Turkey's self-declared "wars" on disease (e.g., malaria), note Kyle T. Evered and Emine Ö. Evered, "Governing Population, Public Health, and Malaria in the Early Turkish Republic," *Journal of Historical Geography* 37 (2011): 470-482; and Kyle T. Evered and Emine Ö. Evered, "State, Peasant, Mosquito: The Biopolitics of Public Health Education and Malaria in Early Republican Turkey," *Political Geography* 31 (2012): 311-323.
5. Though some studies of science and medicine distinguish the two—even in severe terms e.g., Ronald Munson, "Why Medicine Cannot Be a Science," *The Journal of Medicine and Philosophy* 6 (1981): 183-208, their roles and results can be indistinguishable to public and practitioners alike. This point was established in a recent history of national awakening within late colonial Southeast Asia, where "medical training provided the first, sometimes only exposure of the colonized elite to science": Warwick Anderson and Hans Pols, "Scientific Patriotism: Medical Science and National Self-Fashioning in Southeast Asia," *Comparative Studies in Society and History* 54 (2012): 93-113. This integrated understanding of medicine and science, we contend, was pervasive in the Middle East, particularly in Turkey. On the prominent political roles of physicians and "men of science" in the republic's parliament, ministries, and executive offices, see Evered and Evered, "Governing Population, Public Health, and Malaria in the Early Turkish Republic." On the growing political and cultural significance of science as early as the late Ottoman era, note M. Alper Yalçinkaya, *Learned Patriots: Debating Science, State, and Society in the Nineteenth-Century Ottoman Empire* (Chicago: University of Chicago Press, 2015). For Persia/Iran, note Cyrus Schayegh, *Who Is Knowledgeable Is Strong: Science, Class, and the Formation of Modern Iranian Society, 1900-1950* (Berkeley: University of California Press, 2009).
6. On the constructionist tradition in STS, see Sergio Sismondo, "Science and Technology Studies and an Engaged Program," in Edward J. Hackett, Olga Amsterdamska, Michael Lynch, and Judy Wajcman, eds., *The Handbook of Science and Technology Studies* (Cambridge: MIT Press, 2008), 13-31; Wiebe E. Bijker, Thomas Parke Hughes, and Trevor J. Pinch, eds., *The Social Construction of Technological Systems: New Directions in the Sociology and History of Technology* (Cambridge: MIT Press, 1987); and Donald MacKenzie and Judy Wajcman, eds., *The Social Shaping of Technology*, second edition (Buckingham: Open University Press, 1999). Articulating the importance of politics within STS are Alan Irwin, "STS Perspectives on Scientific Governance," in Edward J. Hackett, Olga Amsterdamska, Michael Lynch, and Judy Wajcman, eds., *The Handbook of Science and Technology Studies* (Cambridge: MIT Press, 2008), 583-607; Sheila Jasanoff and Marybeth Long Martello, eds., *Earthly Politics: Local and Global in Environmental Governance* (Cambridge: MIT Press, 2004); and Sheila Jasanoff, *The Fifth Branch: Science Advisers as Policymakers* (Cambridge: Harvard University Press, 1998).

7. This benefit is also quite apparent, for example, in present-day analyses of science, medicine, and public health that examine how they are integral to both the achievement and the conduct of citizenship and democracy, like: Sheila Jasanoff, *Science and Public Reason* (New York: Routledge, 2012); Alan Irwin, *Citizen Science: A Study of People, Expertise and Sustainable Development* (London: Routledge, 1995); Alan Irwin, "From Deficit to Democracy (Re-Visited)," *Public Understanding of Science* 23 (2014): 71-76; and Peter Baldwin, *Disease and Democracy: The Industrialized World Faces AIDS* (Berkeley: University of California Press, 2005).
8. Records of such publications for distribution among both the public and professionals in Turkey, for example, appeared in Evered and Evered, "State, Peasant, Mosquito."
9. Informing how diseases are "framed" politically are chapters in Charles E. Rosenberg and Janet Lynne Golden, eds., *Framing Disease: Studies in Cultural History* (New Brunswick: Rutgers University Press, 1992). Also note Charles E. Rosenberg, *Explaining Epidemics and Other Studies in the History of Medicine* (Cambridge: Cambridge University Press, 1992). Specific to the early Turkish republic and its officials' framing of diseases, their treatments, and traditional curatives, see Emine Ö. Evered and Kyle T. Evered, "Sex and the Capital City: The Political Framing of Syphilis and Prostitution in Early Republican Ankara," *Journal of the History of Medicine and Allied Sciences* 68 (2013): 266-299.
10. Michel Foucault, *Security, Territory, Population: Lectures at the Collège de France 1977-1978*, trans. Graham Burchell (New York: Picador, 2007).
11. On governmentality, see also Mitchell Dean, *Governmentality: Power and Rule in Modern Society*, second edn (London: Sage Publications, 2010).
12. Antonio Gramsci, *Prison Notebooks*, trans. Joseph A. Buttigieg and Antonio Callari, 3 vols (New York: Columbia University Press, 1992).
13. Biopolitics is regarded as both the politicization of life—in its most general terms—and the modern state's efforts to mediate (or govern) associated components, conditions, and processes; see Michel Foucault, *The Birth of Biopolitics: Lectures at the Collège de France, 1978-1979*, trans. Graham Burchell (New York: Picador, 2008).
14. Nikolas Rose, *The Politics of Life Itself: Biomedicine, Power, and Subjectivity in the Twenty-First Century* (Princeton: Princeton University Press, 2007).
15. In addition to ambiguity on how we might read Foucault with regard to notions of territory (especially in articulating governmentality), his works can be critiqued as steeped in the West's historical canon—despite his efforts to render a significant reinterpretation. In this respect, it is useful to note that, while many non-Western states followed Western examples, they often did so as a means of resistance, as in the case of "defensive developmentalism"; James L. Gelvin, *The Modern Middle East: A History*, third edn (Oxford: Oxford University Press, 2011).
16. On quarantine in the late Ottoman Middle East and its global and local geopolitical implications, see Nancy Elizabeth Gallagher, *Egypt's Other Wars: Epidemics and the Politics of Public Health* (Syracuse: Syracuse University Press, 1990); Nancy Elizabeth Gallagher, *Medicine and Power in Tunisia, 1780-1900* (Cambridge: Cambridge University Press, 2002); Birsen Bulmuş, *Plague, Quarantines and Geopolitics in the Ottoman Empire* (Edinburgh: Edinburgh University Press, 2012); and Ellen Amster, "Rumor and Revolution: Medicine, Technology, and Popular Politics in Pre-Protectorate Morocco, 1877-1912," in Driss Maghraoui, ed., *Revisiting the Colonial Past in Morocco* (London: Routledge, 2013), 87-111. On earlier dynamics of disease and state, see Nükhet Varlik, *Plague and Empire in the Early Modern Mediterranean World: The Ottoman Experience, 1347-1600* (Cambridge: Cambridge University Press, 2015). Also note coverage of Europe's relations with the Orient in Peter Baldwin, *Contagion and the State in Europe, 1830-1930* (Cambridge: Cambridge University Press, 1999).

17. George Rosen, *A History of Public Health*, expanded edn (Baltimore: Johns Hopkins University Press, 1993), 209-216, 369-380.
18. Historicizing the professional tradition of medical museums from Renaissance through early twentieth century, with particular attention both to the museum itself as an artifact for historical analysis and to the place of wax models, or moulage, is Ken Arnold, "Museums and the Making of Medical History," in Robert Bud, Bernard Finn, and Helmuth Trischler, eds., *Manifesting Medicine: Bodies and Machines* (Chur: Harwoods Academic Publishers, 1999), 145-174. Surveying of medical museums' continued relevance, see Samuel J. M. M. Alberti and Elizabeth Hallam, eds., *Medical Museums: Past, Present, Future* (London: The Royal College of Surgeons of England, 2013).
19. This coevolution of modern state and public health is described both favorably and critically in Roy Porter, *The Greatest Benefit to Mankind: A Medical History of Humanity* (New York: W.W. Norton, 1999), 630.
20. While a vernacular of science, modernity, progress, and reform figured increasingly in discourse of the last century of the Ottoman Empire, we contend, this rhetoric intensified greatly in the republican era. Enabling the state's authoritative positioning over the population, this language was integral to achieving scientific governance among the citizenry. On the empire's ambitions to promote public health and establish a bureaucracy and associated institutions, particularly in 1913, see Nuran Yıldırım, *A History of Healthcare in Istanbul: Health Organizations, Epidemics, Infections and Disease Control, Preventive Health Institutions, Hospitals, Medical Education*, trans. İnanç Özekmekçi (Istanbul: ajansa, 2010), 36-37.
21. This observation of empire-to-republic continuities in modernist development schemes was made previously in Kyle T. Evered, "Draining an Anatolian Desert: Overcoming Water, Wetlands, and Malaria in Early Republican Ankara," *cultural geographies* 21 (2014): 475-496; and Kyle T. Evered, "Symbolizing a Modern Anatolia: Ankara as Capital in Turkey's Early Republican Landscape," *Comparative Studies of South Asia, Africa, and the Middle East* 28 (2008): 326-341. The continuities in medical science concepts (e.g., hygiene, eugenics, and other contemporary ideas) between empire and nation-state constitute a central aspect of many significant works on governance and public health, such as Alison Bashford, *Imperial Hygiene: A Critical History of Colonialism, Nationalism and Public Health* (Basingstoke: Palgrave Macmillan, 2004).
22. Perhaps understandably, amid the political agendas at play, the actual meanings of science and related concerns, like medicine and public health, could be quite tenuous; an observation also made by Livingstone, *Putting Science in Its Place*.
23. As outlined in Benjamin C. Fortna, *Imperial Classroom: Islam, the State, and Education in the Late Ottoman Empire* (Oxford: Oxford University Press, 2002); and Emine Ö. Evered, *Empire and Education under the Ottomans: Politics, Reform and Resistance from the Tanzimat to the Young Turks* (London: I.B. Tauris, 2012).
24. In the case of malaria, the causal parasite was not identified until 1880, after chemist Louis Pasteur's refinements and substantiation of the germ theory of disease in the 1860s. Over the next two decades, researchers differentiated some of the forms of malaria that afflict humans and proved the role of mosquitoes as vectors for the malaria parasite. Even in Western Europe and North America, modern scientific initiatives to confront malaria did not arise until the approximate time of the Turkish republic's early 1920s emergence. Similarly, though the affliction of syphilis was well known prior to the twentieth century, the causative bacterium was not identified until 1905, and Salvarsan, Neosalvarsan, and penicillin were not discovered as viable therapies until 1910, 1912, and 1943, respectively.

25. In addition to World War I, the wars and insurrections of the late Ottoman era that preceded the republic were almost innumerable and involved Albania, Bosnia, Bulgaria, Crete, Greece, Italy, Montenegro, Romania, Russia, Serbia, and other then/eventual states, in addition to struggles involving Arabs, Armenians, Kurds, and other ethno-national minorities of the empire. At the time of the republic's origins, Turkey endured a post-World War I occupation of Ottoman Istanbul by Britain, France, and Italy (1918-1923) and the Turkish War of Independence (1919-1923).
26. Within Turkey, many top-down development projects of the republic functioned like those in other modernist states, as detailed in James C. Scott, *Seeing Like a State: How Certain Schemes to Improve the Human Condition Have Failed* (New Haven: Yale University Press, 1998). While such schemes may be critiqued for their sociopolitical dimensions and practical shortcomings, characterizing many of those associated with public health as abject failures is problematic; citizens often participated enthusiastically in public health efforts, and there were positive outcomes in infant mortality rates and life spans.
27. Traditional studies of Turkey typically reaffirmed the goal of modernity as held by the nation-state's leadership, regardless of disciplinary approach; such sources include: John Parker, and Charles Smith, *Modern Turkey* (London: G. Routledge & Sons, Ltd, 1940); Daniel Lerner, *The Passing of Traditional Society: Modernizing the Middle East* (Glencoe: Free Press, 1958); and, Bernard Lewis, *The Emergence of Modern Turkey* (Oxford: Oxford University Press, 1961). Among works critiquing this tradition of uncritically championing modernization, note most recently Hemant Shah, *The Production of Modernization: Daniel Lerner, Mass Media, and the Passing of Traditional Society* (Philadelphia: Temple University Press, 2011).
28. Notably with Sibel Bozdoğan, and Reşat Kasaba, eds., *Rethinking Modernity and National Identity in Turkey* (Seattle: University of Washington Press, 1997).
29. Such as Sibel Bozdoğan, *Modernism and Nation Building: Turkish Architectural Culture in the Early Republic* (Seattle: University of Washington Press, 2001).
30. A notable exception to this characterization was a study of anti-malaria campaigns amid nation-building; İlhan Tekeli, and Selim İlkin, "Türkiye'de Sıtma Mücadelesinin Tarihi," in Gül E. Kundakçı, ed., *70. Yılında Ulusal ve Uluslararası Boyutlarıyla Atatürk'ün Büyük Nutuk'u ve Dönemi* (Ankara: ODTÜ Basım İşliği, 1999), 209-255. Many accounts of Ottoman decline and of development challenges faced by the republic mention technological deficits; none have yet engaged with these issues from a critical STS perspective – despite a robust tradition of studies on the histories of medicine and science in Turkey. Among recent STS-informed studies on Turkey, note: Yakup Bektaş, "The Sultan's Messenger: Cultural Constructions of Ottoman Telegraphy, 1847-1880," *Technology and Culture* 41 (2000): 669-696; Noyan Dinçkal, "Reluctant Modernization: The Cultural Dynamics of Water Supply in Istanbul, 1885-1950," *Technology and Culture* 49 (2008): 675-700; and, Burçe Çelik, *Technology and National Identity in Turkey: Mobile Communications and the Evolution of a Post-Ottoman Nation* (London: I.B. Tauris, 2011). This observation should be qualified by adding that, despite a relative lack of studies to employ critical theory, STS approaches, or related lines of inquiry on the Turkish example, many solid medical histories exist, though written largely in Turkish (e.g., articles in Turkey's leading journal of the history of medicine and health, *Yeni Tıp Tarihi Araştırmaları*). Of particular note, as it covers topics dealt with in this study (and is published both in Turkish and in an English translation), is Yıldırım, *A History of Healthcare in Istanbul*.
31. Throughout the nineteenth century there were conflicts with foreign powers and national secessionists within the empire's territories in Albania, Bosnia, Bulgaria, Crete, Crimea, Greece, Montenegro, Romania, Rumelia, Serbia, and elsewhere. Particular conflicts included the Crimean War (1853-1856), the Russo-Turkish War of 1877-1878, the Italo-Turkish War of

- 1911-1912, the two Balkan Wars of 1912 and 1913, World War I (1914-1918), and the Turkish War of Independence (1919-1923), which culminated with the 1922 abolishment of the sultanate and the 1923 declaration of the republic. A number of rebellions by Kurds, Alevis, and others against the republic continued, however, up to the late 1930s.
32. As Porter wrote, "War is often good for medicine. It gives the medical profession ample opportunities to develop its skills and hone its practices. It can also create a postwar mood eager to beat swords into scalpels." He also observed, however, conflicts and the threats of them could produce anxieties over the health of a nation's population, fears that provided momentum to eugenics (Porter, *The Greatest Benefit to Mankind*, 639 and 652). Addressing medical innovations (e.g., quinine for malaria) amid the racial politics of geopolitical conquest, and noting a scholarly "disregard" for the place of science and technology in such histories, is Daniel R. Headrick, *The Tools of Empire: Technology and European Imperialism in the Nineteenth Century* (Oxford: Oxford University Press, 1981).
 33. Conclusive figures for Ottoman casualties during World War I (both of combatants and civilians) are not available. Estimates range as high as 34% of all Ottoman combatants mobilized and up to 25% of the empire's entire population—which include Armenian, Assyrian, and Greek deaths during this period, as well; figures that are approximate, at best, and commonly contested to this day. Providing insights on the bleak circumstances of Turkish prisoners of war is Yücel Yanıkdağ, *Healing the Nation: Prisoners of War, Medicine and Nationalism in Turkey, 1914-1939* (Edinburgh: Edinburgh University Press, 2013).
 34. Most notable in the post-conflict period was the 1923 population exchange between Greece and Turkey.
 35. As established generally for Europe, note Maria-Sophia Quine, *Population Politics in Twentieth Century Europe: Fascist Dictatorships and Liberal Democracies* (London: Routledge, 1996); and (specifically for Italy) Carl D. Ipsen, *Dictating Demography: The Problem of Population in Fascist Italy* (Cambridge: Cambridge University Press, 1996). Similarly, on American pronatalist and eugenics-based reactions to such demographic anxieties in Europe, note Laura L. Lovett, *Conceiving the Future: Pronatalism, Reproduction, and the Family in the United States, 1890-1938* (Chapel Hill: University of North Carolina Press, 2007).
 36. For various perspectives on pronatalism in the late empire and republic, see Gülhan Balsoy, *The Politics of Reproduction in Ottoman Society, 1838-1900* (London: Routledge, 2013); Selçuk Dursun, "Procreation, Family and 'Progress': Administrative and Economic Aspects of Ottoman Population Policies in the 19th Century," *The History of the Family* 16 (2011): 160-171; Ruth A. Miller, "Rights, Reproduction, Sexuality, and Citizenship in the Ottoman Empire and Turkey," *Signs* 40 (2014), 347-373; and Yaşar Semiz, "1923-1950 Döneminde Türkiye'de Nüfusu Arttırma Gayretleri ve Mecburi Evlendirme Kanunu (Bekârlık Vergisi)," *Türkiyat Araştırmaları Dergisi* 27 (2010): 423-469.
 37. On notions (and limits) of eugenics in Turkey's sanitary movement, see Ayça Alemdaroğlu, "Politics of the Body and Eugenic Discourse in Early Republican Turkey," *Body and Society* 11 (2005): 61-76; Sanem Güvenç Salgırlı, "Eugenics for the Doctors: Medicine and Social Control in 1930s Turkey," *Journal of the History of Medicine and Allied Sciences* 66 (2011): 281-312; and Nermin Ersoy, Yüksel Güngör, and Aslihan Akpınar, "International Sanitary Conferences from the Ottoman Perspective (1851-1938)," *Hygiea Internationalis* 10 (2011): 53-79. Rendering broader insight on global diffusions of sanitation as one of many Western scientific notions "proving" racial disparities and superiority, see Michael Adas, *Machines as the Measure of Men: Science, Technology, and Ideologies of Western Dominance* (Ithaca: Cornell University Press, 1989).

38. A Foucauldian geopolitics of population-governance-economics in the Turkish context is sketched in Evered and Evered, "Governing Population, Public Health, and Malaria in the Early Turkish Republic."
39. In addition to previously cited sources on malaria and syphilis in the early republic, on tuberculosis see Fatma Tütüncü, "The National Pedagogy of the Early Republican Era in Turkey" (Middle East Technical University, PhD thesis, 2007). Given the time period (i.e., shortly after the 1918 Spanish flu pandemic), influenza is conspicuously absent from almost all of the early 1920s public health policies and literature of the nascent republic that have been researched thus far.
40. Concerns over reproductive health and infant mortality continued to expand, to the extent that the 1930s saw institutions for children's protection established as well. Kathryn Libal, "The Children's Protection Society: Nationalizing Child Welfare in Early Republican Turkey," *New Perspectives on Turkey* 23 (2000): 53-78.
41. Covering contemporary debates over alcohol consumption and prohibition, note Emine Ö. Evered and Kyle T. Evered, "A Geopolitics of Drinking: Debating the Place of Alcohol in Early Republican Turkey," *Political Geography* 50 (2016): 48-60; and Emine Ö. Evered and Kyle T. Evered, "From *Raki* to *Ayran*: Regulating the Place and Practice of Drinking in Turkey," *Space and Polity* 20 (2016): 39-58. On the perils of high heels, with mention of the atlas analyzed in this article, see Mahmut Tokaç and İbrahim Topçu, "Cumhuriyetin İlk Yıllarına Ait Bir Halk Sağlığı Sorunu: 'Yüksek Ökçeler,'" *Lokman Hekim Journal* 1 (2011): 28-32.
42. According to archival records, between 1923 and 1948 the ministry published and disseminated 200,000 copies of *Sihhiye Mecmuası* (later *Sağlık Dergisi*), and roughly 150,000 copies of translated medical texts were printed and distributed. See BCA 490-01-1211-22-1-38; and Meliha Özpekcan, "Büyük Millet Meclisi Tutanaklarına Göre Türkiye Cumhuriyeti'nde Sağlık Politikası (1923-1933), II. Bölüm," *Yeni Tıp Tarihi Araştırmaları* 8 (2002): 163-274. Both sources cited previously in Evered and Evered, "State, Peasant, Mosquito."
43. This last survey was the only one published in modern Turkish (as opposed to Ottoman Turkish, printed in an Arabic-based script). On the significance of these surveys regarding syphilis and associations with prostitution, see Kyle T. Evered and Emine Ö. Evered, "Syphilis and Prostitution in the Socio-Medical Geographies of Turkey's Early Republican Provinces," *Health and Place* 18 (2012), 528-535. As demonstrated through this work and a subsequent study (Emine Ö. Evered and Kyle T. Evered, "'Protecting the National Body': Regulating the Practice and the Place of Prostitution in Early Republican Turkey," *Gender, Place and Culture* 20 [2013]: 839-857), these surveys provide insight into the rationale behind many public health schemes, including the regulation of prostitution—which endures in Turkey to the present day.
44. Addressing this sort of scientific/modern versus traditional/primitive divide on a global scale for the late colonial and early nation-state eras is Adas, *Machines as the Measure of Men*.
45. Quoting İsmet İnönü Paşa's opening remarks at the republic's first medical conference hosted in Ankara in 1925 and his plea for physicians to go among the people to alleviate suffering and teach them about health is Evered and Evered, "State, Peasant, Mosquito," 317. On this role envisioned for the nation's doctors by state leaders into the 1930s, see Sanem Güvenç Salgırlı, "The Image of the Self-Sacrificing Doctor: Medicine, Taxes and Unemployment in 1930s Turkey," *Social History of Medicine* 28 (2015): 351-368.
46. The "politics of public health" and a "politics of prevention" in European—and hence many global—efforts are outlined in Baldwin, *Contagion and the State in Europe, 1830-1930*, 10-15 and 524-563.

47. On mapping such risk as a matter of both preventive medicine and epidemiology, see Evered and Evered, "Governing Population, Public Health, and Malaria in the Early Turkish Republic." On the challenges of malaria and agriculture, see Kyle T. Evered and Emine Ö. Evered, "A Conquest of Rice: Agricultural Expansion, Impoverishment, and Malaria in Turkey," *Historia Agraria* 68 (2016): 103-136.
48. Covering the empire's brief experience with medical museums, Nuran Yıldırım provides an invaluable survey of Ottoman antecedents to the republic's atlas (*A History of Healthcare in Istanbul*, 39-40). For the republic's own account in the decade following the empire-to-republic transition, note T.C. Sıhhat ve İçtimaî Muavenet Vekâleti, *Sıhhiye Mecmuası Fevkalâde Nüshası: Vekâletin 10 Yıllık Mesaisi* (Istanbul: Hilâl Matbaası, 1933).
49. Returning to Istanbul with twenty-five "panels," Hamdi had eighteen adapted as oil or watercolor images for display. Reproduced in Yıldırım, *A History of Healthcare in Istanbul*, one of these images, titled "Dipsomania" (i.e., alcoholism), would later feature in the atlas in the form of what is most likely a reproduction in oils; this second image is included in Evered and Evered, "A Geopolitics of Drinking," 55.
50. This directive derived purportedly from grand vizier and acting minister of health Mehmet Talât Paşa, one of the three Committee of Union and Progress (or CUP) leaders of the late empire associated largely with the Armenian deportations and genocide (Yıldırım, *A History of Healthcare in Istanbul*).
51. T.C. Sıhhat ve İçtimaî Muavenet Vekâleti, *Sıhhiye Mecmuası Fevkalâde Nüshası*, 111.
52. Such as one fire that occurred in 1931, as noted in Evered and Evered, "State, Peasant, Mosquito," 315; the fire is detailed as being particularly destructive in T.C. Sıhhat ve İçtimaî Muavenet Vekâleti, *Sıhhiye Mecmuası Fevkalâde Nüshası*, 111.
53. Yıldırım and fellow historian of medicine Ayten Altıntaş later researched this institution and oversaw restoration of some of the original paintings featured in the museum (Yıldırım, *A History of Healthcare in Istanbul*, 40).
54. By 1930, there was some reciprocity in Turkey's relations with German museums, as the republic contributed materials to hygiene exhibits in Dresden (T.C. Sıhhat ve İçtimaî Muavenet Vekâleti, *Sıhhiye Mecmuası Fevkalâde Nüshası*, 111).
55. As reflected in archival sources, such as BCA 490-01-1211-22-1-38, pp. 25 and 31; cited previously in Evered and Evered, "State, Peasant, Mosquito," 315.
56. With malaria eradication campaigns, the state even persuaded imams to incorporate public health lessons in their sermons (Mehmet Temel, *Atatürk Döneminde Bulaşıcı ve Salgın Hastalıklarla Mücadele* [Istanbul: Nehir Yayınları, 2008], 74-75; cited previously in Evered and Evered, "State, Peasant, Mosquito," 315).
57. As with a 1926 loan of materials to the museum in Ankara (T.C. Sıhhat ve İçtimaî Muavenet Vekâleti, *Sıhhiye Mecmuası Fevkalâde Nüshası*, 111).
58. As noted for Eastern Europe and Russia in Evered and Evered, "State, Peasant, Mosquito," 315.
59. This figure was noted in Özpekcan, "Büyük Millet Meclisi Tutanaklarına Göre Türkiye Cumhuriyeti'nde Sağlık Politikası (1923-1933), II. Bölüm," 241; cited previously in Evered and Evered, "State, Peasant, Mosquito," 315. The number of 1,000 printed copies appeared also in T.C. Sıhhat ve İçtimaî Muavenet Vekâleti, *Sıhhiye Mecmuası Fevkalâde Nüshası*, 111-112.
60. T.C. Sıhhiye ve Muavenet-i İçtimaîye Vekâleti, *Sıhî Müze Atlası* (no publisher or publisher location provided, 1926), n.p.; cited previously (with an abbreviated quote) in Evered and Evered, "State, Peasant, Mosquito." The copy examined for this study is the one maintained

- by the TBMM (*Türkiye Büyük Millet Meclisi Kütüphanesi*, or Library of the Grand National Assembly of Turkey) in Ankara.
61. Geopolitical dimensions of “public health spaces” are not at all uncommon, even below the global scale. As noted by Alison Bashford, “(a)ll these spaces—the therapeutic, carceral, preventive, racial and eugenic geographies—produced identities of inclusion and exclusion, of belonging and citizenship, and of alien-ness” (*Imperial Hygiene*, 1); they did so from the scale of the global down to that of the individual citizen—and even microbe.
 62. Recall, for example, Bashford, *Imperial Hygiene*.
 63. Roy Porter, *Blood and Guts: A Short History of Medicine* (New York: W.W. Norton, 2004), 158.
 64. As outlined for “high-modernist” states’ initiatives to instruct their populations (Scott, *Seeing Like a State*, 219).
 65. As engaged with throughout Evered and Evered, “State, Peasant, Mosquito.”
 66. T.C. Sıhhiye ve Muavenet-i İçtimaîye Vekaleti, *Sıhî Müze Atlası*, 42-46.
 67. T.C. Sıhhiye ve Muavenet-i İçtimaîye Vekaleti, *Sıhî Müze Atlası*, 42.
 68. On the state’s disdain for traditional curatives and associated beliefs, see Evered and Evered, “State, Peasant, Mosquito,” and on officials’ views on Anatolia’s traditional healers, see Evered and Evered, “Governing Population, Public Health, and Malaria in the Early Turkish Republic.”
 69. As detailed in Porter, *Blood and Guts*, 62-67.
 70. Note the remarks by Asif İbrahim Bey, among others, at Turkey’s first ever medical conference, which was devoted to malaria, in Evered and Evered, “State, Peasant, Mosquito,” 318.
 71. This frightening of villagers in order to compel them both to avoid regions designated as malarial and to adopt other preventive and therapeutic measures is confronted in Evered and Evered, “State, Peasant, Mosquito,” 319-322.
 72. T.C. Sıhhiye ve Muavenet-i İçtimaîye Vekaleti, *Sıhî Müze Atlası*, 56-57.
 73. T.C. Sıhhiye ve Muavenet-i İçtimaîye Vekaleti, *Sıhî Müze Atlası*, 56.
 74. T.C. Sıhhiye ve Muavenet-i İçtimaîye Vekaleti, *Sıhî Müze Atlası*, 65; also note discussion of this section of the atlas in Tokaç and Topçu, “Cumhuriyetin İlk Yıllarına Ait Bir Halk Sağlığı Sorunu.”
 75. T.C. Sıhhiye ve Muavenet-i İçtimaîye Vekaleti, *Sıhî Müze Atlası*, 67.
 76. T.C. Sıhhiye ve Muavenet-i İçtimaîye Vekaleti, *Sıhî Müze Atlası*, 68.
 77. Though both men and women were depicted routinely as citizens with individual responsibilities, men were portrayed commonly as having the added burden—as head of household—to safeguard the family and home from external threats to health and safety.
 78. T.C. Sıhhiye ve Muavenet-i İçtimaîye Vekaleti, *Sıhî Müze Atlası*, 25-26.
 79. T.C. Sıhhiye ve Muavenet-i İçtimaîye Vekaleti, *Sıhî Müze Atlası*, 27.
 80. Elucidating melodramatic narratives as frames in medicine and bioethics is Susan M. Reverby, “Ethical Failures and History Lessons: The U.S. Public Health Service Research Studies in Tuskegee and Guatemala,” *Public Health Reviews* 34 (2011): 1-18.
 81. For example, though his text covers different types of exhibits of political import, with chapters devoted to air and space, botanical, environmental, natural history, scientific, and other types of museums, Luke’s vital study omits those focused on medical science or disease; Timothy W. Luke, *Museum Politics: Power Plays at the Exhibition* (Minneapolis: University of Minnesota Press, 2002). Indeed, most museums and institutions devoted to histories of medical science, public health, and disease (e.g., the Wellcome Library in London) figure more commonly as sites of research rather than as subjects of research.

82. Though it serves as a site of research, art, and education, for example, many Americans view the Mütter Museum of Philadelphia as an entertaining assemblage of morbid curiosities. This view, cultivated in no small part by the museum itself, contributed significantly to both increase attendance and educate a far wider demographic.
83. Recalling Anderson, *Imagined Communities*, 163-185.
84. The central thesis of Anderson's *Imagined Communities* is that the achievement of "print capitalism," (typically understood as literacy and the dissemination of written media to the masses, was what enabled an "imagining" of nationhood among often far-flung and disparate communities.
85. As with "logo-maps" in the minds of citizens (Anderson, *Imagined Communities*, 122); on the related concept of "geo-bodies" of nations, also note Thongchai Winichakul, *Siam Mapped: A History of the Geo-Body of a Nation* (Honolulu: University of Hawaii Press, 1994).