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Ottomanist Infrastructures: A Path to Colonialist Resource Extraction or Imperial State Building and Territorial Integrity?

Orhan Hayal [1]

[1] Independent Researcher, Istanbul, Türkiye

Abstract

The paper examines the interaction between the Ottoman imperial center and periphery during late Ottoman modernization with a focus on infrastructure and public works. It questions the idea that modernization has been exclusively driven by Western-influenced elites and criticizes the tendency to overly reify the state. In particular, the paper takes a critical stance against recent debates that align the Sublime Porte's will to improve the peripheral populations, which were categorized as uncivilized and impoverished, with Western-style colonialism. Ottoman infrastructures were power technologies related not just to resource extraction but also to imperial state-building that evolved in tandem with local actors, demands, power dynamics, traditions, urban landscapes, and rural environments. The paper draws upon recent provincial, infrastructural, and environmental studies within Ottoman historiography and also looks into newspapers, professional journals, parliamentary minutes, and foreign consular reports to gauge public sentiment on infrastructure and public works. The study defines a biopolitical and governmental rationality intended for improving agriculture, commerce, and the general well-being of imperial subjects in Foucauldian terms, suggesting that local actors may have occasionally embraced, adjusted, or challenged this rationale. Lastly, it argues that unequal infrastructural development or neglect among Empire's populations cannot be interpreted as evidence of colonial rule, which separates the colonizer and the colonized through the categories of civilized and uncivilized.

Keywords Colonialism · Ottoman Orientalism · Imperial center · Frontier provinces · Infrastructure · Mesopotamia

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Corresponding author: Orhan Hayal orhanhyl@gmail.com

Ottomanist Infrastructures: A Path to Colonialist Resource Extraction or Imperial State Building and Territorial Integrity?

The Ottoman Empire's vast and challenging geography with its high mountain ranges, deep valleys, and barren deserts posed significant obstacles to efficient travel and communication. These natural barriers acted as dividing lines between the fertile inland regions and coastal gateways, impeding the transportation of goods and people. Due to the lack of extensive railway networks and well-constructed roads and engineering structures for wheeled horse-drawn carriages and wagons, transportation relied heavily on pack animals such as camels, mules, donkeys, and oxen carts, which incurred high costs and made long-distance travel cumbersome. The introduction of steam power had the potential to transform rivers into viable transportation routes to the interior, but it would require extensive and costly engineering efforts including dredging riverbeds, excavating islets and meanders, regulating flow, and preventing silt accumulation. These rivers also flowed in vain, the potential for irrigation and transit having remained unused. Furthermore, periodic floods wreaked havoc on settlements and cultivated areas. The vast marshlands were breeding grounds for diseases and posed a persistent danger to public health and well-being. The forests remained wild and untapped. Underdeveloped transportation and hydraulic infrastructures constrained the cultivation of fertile soil and the exploitation of its vast resources, leading to sparse settlements and low population density. Ultimately, these challenges limited economic development and prosperity, with the state failing to generate sufficient revenues from its population and nature.

Ottoman-Turkish modernization was an early instance of how modern infrastructures could have been deployed to pave the way for civilization and progress in a non-Western environment. It was the contentious history of an emergent state striving to improve the well-being of its populace and expand its power across different socio-natural settings. The Ottoman Empire became a player in inter-imperial confrontations, the scientifically informed international society, and expanding techno-political networks. The imperial realm was physically engineered and outfitted with infrastructural technologies and expertise. Railways, well-paved carriage roads, and telegraph lines crisscrossed the rural landscape. The coasts were equipped with ports, lighthouses, coal depots, and quarantine posts. Rivers and lakes were improved for navigation. Swamps were drained and reclaimed for cultivation. Irrigation canals also converted arid regions into productive agricultural basins. A recent surge has occurred in scholarly attention examining the complex interaction of modernization, state formation, and nation-building through the lens of a broader political-ecological geography and has led to studies in the fields of infrastructure and environmental history. Scholars have gone further in understanding how the Ottoman state's emergent infrastructural power had manifested in the natural landscape and engaged in interventionist practices, moving beyond classic notions of state-society relations. On one hand, these scholars depicted an emergent state aimed at improving living conditions, cultivation, resource extraction, and fiscal revenues, as well as increased visibility in the daily lives of local communities and the natural landscape, while on the other hand depicting the role of bureaucrats, experts, foreigners, local actors, newspapers, and the wider public (Adak, 2022; Akpınar, 2021; Gratien, 2022; Ozkan, 2014; Petriat, 2014).

The evolution of the imperial infrastructure and public works was driven by an urge for equilibrium among the European colonial interests, the growing demands of emergent urban and rural notables to participate in public policymaking, the state's efforts toward political integration and fiscal consolidation, and the Sublime Porte's will to improve the well-being of the population and land. This evolution did not simply mean the Western economic and political influence over the Empire or its integration into world capitalism. Nor was it the imposition of the central authority onto the periphery under the guise of Ottoman colonialism. To describe imperial state-building as colonialism would be a mistake, even though the civilizing discourse and governmental technologies deployed by high-ranking officials in the peripheries could have had similarities to Western colonial administration. The paper focuses on infrastructural development to show how Ottoman technocrats envisioned the empire as a united entity despite its many facets. This means the vision of a unified empire was not limited to officials but was occasionally embraced by local actors, underscoring the difference between Ottoman improvement policy and Western-style colonialism. The paper draws on a variety of materials to support its argument, including parliamentary minutes, foreign consular reports, newspapers, and engineering journals.

From Dissolution to Consolidation: Considering the Decline Paradigm and Elite-Driven Modernization

Ottoman modernization is perceived to have originally commenced with Selim III's Nizam-ı Cedid reforms at the turn of the century and to have become more radicalized under Mahmud II's reign, as evidenced by the abolition of the Janissary corps. It culminated in the Gülhane Edict, which acted as a manifesto, and had broad consequences for imperial governance, economy, social structures, and daily life in the subsequent decades. Ottoman modernization was widely recognized as a set of policies crafted by elites, influenced by the West, and disseminated from the imperial center to provincial peripheries. Modernization theorists argued that reforms resulted from a concerted effort to consolidate power in reaction to military defeats, territory losses, separatist revolts, declining central authority, and the rise of local notables in the 17th and 18th centuries. Ottoman modernization followed a historical order of legislative and administrative progress whose dosage and intensity gradually increased. Türkiye had just one path forward: Modernization and Westernization. Despite interruptions and challenges, the fundamental course remained constant, and there was no going back (Lewis, 1993, p. 127). Its success was dependent on the elites' enlightened ambition and determination in the face of regressive resistance. Given that Türkiye was a non-Western Eastern society, modernization had to have been revolutionary. It was considered unachievable unless culturally alienated elites acted authoritatively. The adoption of scientific and technological advancements was insufficient. Türkiye had to embrace the West as a whole (Berkes, 2012, pp. 524, 526). After 1980, growing interest in democracy and civil society led to condemnation of the authoritarian characteristics of modernization. Accordingly, it was "a patriarchal and anti-democratic imposition from above that has negated the historical and cultural experience of the people" (Bozdogan & Kasaba, 1997, p. 4). Post-Kemalist scholars considered modernization as social engineering, militarist modernization, a civilization project, and the will to civilize, as well as being for the people despite the people (Belge, 2012; Göle, 2011, p. 14; Kadıoğlu, 1996; Keyman, 1995; Köker, 2007, p. 175). Paradoxically, these scholars confirmed modernization theorists' basic assumptions of

a strong state, the supremacy of the imperial center, and enlightened elites in power. As a result, the image of a powerful and paternalistic state, which the Republic was assumed to have inherited from the Ottoman Empire, has remained popular in the modernization literature. For scholars, the state was a categorical imperative, a universal and a priori form that was above and beyond society. It was consistent and integrated, as well as rational and authoritative. The classical Ottoman state was fixed in terms of criteria such as merit, public service, equity, and the rationality of a modern nation-state (Abou-El-Haj, 2000, pp. 30, 34; Piterberg, 2017, p. 172). Decentralization was equated with disintegration, while modernization was associated with centralization and the consolidation of the state. Recent studies on provinces and local actors call into question the idea that decentralization inevitably leads to dissolution (Faroqhi, 2006, p. 11). Barkey (2011) offered one of the best-known explanations. In the 18th century when the central authority over the periphery was considered to be eroded, the Ottoman Empire attempted a type of centralization different from the Western model. Bandits, not peasant or aristocratic revolts, challenged the order. These events were mainly triggered by recruitment and the demobilization cycle. The state settled the issue through negotiation while simultaneously exploiting it to justify further centralized measures. Although Barkey contended the Ottomans as having pursued a different route to centralization, she shared the concerns of state-centered ideas in state theory. The state was reified as a rational agent. Furthermore, she offered a structural explanation for center-periphery relations. Intermediary bodies, networks, and elites mediated state-society relations rather than direct exchanges with individual subjects. Authority flowed from the central state to local elites and ultimately to the local populace. Imperial power relations formed as a "hub-and-spoke network," with each spoke tied to the center but having less direct connection with others, letting central control expand over peripheral entities through vertical integration and limited communication among peripherals (Barkey, 2008, p. 10). A more argumentative analysis focuses on the 18th century and the tax farming system, which is regarded as one of the most common examples of the fall of imperial authority and the emergence of centrifugal regional actors. As outlined by Salzman (1993, p. 406), with the collapse of the *timar* system(fief, land grants)[1], the granting of the tax revenues of a specific region with a contract of advance payment to meet increasing cash needs led to the expansion of the monetary economy throughout the Empire, and the process regarded as decentralization actually resulted in a much closer relationship between the center and the periphery. Contract-based financial networks and monetization facilitated a bottom-up reorganization of the imperial authority. In a more recent study of a successful application of environmental history to the Ottoman Egypt during a period when the Sultan's rule was supposed to be just nominal, Mikhail (2011) posed a significant challenge to the center-periphery model, which claims the center as having had little interest in forming an imperial identity or establishing permanent relations and institutions other than extracting resources from peripheral provinces. The model oversimplified "the complex and mutually determinative relationships between component parts" (pp. 25-26) of the Ottoman Empire. The empire was not organized with various peripheries around a single center. Rather, it was an assemblage of multiple centers and multiple peripheries that interacted with one another through ecological processes, roads, ships, irrigation works, food chains, energy flows in the form of calories, timber, and other strategic items.

[1] It was an Islamic taxation and land tenure system that benefited timaroit, or high-ranking provincial officials.

From Imperial Core to Frontiers: Governed in Difference - Colonialist or Not?

The center-periphery model made similar assumptions to the modernization school and the post-Kemalist literature described previously. It reified the state as the driving force of modernization while emphasizing the role of elites. Expanding on this model, some scholars have asserted such concepts as Ottoman Orientalism or borrowed colonialism, arguing the elites who controlled the Turkish core of the empire to have embraced both the European civilizing rhetoric as well as the use of colonial tactics to govern territories perceived as backward, notably the Arab provinces. In this view, the Tanzimat was a centrally planned project imposed on the periphery using a top-down approach. Ottoman citizenship was just an empty vessel designed by the central authority and reshaped by the state's modernizing might. Makdisi (2002, p. 770) claimed that, during an era dominated by Western modernity, each nation created its own Orient, and the Ottoman modernization was no exception. It prioritized the imperial Turkish core, which was entrusted with proving equivalency with Europe in terms of political structure, military might, technological advancement, and civic conduct, all while retaining its sovereignty and cultural distinctiveness as a Muslim empire. This demanded a restructuring of the relationship between the Turkish core and its subject peoples, particularly the Arabs. Ottoman reformers regarded them not just as potential citizens but also as backward and not yet Ottoman, providing both impediments and objectives for imperial reform. As the state consolidated and homogenized its core territories, Arab provinces were increasingly envisioned as a quasi-colonial space characterized by "nomadism and savagery," and Ottoman authorities had a "civilizing motif" regarding their periphery as a colonial setting (Deringil, 2003, p. 318). The primary subject in both historians' arguments was the widespread use of derogatory language in official records when referring to the people living in these regions. It seemed to draw a gap between the so-called civilized Ottoman authorities and the uncivilized population (Minawi, 2015, p. 77).

Provincial studies have refined the notion of Ottoman colonialism as a rule of difference in which the imperial center adapted to varying local realities. Kuehn (2011, p. 135) referred to "colonial Ottomanism" as a hybrid form of provincial administration that acknowledged some colonial but ambiguous and contradictory aspects of late Ottoman rule in Yemen. It differed from European colonialism in that it didn't establish separate political structures or legal codes and avoided discourses of racial or sexual segregation, instead suggesting a "hierarchy of subjects" and designating Yemenis as "Ottomans of a lesser kind". Hanssen (2005, pp. 4-5) explored a comparable dynamic in Beirut, where conflicting European, Ottoman, and local "civilizing missions" influenced political domains including administration, infrastructure, urban planning, public health, education, public morals, media, and architecture. Beirut evolved into a product, object, and project of imperial and urban politics of difference, with discursive practices of social exclusion and inclusion molding urban space into a distinctively Ottoman form of Orientalism. Reforms in the Anatolian and Syrian provinces focused on integration, while the colonial language targeted nomadic populations in deserts and mountainous regions. Urban notables with economic, social, and cultural capital actively participated in the Ottoman state-building process through symbolic, ceremonial, and selectively participatory politics, seeking a political path to Istanbul that would affect financial capitalization at home.

The presence of tribal and autonomous power structures, foreign influences, and colonial threats, as well as local customs in distant provinces such as the Hijaz, Trablusgarb, Yemen, and parts of Iraq, rendered them

unsuitable for full incorporation into the imperial system envisioned by the Tanzimat's universalizing ideology. The lack of censuses, regular taxation procedures, cadastral surveys, land registration, conscription, and Western-style education and court systems suggested that the locals had remained beyond the scope of civilized Ottoman subjects. That kind of frontier governance separated Ottoman rulers from locals based on cultural rather than racial or ethnic characteristics. Unlike European colonialism, which established the gap between colonizers and colonized, it allowed for a an adjustable division over time and was not an intrinsic prerequisite of Ottoman imperial rule (Minawi, 2016, p. 15). Certainly, reformers often saw imperial people as objects rather than actors in the process of imperial change. On the other hand, a strict focus on the official state mission ignores how Ottoman subjects engaged, refined, and challenged the state's initiatives. They'd learned to "speak Tanzimat" by negotiating between official and subaltern perspectives on reform and state power (Petrov, 2004, p. 733).

The Empire was not a blank slate for the Sublime Porte. For example, the cadastral surveys and land registrations didn't introduce wholly new terms into local land use practices. Instead, the administration negotiated the terms of the code with the established conditions. Officials met with local actors on site to register their property rights in accordance with the legislation, modern registration techniques, tax calculation methods, and local social production relations, resulting in various outcomes across the empire (Mundy & Smith, 2007, pp. 4-7). Local conditions mandated that they be governed in distinctive ways. It was not a strict enforcement of centrally planned policies but rather a process in which old practices were entwined with new processes; the locals were effective in policy formation, and the Tanzimat state had an important capacity to learn from local reactions and re-adapt reforms (Köksal, 2002, p. 108).

Ottoman state-building resulted in the emergence of a new class of educated professionals and intellectuals, as well as a popular press and civil society. All of these were critical in determining and disseminating various ideas about the imperial collective in the context of broader social, economic, and cultural transformations (Campos, 2011, p. 65). For example, Ahmed, a Basra notable, spent most of his adulthood in exile in Istanbul. He rebuilt his personal ties and family interests in Basra by taking advantage of the concession investments and bank loans available in Istanbul. He signed a contract with the government for a concession to drain the marshes around Praviçte Lake in Salonica for agricultural and irrigation purposes. He saw the Basra people as possible investors in his concession project. This revealed his vision of the Ottoman Empire as a unified sphere in which mobile capital could circulate without going through Istanbul. While he identified as Ottoman, his decisions and affiliations differed from the typical "hub-and-spoke model" (Cole, 2020, pp. 34-35).

The Sublime Porte governed the complexities of its ethnically and religiously diverse frontiers while seeking to keep a delicate balance between integration and heterogeneity. Ottoman state-building and civilizing practices must be distinguished from European colonialism because they went beyond merely adopting Western norms and enforcing uniformity from the center. These practices were related to modern governmentality, bureaucratic efficiency, and territorial sovereignty and required a nuanced approach involving actors from various geographical and socioeconomic backgrounds. Ottoman officials were aware that autonomous frontiers could lead to disparities and instability, making consolidating state power and imperial sovereignty difficult. They undertook ambitious initiatives to engineer these frontiers, relying on

modern technology and public works to overcome biopolitical and juridical deficiencies. With a "technocratic gaze" (Low, 2020, p. 34), they governed both human populations and natural resources and gradually replaced autonomous political structures with a more centralized territorial authority.

Public Works: A Way of Improving *Mülk-ü Millet* (Empire and Nation)

The emergent Ottoman state aimed to transform nature into resources for profitable enterprises. It had rivers running in vain and fertile soil that had never been cultivated, as well as inanimate forests, wetlands, and lakes. One region had plenty while another had famine. Soil, crops, and animals had no economic worth. Tanzimat policies meant to improve and alter nature to establish a strong and prosperous state, population, and land by adopting classical economics. In 1845, the Sublime Porte launched a comprehensive initiative to investigate and address local agricultural, commercial, industrial, and infrastructural requirements. A commission was formed with representatives from each province for gathering insights on their respective provinces. Ten public improvement commissions were appointed, five in Rumelia and five in Anatolia. They were charged with conducting on-site surveys to collect an economic inventory of the provinces. More specifically, they were to gather data on a variety of topics, such as the types of crops farmers cultivated, the goods merchants traded, and the products tradesmen manufactured, as well as the condition of existing infrastructure such as ports, roads and bridges, and navigability of rivers (Seyitdanlıoğlu, 1992, pp. 328-329). Infrastructure and public works were intimately associated with a transition in political rationality during modernization. A novel form of governance emerged, finding its order not in any transcendental concept but in the regularities inherent in the collective existence of individuals, such as population-related phenomena (e.g., death, birth, famine, illness, wealth distribution). This paved way for a governmental interaction between the state and the populace. Individuals no longer appeared as merely legal subjects bound to the Sultan's or the state's sovereign order; instead, they were integral members of a general population category whose livelihoods, interactions, and living conditions were inherently dependent on the material environment in which they lived. This environment informed and organized the state's activities while also serving as a setting for intentional and ongoing biopolitical interventions (Foucault, 2000a, 2000b; 2013, pp. 93-94). The infrastructural form of state power was meant to govern people through the "administration of things," rather than exerting power through legislation and disciplinary measures on individuals (Foucault, 2007, p. 49; Lemke, 2021, pp. 85-89), and was dedicated to governing and conducting the circulation of vital substances. Having diverse forms, infrastructure was made up of materials and technologies that were meticulously planned, constructed, and monitored with knowledge, expertise, legal frameworks, budgets, and technical standards. It was a complex technical system that mechanized the movement of humans, animals, vehicles, goods, water, waste, energy, ideas, and information with minimum human involvement. Once mechanized, the infrastructure mediated state power. Modern urban infrastructure such as street lighting, well-maintained roads, piped water, sewers, and electric wires were regarded by Foucault-inspired scholars as the technologies of liberal rule in Victorian Britain and ensured that governmental bodies weren't engaged in everyday affairs directly. These were meant to facilitate the way individuals adopted specific habits without direct authoritative oversight, allowing for the cultivation of self-governing subjects (Joyce, 2003, p. 11; Osborne, 1996, pp. 114-115; Otter, 2002, p. 6) and echoing early notions in science and technology studies, which depicted infrastructures as technical systems and background processes that were mostly

invisible and only became conspicuous when they malfunction (Star & Ruhleder, 1996, p. 113). Could an identical connection have existed between infrastructure and politics while moving from the metropole to the colonial world? Colonizers didn't treat each colony the same way. Colonial infrastructures materialized a sharp division between colonizers and the colonized. While their construction aimed to streamline the extraction of resources from the colonies to the metropole, they also solidified a narrative of racialization and dehumanization toward the colonized population. The autonomy granted by mechanized infrastructures to urban subjects, including the working classes, was not intended for the colonized people. Colonizers aimed not to create a regulated, uninterrupted, and liberated circulation milieu akin to the metropole but rather a fragmented and restricted one. Natives were racialized as incapable of self-government, uncivilized, and polluted bodies (McFarlane, 2008, p. 418). Colonial infrastructures also developed a visible form of monumentalism, serving as perpetual reminders of the gap between colonizers and colonized. They physically enforced colonial rule by superimposing existing structures, transforming territories and their political, economic, and social ties. Furthermore, the promises of science, progress, and authority inherent in their technology symbolized the colonial sublime (Larkin, 2008, pp. 47, 61, 247).

Ottoman technocrats sought to engineer a networked empire that extended from Rumelia to Anatolia, including the Levant, Mesopotamia, the Hejaz, and Yemen, in contrast to the European-deployed infrastructures that fractured the colonial realm and populace. The goal was to reanimate these regions by focusing on agriculture, which was deemed essential to state revenue and population welfare amid the Empire's vast and challenging terrain. It aimed to cultivate previously untapped fertile lands, increase agricultural output, encourage cash crop cultivation, and facilitate commerce with urban and overseas markets. It entailed improving transportation, communication, and public works. Scholars generally understand the development of modern infrastructure in the empire by looking at the urban environment. They concentrate on major port cities with strong commercial ties to Europe, underlining the effect of Levantine inhabitants and non-Muslim bourgeoisie in specific districts. Istanbul, Izmir, Salonica, Trabzon, Samsun, and Beirut became hubs for railways, roads, advanced port facilities, postal services, and telegraph networks. Furthermore, these cities experienced improvements in urban amenities such as well-paved streets, a centralized water supply, extensive sewage networks, street lighting, tramways, electricity, and telephone lines, all made possible by modern municipal governance (Çelik, 1998; Dinçkal, 2008). Scholars who've adopted the world-system perspective to understand the physical, economic, social, and cultural transformation of Ottoman cities considered these developments as the outcome of being incorporated into the global capitalist economy. As the Empire became entangled with Europe as a source of cheap raw materials and agricultural goods (Keyder et al., 1993, p. 532), it experienced significant changes in production relations, land tenure, and political structure. Port cities represented a weakening of the state authority and a growing foreign influence (Kasaba et al., 1986, p. 123). While this perspective provides a relational framework by placing the Ottoman Empire within the historical context of global capitalism (İslamoğlu-İnan, 1987), it privileges the international system, foreign trade, and the intermediary merchant class, ignoring the strengthening connections between port cities and their rural hinterlands (Fuhrmann, 2020, pp. 13, 298). Urban modernity was not only motivated by foreign economic interests or the centralization ambitions. Numerous local actors were active, and a public opinion focused on urban concerns had formed. Newspapers played an important role in de-

veloping urban imagination by disseminating both the conflicting interests of locals and complaints from urban citizens (Hanssen, 2005, p. 53; Zandi-Sayek, 2012, p. 138). They did more than just capture events and words or relay information; they also had a constructive role in imbuing Ottoman-ness with meaning while shaping and communicating the public imperial self (Campos, 2011, p. 133). These concerns went beyond the urban centers. The provincial councils as extensions of the Tanzimat reforms in charge of conducting economic development and public works worked alongside local officials, merchants, and entrepreneurs to construct physical infrastructure such as railways, factories, warehouses, roads, bridges, and port facilities. They also played a role in creating banking, insurance, municipal, and other urban institutions, as well as increasing access to and control over natural resources in rural hinterlands (İnal, 2019, p. 2).

Mapping an Integrated Realm and Paving Infrastructures

Following the devastating territorial losses in the 1877–1878 Ottoman-Russian war, Hasan Fehmi Pasha, Minister of Public Works under Abdulhamid II, introduced the Empire's first comprehensive public works program. It featured the construction of roads, railways, ports, and quays throughout the Empire's Anatolian, Mesopotamian, and Syrian provinces, as well as irrigation, swamp drainage, land reclamation, and river regulation projects. Firstly, having a well-maintained transportation network of roads, railways, and ports was determined to be essential for the consolidation of state power; the encouragement of commercial, industrial, and agricultural development; and the prevention of famines that would occasionally strike particular regions and severely damage the populace. Secondly, land reclamation, swamp drainage, and flood control were deemed vital to agricultural production, public health, and the general well-being of the rural population. Marshy areas and periodic floods forced the abandonment of settlements and vast fertile lands, causing a decrease in population and the eventual ruination of towns and villages. Thirdly, the program involved harnessing rivers for both transportation and irrigation. Dredging riverbeds and managing flows would make rivers navigable, allowing for easier transit to inland regions. Furthermore, constructing an irrigation network through the canals would boost agricultural output and the cultivation of non-arable lands (Dinçer, 1968). In fact, the program represented a new political rationale in Foucauldian terms. Its goal was to boost commerce and agricultural output within the imperial realm while also improving living conditions and general well-being. It had a biopolitical and governmental approach. Individuals were no longer considered merely subjects but rather equivalent inhabitants of the population, dependent on the physical conditions of their surroundings. Given the Empire's lack of fiscal and technical capabilities to carry out such a large endeavor, the program relied on foreign capital and expertise and reflected the liberal mindset that prevailed at the time.

Figure 1

Map detailing the roads, railways, and ports to be built, as well as lands to be irrigated and marshes to be drained attached to the Public Works in Anatolia Program drafted by Hasan Fehmi Pasha[2].



Infrastructure for transportation, communication, urban amenities, and public works advanced rapidly in provinces such as Salonica in Rumelia; Aydın (Izmir) and Adana in Asia Minor; and Beirut, Damascus, and Jerusalem in the Levant. This improvement was made possible by foreign concessions, as well as by direct investments from both central and provincial authorities. Many modern infrastructures such as railways, well-paved roads for horse-drawn carriages, deepwater harbors, and advanced port facilities appropriate for steamers and overseas commerce were not first introduced in the imperial center of Istanbul. For example, the Izmir-Aydın and Izmir-Kasaba lines were the first railways in Anatolia and became fully operational in 1867. The British got a concession to extend Izmir's docks in 1867, but the French were the ones who finished construction and operated the port in 1875. Galata quays were inaugurated in 1896. This period also included the construction of ports in Beirut (1887–1892) and Salonica (1888–1902). Gas and lighting facilities were established in Izmir (1857–1876), Beirut (1885–1888), and finally Istanbul (1888–1892). Izmir and Salonica were the Ottoman Empire's first two cities to be equipped with electricity (Geyıkdağı, 2011). In 1836, the Chesney expedition surveyed the Euphrates River to facilitate steam navigation. In 1861, the Lynch Company was granted a concession to operate one boat, which was eventually raised to two in 1864 and three in 1907. A government-operated line was established in 1855, which was later reorganized and expanded in 1867 (Cole, 2016). Steam navigation considerably decreased the voyage time from Baghdad to Basra to 52–60 hours, as opposed to 5-8 days by sailing ship. Syria had one of the Empire's longest railway networks. Between 1889-1914, it underwent major railway expansion mostly financed with French capital, including the Jaffa-

[2] Note: COA, Y..EE..11-5; COA, HRT1603. The author has added red numbers to indicate: 1. Railways in operation 2. The planned major railway route from Izmit to Baghdad, with additional branches and secondary lines 3. Roads classified as first- and second-class 4. Major ports and sheltered ports 5. Lands to be irrigated 6. Marshes to be drained.

Jerusalem, Beirut-Damascus, Damascus-Muzayrib, Rayak-Aleppo, and Homs-Tripoli lines, which totaled 772 km in length and £5,600,000 in cost. By 1913, railways were playing a vital role in the region's internal transportation, possibly carrying up to half of Syria's trade. In addition, the Hijaz Railway, which served military and political goals, was constructed at a cost of over £4.5 million and had reached around 1,650 km in length by 1918 (Issawi, 1982, pp. 52-56).

The Hejaz Railway was one of the most significant public projects. Unlike previous railways, it was not built with foreign concessions but rather with donations from Muslims throughout the world and public funding. It had no clear economic goal; instead, it had been propagandized as a symbol of the Sultan's authority as caliph of all Muslims and his attempts to encourage pilgrimage to the holy land (US Department of Commerce and Labor Bureau of Manufactures, 1907, p. 10). The railway is generally regarded as a manifestation of Abdulhamid II's pan-Islamic policies. However, most pilgrimage voyages, notably those by steamer, originated in British-controlled India, implying that a railway project connecting the Red Sea port of Jeddah to Mecca could have been a more cost-effective option. Indian pilgrims voiced strong support for such a railway. It would have meant developing the overseas connections of the already autonomous Hijaz, which conflicted with the interests of the imperial capital and the rest of the Empire. The Hijaz and the Red Sea staged inter-imperial struggles. In particular, once Britain colonized India and occupied Egypt, the Suez Canal opened, steam navigation and overseas trade expanded, and pilgrimage traffic increased. It forced the Sublime Porte to take new measures to assert its previously nominal rule over the Hijaz (Low, 2020). During the cholera era, poor pilgrims traveling by steamer were major spreaders of the disease, leaving the Ottoman government in a precarious position in relation to Europeans. It internationalized the pilgrimage and provoked European involvement. Britain was also eager to monitor the conditions of its colonial people throughout the journey. The Sublime Porte considered each Indian pilgrim a symbol of Britain's expanding influence. The Muslim caliph couldn't possibly openly restrict their pilgrimages. The Sublime Porte did its best to control pilgrimage traffic and prevent British influence by adopting internationally recognized cholera prevention measures, such as mandatory inspections, quarantine stations, transit permits, and passports. It also expanded its power techno-politically through sanitation infrastructure and the Hejaz Railway, which would physically connect the region to the rest of the Empire.

The Constitutional Way of Infrastructural Development

The Young Turk Revolution restored the Constitution. Elections were held, Parliament was reopened, the press was liberated, and political parties and other organizations emerged. The constitutional regime allowed for unprecedented more open discussion with the public about the Empire's economic development and progress, as well as people's well-being and prosperity. It also faced challenges from the March 31 counter-revolutionary movement and the rebellions in isolated frontier provinces such as Albania, southeastern Anatolia, Mount Lebanon, and Yemen, proving centralized governance difficult. The army was mobilized to restore order. Following that, arguments in Parliament and among the public emerged regarding the roots of the rebellions and potential non-military solutions. One article (Ucciani, 1910) on recent Albanian unrest had focused on sociopolitical factors. Albania was traditionally characterized by a fragmented society separated along tribal lines, with authority distributed among local leaders. The decentralized system

offered the Albanian community living under Ottoman rule a sense of autonomy. However, the taxation, compulsory military service, and centralized authority the Young Turks introduced were encroaching on their traditional way of life. While the army served to restore order, a merely military reaction was insufficient for the underlying issues. Many Albanians lived in abject poverty, with limited access to education and economic opportunities. To prevent further unrest, the article advocated for infrastructural improvements, including roads, railways, and irrigation systems, that would boost economic development and improve living standards, as well as promote education and establish fair jurisdiction.

Gabriel Noradounghian Effendi, the constitutional regime's first Minister of Public Works, presented a comprehensive public works program to the Grand Vizier. The primary goal was to boost agriculture, which was considered vital to both state revenue and to the population's welfare. The planned infrastructure network comprised 30,000 km of roads and 7,900 km of railways, as well as upgrades to existing ports and the construction of new ones along the Empire's coasts. The program predicted hydraulic projects over 17,600,000 hectares. Priorities included swamp drainage, flood prevention, and irrigation in the Adana Plain; regulation of the Vardar River and the drying up Lake Yenice in Rumelia; utilizing the Menderes River for irrigation in Aydın; draining marshes in Iskenderun, Beirut, and Jerusalem; and irrigating the plains in Kilis, Antep, Hama, Homs, and Jaffa (Noradounghian, 1 Decembre 1908). The program was a comprehensive development plan that covered the whole Empire both in terms of content and geographical reach. The state noticed infrastructure as a common good and a public duty and showed a desire for national unification and the Empire's commitment to all of its territories at a time when the Parliament included representatives from all provinces (Tekeli & İlkin, 2004).

Parliament was an arena of intense debates regarding investments. MPs competed for funds and staff allocation for road, bridge, port, swamp, and irrigation projects. Written and oral parliamentary questions were a usual way for MPs to bring infrastructural inadequacies in their provinces to the Parliament's attention and inform their colleagues. Table 1 outlines several motions submitted by MPs from different provinces during the Ministry of Public Works' budget negotiation. These involve the requests for funding and technical staff to develop public works. MPs emphasized that investment in infrastructure and public works would stimulate economic development and promote the overall well-being of their provinces and the Empire. Even though many motions were rejected or deferred to the Ministry of Public Works committee, they served as a means of drawing attention to the deficiencies and needs of distant provinces or frontiers, of informing MPs from other provinces, and of elevating these issues to the wider public.

Table 1

Motions Submitted by MPs in Budget Negotiations for the Ministry of Public Works: 1910-1911

MPs	Province/Sanjak	Motion Details	Year
Şükrü Şevki Ali Cenani Fehmi Ziya	Maras Sivas Halep Maras Sivas	A request for allocating funds from the Public Works budget to complete the Sivas Road, which connects the Fourth and Fifth Armies and serves as a major commerce route between Anatolia and Syria.	1910 (1326)
Davut Arif	Musul Bitlis	A highlighting of the neglect of the key roads connecting Van to the Iranian border via Baskale, as well as routes	1910

MPs	Province/Sanjak	Motion Details	Year
Fevzi İlyas Sarmi Mehmet Emin Fazıl Papazyan Varteks Seyyit Taha Karakin Pastırmacıyan Mehmet Nuri Ibrahim	Diyarbekir Mus Genc Musul Van Erzurum Hakkari Erzurum Marmuretülaziz Ergani	from Diyarbekir, Erzurum, Genc, and Mus to Palu and Bitlis. Despite their military and political significance, they had remained overlooked, whether owing to the previous administration's failure to undertake studies or the public's unwillingness to express their concerns due to harsh conditions. The motion requests that these routes be included and prioritized in the Ministry's general road program.	
Salih Mehmet Ali	Kerkük	A request for the construction of bridges on the main road from Mosul to Kirkuk and Baghdad, as well as over rivers such the Great and Small Zab and the Tigris.	1910
Ömer Mansur	Bingazi	A request to construct a regular road connecting Merc Kazası to the Bingazi center and districts, given its strategic location and commercial importance.	1910
Hızır Lütfi	Zor	A motion requesting additional funding, either through Agricultural Bank loans or Ministry allocations, to complete a 5-year-old bridge-building project in Zor over the Euphrates River.	1910
Emin Aslan	Lazkiye	A request calling for the completion of road projects connecting Merkab, Hama, Lazkiye, and Halep.	1910
Ömer Mansur	Bingazi	A motion noting that a motion had been made for the Bingazi port last year, whose construction had begun but not been finished; the deputy minister stated that 50,000 liras were needed to complete the project. The motion requests that the port be completed through an open tender or directly by the state.	1910
Halit Berazi	Hama	A request for comprehensive hydraulic works along the Orontes River, including the construction of dams, levees, and irrigation canals to reduce floods, regulate water flow, and improve cultivation in the Hama province.	1911 (1327)
Abdülhamit Zehravi Halit Berazi	Hama	A motion emphasizing how the Orontes River, which originates on the slopes of Mount Lebanon and flows through the plains of Homs and Hama, offers little benefit to the region despite being one of the area's major rivers. If properly studied and regulated through modern engineering, great benefits might be realized for both the country's development and the Treasury. The motion proposes that the Ministry assign qualified engineers to the area and commence efforts to improve it.	1911
Sait El Hüseyni	Kudüs	A request for additional allocations to drain marshes for agriculture and public health.	1911
Fehmi Şükrü	Maraş	A motion demanding preliminary studies and projects for the rehabilitation of rivers and lakes that devastate farmlands and endanger public health.	1911

MPs	Province/Sanjak	Motion Details	Year
Yusuf Şetvan Ömer Mansur	Bingazi	A motion underlining the water scarcity in Bingazi's agricultural sector, as well as how the government could benefit millions of liras from agriculture, people could have higher living standards, and the region could contribute to the national economy with adequate irrigation. The motion proposes continuation of the works for drilling artesian wells drilling works that had been funded last year and had successful results, as well as for additional funds to be granted.	1911

Notes: MMZC, Devre 1, İçtima 2, Cilt 6, İnikad 113, 1 Haziran 1326. MMZC, Devre 1, İçtima 3, Cilt 6, İnikad 98, 2 Mayıs 1327. The table has been formed using the parliamentary minutes (Meclisi Mebusan Zabıt Ceridesi).

The government sought to advance agriculture by establishing modern schools and creating an agricultural bureaucracy. Additionally, model farms were established across the Empire to educate farmers on scientific farming practices and promote the utilization of modern agricultural equipment. The Agricultural Bank was reformed to provide farmers with affordable loans and increase access to imported agricultural machinery. Agricultural technocrats were also assigned to regions with varying climates and soils in the Empire (Williams, 2023). These efforts were accompanied through public works. Many engineers were charged with preliminary studies on the Empire's rivers, lakes, wetlands, and marshes, with funds set aside for a variety of hydraulic infrastructures[3]. Improving agricultural infrastructure was also essential for supporting the extensive railway construction, which was typically built under foreign concessions with kilometer guarantees and agricultural revenues along the projected lines. The irrigation project on the Konya Plain, which was crossed by the German-built Baghdad Railway, was deemed successful. After completion, agricultural output rose, which contributed to financing the railway (Godard, 1909; US Department of the Interior, 1909, pp. 114-115).

While the Mesopotamian irrigation project was a similar undertaking, it was considerably more ambitious and extensive in scale. The project was particularly high on the new regime's public works agenda, drawing attention from foreign powers, businesses, and engineering circles (T. de Leandre, 1911). Given the German-controlled Baghdad Railway project and British interests in the region, it became yet another hotspot in the inter-imperial struggle. The periodic floods of the Tigris and Euphrates rivers harmed agriculture and public health. Despite abundant water sources, these were unable to be used for irrigation.

Figure 2

Preliminary project for irrigating the southern part of Mesopotamia[4].

[3] In an article published in the journal Le Génie Civil, Louis Godard, Chief Engineer of the Bridges and Roads Directorate under the Ministry of Public Works, reviewed the pace of such projects under the new regime. Public works were carried out in various places, including the Meriç and Vardar deltas, the Adana and Menemen plains, the Menderes valley, and the Antakya and Iskenderun marshes (Godard, 1910). They were also regularly documented in periodicals, which were the publication organs of the engineering associations founded during the constitutional regime (Ed. Schneider, 1911; Engineer, 1911; Revue Technique d'Orient, 1911).



The government appointed William Willcocks, a British engineer with experience in Egypt and India. Wilcocks' project was part of the abovementioned public works program and consisted of 12 sub-projects categorized into three sections with the purpose of irrigating a total of 1,285,000 hectares of land at a cost of approximately 7,500,000 liras. The aim was to construct dams, levies, and canals to prevent floods and reclaim agricultural land. The most urgent of these was to replace the old Hindiyya Dam on the Euphrates River with a new dam located a few kilometers upstream, along with the associated canal project. It was projected to cost 600,000 liras and, once completed, would irrigate 500,000 hectares of the surrounding area of Ancient Babylon (Noradounghian, 1 Decembre 1908, pp. 147-168).

The British Lynch Company, which held a steam navigation concession on the Tigris and Euphrates, would suffer if flood protection measures and irrigation canals were to lower water levels in the rivers. In response to British pressure, the government renewed the concession, which granted the company a monopoly over navigation between Basra and Baghdad. This sparked widespread annoyance across Mesopotamia and the Empire (L'Asie Française, 1910a; L'Asie Française, 1910b). Locals were concerned that the concession extension would interrupt the irrigation project and further entrench British influence. According to a manifesto published in Egypt by the Committee for the Defense of Iraq's Interests (L'Asie Française, 1910c), the Baghdad people were unanimously opposed to the agreement, viewing it as politically and economically dangerous. They were motivated by strong Ottoman feelings and convinced that safeguarding the Sultan's interests would serve to promote the Prophet's honor. An additional complaint was leveled against Willcocks' management and his actions regarding the long-awaited irrigation project, as he appeared to prioritize British interests above local needs. His plans to move water away from cultivated fields and into deserts, as well as the destruction of the Hindiyya Dam to improve water pressure, intensified worries, as this would increase the amount of flooded land and harm local agriculture (L'Asie Française, 1910d). In a series of articles published in La Jeune Turquie, engineer Santo Sémo described the project as a political, economic, and engineering disaster akin to the French Panama Canal venture. Willcocks' one-and-a-half-year mission had

[4] Note: Section 1 between Musseib and Samawa had first priority, with the construction of a new dam on the Euphrates River and an associated diversion canal. COA, HRT1710.

cost the government £130,000. He'd left behind just a costly and incomplete repair of the Hindiyya Dam and the useless Hilleh branch dredging. Aside from this £50,000 expenditure, which had done more harm than good, Wilcocks also had spent £80,000 pounds on salaries and travel expenses (Santo Sémo, 1910). While Willcocks' grandiose plan remained on paper, the government decided to only contract the international engineering firm Sir J. Jackson, Ltd. of London to construct the new Hindiyya Dam on the Euphrates, which would be completed before the outbreak of World War I. Mesopotamia Irrigation Project suffered the same destiny as the Baghdad and Hejaz Railways. In the latter days of the Empire, the infrastructural will to bind imperial subjects into an unified body politic while also improving them with their surroundings as fellow citizens in that whole eventually failed.

Conclusion

This paper argues that Ottoman modernization and state formation cannot simply be seen as Western-style colonialism aimed at just resource extraction by leading into a physical and social space that has been fragmented into civilized and uncivilized, colonizer and colonized, or center and periphery. Infrastructures were an effective means of imagining the physical space of a unified Empire. This imagining was shared not only by the ruling elites but also by local actors who'd become more involved in collective decision-making and public life. The imperial center adopted the techno-political aspects of modern infrastructures to materialize its rule over the frontiers, which had hitherto been largely nominal, amidst escalating inter-imperial conflicts. The state had to solidify its presence in both urban and rural landscapes while also consolidating its infrastructural and logistical power. Material networks performed as a substrate for integrating tribes and frontiers, which the Sublime Porte struggled to formally confront and centralize militarily and administratively, into the rest of the empire. Concurrently, infrastructures and public works gained popularity as a public benefit and regular means of progress and general well-being among the emergent urban bourgeoisie, landowners, and, at the very least, the literate people. They became conduits for attachment to the state and a rising sense of citizenship, particularly once the constitutional regime was restored and Parliament emerged as the main forum for addressing concerns about how to develop every corner of the Empire. MPs lobbied the government for infrastructure projects in their respective provinces. They informed other provincial MPs and the wider public about the lack of infrastructure during parliamentary sessions and submitted how the construction of railways, roads, and hydraulic systems would strengthen the state and boost the Empire's general prosperity. At last, the regime's legitimacy had become dependent on satisfying infrastructural desires that would improve people's lives and cement their allegiance to the state as fellow citizens of the Empire, particularly in remote provinces. Given the geographical and social heterogeneity, the Sublime Porte was compelled to strategically adopt a policy of recognizing differences in how to govern the Empire. All the same, the notion of a unified Empire progressively merged with the emergent collective imperial self and became somewhat concrete with a consensus on the common good and the visible manifestation of the public programs and infrastructure designed to accomplish it.

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Author Details Orhan Hayal
[1] Independent Researcher, Istanbul, Türkiye
0000-0002-3542-0668 orhanhyl@gmail.com

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