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Research Article

Spatial Imaginations in Scientific Novels: Reading Ottoman Modernization in Fictional Spaces

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Abstract This study aims to reinterpret late Ottoman modernization through the fictional spaces and architectural imaginations constructed in the “scientific novels” (fenni roman). The research focuses on three works: Ahmet Midhat Efendi’s *A Scientific Novel, or The Doctors of America* (1888), Molla Davutzâde Mustafa Nazım Erzurumi’s *Seeing the Progress and Civilization of Islam in a Dream* (1913), and Osman Nuri Eralp’s *Are There Living Creatures on Other Worlds?* (1918). Using a mixed method, the study classifies the spatial indicators in these texts through the hierarchical scales of Universe-World-City-Building-Structure, and compares them across the novels. The findings show that space in these works does not remain a passive background; instead, it becomes an active, ideological element in which modernization ideals, political utopias, and technological imaginations take shape. In this sense, the study demonstrates how scientific novels transform space into a constructive subject that reflects the spatial dimensions of the Ottoman modernization experience.

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1. Introduction

Architecture is not a field isolated from other arts or areas of thought; rather, it is a multilayered mode of spatial production that is constantly shaped through its interaction with literature, cinema, and the visual arts. Space is not only a physical backdrop but a setting where social relations are formed, identities and ideological structures are represented. As Henri Lefebvre states, space is "one of the forms through which social relations exist" and is an inseparable part of both individual and collective experience (Lefebvre, 2014). In this sense, architecture is an interdisciplinary practice that not only constructs physical environments but also represents cultural and political meanings.

This representational dimension becomes particularly visible in literary texts. A novel is built around elements such as space, time, characters, and events, and within this structure space is more than a scene or décor. It shapes the flow of events, reflects the inner worlds of characters, and gives material form to social values. Within fictional narratives, the idea of utopia emerges as an expression of humanity's desire for the ideal. Throughout history, people have created imagined spaces as alternatives to existing social and physical realities, and these imaginaries eventually led to the formation of the utopian genre. Thus, utopia is not only a literary form but also a conceptual practice closely connected to architecture.

Although the term "utopia" comes from Thomas More's *Utopia* (1968), the search for an ideal society dates back to Plato. For this reason, utopia is not a genre limited to the West but a universal cultural need shaped by human hopes for justice and improvement (Dağ, 2017). While Ottoman literature does not have a longstanding utopian tradition, texts containing utopian elements began to appear in the second half of the nineteenth century as a result of intensified cultural interaction with the West. Initially functioning as "pre-utopias", these texts later developed into a more defined genre and came to be known as the "scientific novel" (fenni roman).

The scientific novel is a literary form shaped by late Ottoman intellectuals around ideas of science, technology, and progress. Andı (1993) describes this genre as narratives that include inventions and discoveries, contain technological imaginations about the future, and are influenced by Western scientific thought. Uyanık (2013) emphasizes that scientific novels emerged in response to political and economic crises in the Ottoman Empire and framed modernization debates within a literary context. Varol (2023) argues that the future visions in these works stem from dissatisfaction with the existing social order and from desires for change, yet always remain intertwined with contemporary discussions of modernity.

At this point, the gap in the literature is clear: Scientific novels have rarely been studied through the lens of space. Existing research mostly focuses on the genre's literary features or its modernization discourse, while the role of space in representing modernization ideals has received limited attention. This study aims to fill this gap. Its central question is whether space in scientific novels functions merely as a background or as an ideological tool that shapes Ottoman modernization imaginaries.

For this purpose, the texts are examined through five spatial scales: Universe–World–City–Building–Structure. This five-level model is not only a classification tool but a hierarchical reading framework inspired by Lefebvre's (1991) theory of the production of space. Modernization is experienced as a continuum from the smallest unit of everyday life, such as a room or threshold, to the broadest imaginative horizon, the universe. This hierarchical lens helps identify the scale at which Ottoman intellectuals confronted the crisis of modernization: The study examines whether it was perceived as an urban problem, a domestic issue, or a broader civilizational question. Thus, transitions between scales reveal the ideological positioning embedded in these texts.

Accordingly, the study examines three scientific novels written in the late Ottoman period: Ahmet Midhat Efendi's *A Scientific Novel, or The Doctors of America* (1888), Molla Davutzâde Mustafa Nazım's *Seeing the Progress and Civilization of Islam in a Dream* (1913), and Osman Nuri Eralp's *Are There Living Creatures on Other Worlds?* (1918). The method combines qualitative and quantitative approaches: spatial indicators are classified under the five scales, and comparative analysis is conducted through word frequency and conceptual diversity. Through this approach, scientific novels are reinterpreted not only as literary works but also as texts that make the spatial dimensions of Ottoman modernization visible at an imaginative level.

This study does not aim to conduct architectural design analysis or to evaluate material, structural, or constructional solutions. Instead, it operates within architectural theory and historiography by examining literary texts as sites of spatial representation and ideological construction. Fictional spaces are approached as mental and cultural productions through which architectural concepts such as scale, institution, and spatial order are articulated rather than materially designed.

2. Theoretical Framework

2.1. The Relationship between Architecture and Literature

Space, as a constitutive element of both architecture and literature, signifies not only a shared descriptive framework but also an epistemological and ideological ground of interaction. Within architectural literature, space is understood as a dynamic construct that goes beyond physical boundaries and geometry, shaping and representing social relations. Hasol's (1975) definition of space as a "limited void that allows human action", and Sözen and Tanyeli's (1994) emphasis on space as a "delimited part of extension", point to its geometric and physical origins. Simpson and Weiner (1989), however, draw attention to the mental and cultural construction of architectural space by incorporating the observer's perception. Taken together, these definitions show that space is not merely a physical volume but a multilayered phenomenon that must be understood through its perceptual, cultural, and social dimensions—encompassing what Lefebvre calls the "lived" and "perceived" processes.

In literature as well, space is far more than a simple setting or passive backdrop; it is an ontological component that constructs the narrative universe (diegesis) together with plot, time,

and character. Balcı (2012) approaches literary space through abstract and concrete dimensions, noting that abstract spaces gain meaning through desire, imagination, and longing, while concrete spaces refer to real locations that provide historical and cultural grounding. For Dener (1995), space is the “raw material of the novel”, and in Narlı’s (2002) analysis it becomes an ideological structure shaped through dialectical oppositions such as inside/outside, open/closed, and center/periphery. Thus, the use of space in literature becomes a field where the author’s mental construction and worldview take material form—a site where ideology is spatialized.

The structural and constructive link between architecture and literature gains theoretical depth through the conceptualizations of various thinkers. Victor Hugo’s definition of architecture as a “book in stone” (Asiliskender, 2004) suggests that the built environment, like a literary text, can be read as a semiotic system with representational power. Lefebvre (2014) positions space as both the product and producer of social relations, framing it as a dynamic process in which ideology becomes material. In this context, Bakhtin’s (1981) concept of the “chronotope”, which expresses the inseparability of time and space within literary narrative, Foucault’s (2015) notion of “heterotopia”, which points to crises and deviations through spaces situated between utopia and real space, Soja’s (2019) “thirdspace”, which synthesizes physical and imagined spaces, and Westphal’s (2011) “geocritical” approach, which examines the permeability between real and fictional space, all provide a strong interdisciplinary theoretical framework that dissolves boundaries between the two fields.

This theoretical foundation explains why literary texts are indispensable sources for architectural history and theory: Literature does not merely represent space (mimesis) but also reproduces, transforms, and constructs it at an ideological level (poiesis). Ottoman scientific novels offer some of the most striking examples of this process of spatial reconstruction. The laboratories, apartment interiors, modern avenues, and cosmic depictions that appear in these texts function not only as fictional elements but as “architectural manifestos” of the Ottoman imagination of modernity. By synthesizing Western scientific thought with Islamic intellectual traditions, these novels propose new spatial orders and serve as fertile ground for examining the ideological and social reflections of modernization. Thus, the relationship between architecture and literature moves beyond an aesthetic affinity and becomes an analytical and critical field for uncovering the spatial codes of cultural transformation.

2.2. The Development of Ottoman Fenni Roman

The Ottoman Empire’s contact with the West, which began in the eighteenth century, expanded in the nineteenth century not only in military and technical fields but also in cultural and social life. With the reforms of the Tanzimat Era, the question of how Western science and technology could be transferred to society became a major topic of debate, and literature emerged as an important medium for this discussion. In particular, novel translations and the works of Jules Verne opened new imaginative horizons for Ottoman readers (Uyanık, 2011). The fact that Verne translations published between 1885 and 1895 carried the direct label “scientific novel” shows that the term was actively used in the discourse of the period.

The concept of science/technical knowledge was chosen in the Ottoman context to express modern scientific thought. As Kara (2020) notes, while "*ilim*" was associated more with religious knowledge, "*fen*" referred to the scientific and technical information transmitted from the West. For this reason, "*fen*" was seen as an essential tool of progress (terakki) (Berkes, 2002; Varol, 2023). Andı (1993) defines scientific literature as narratives dealing with events related to science, inventions and discoveries, technological possibilities of the future, and texts shaped by Western scientific thought.

Scientific novels reflect the Ottoman intellectual's search for solutions to social crises, wars, and repeated defeats. In Molla Davutzâde Mustafa Nazım Erzurumi's *Seeing the Progress and Civilization of Islam in a Dream*, the destruction caused by the Balkan Wars is overcome through the device of the dream; in Ahmet Midhat's *A Scientific Novel, or The Doctors of America*, America becomes the symbol of dynamism and innovation, while Europe appears both as the center of scientific advancement and as a site of moral decline. Osman Nuri Eralp's *Are There Living Creatures on Other Worlds?* expands the imagination even further, combining science with a cosmic vision and extending the idea of modernization from the world to the universe.

These examples show that Ottoman scientific novels do not correspond exactly either to classical utopias or to Western science fiction. Instead, they form a unique genre that blends utopia, dream techniques, and scientific imagination within the political and social context of the Ottoman Empire. Descriptions of laboratories, factories, schools, and cities serve as spatial stages on which modernization ideals are articulated. In this way, scientific novels provide a distinctive and valuable source for understanding the spatial imaginations of Ottoman modernization.

2.3. Ottoman Modernization: Historical Breaks, Intellectual Transformations, and Spatial Reflections

Modernization, contrary to how it is often described in classical sociology, is not a linear process limited to changes in social institutions, production relations, or technological infrastructure. Rather, it is a multilayered and complex transformation that reshapes individuals' mental maps, their perception of time, everyday practices, and their ontological relationship with the physical environment. In this sense, modernization requires a new "spatial consciousness" and a rational reorganization of the built environment compatible with modern social conditions. Although discussions of Ottoman modernization in the literature usually focus on institutional reforms, legal changes, or cultural Westernization, the field where the process becomes most visible -and leaves its deepest marks on collective memory- is space itself, where abstract shifts in mentality acquire physical form.

Ottoman modernization, therefore, cannot be reduced to a mere imitation of the West or a superficial stylistic change. It was a tense and plural transformation in which traditional modes of spatial production (organic neighborhoods, inward-oriented houses, privacy-based living patterns) began to dissolve, while new spatial formations (grid plans, barracks, apartments, public squares) marked the emergence of rational, controlled, outward-facing environments.

The main motivation behind this process was the military and political failures that became apparent from the eighteenth century onwards. The territorial losses beginning with the Treaty of Karlowitz (1699) and the decline of Ottoman military and technical superiority generated an acute awareness of "backwardness" within the state. The question "How can the Empire survive?" became the core of modernization efforts. Initially, the issue was understood as restoring military power: Selim III's Nizam-ı Cedid reforms and Mahmud II's abolition of the Janissary corps were the first concrete steps. These reforms did not remain limited to uniforms or equipment-they required architectural and disciplinary spaces suitable for a modern army and a centralized bureaucracy.

Large barracks rising in the Istanbul skyline (Selimiye, Taksim, Rami) were monumental structures unprecedented in the Ottoman urban fabric. From a Foucauldian perspective, this period marks the moment when state power began to monitor, regulate, and transform society through space. Barracks and administrative buildings made state authority spatially visible; discipline became an architectural form (Durak, 2018). The subsequent educational reforms extended this spatial transformation to civil life. The founding of the Medical School in 1827 and the establishment of modern technical schools shifted the locus of knowledge from the medrese (traditional/religious/cyclical time) to the modern school (positivist/rational/linear time). These new buildings, with their corridors, classrooms, and laboratories, functioned as epistemological spaces where the cognitive codes of the modern individual were formed.

The most critical rupture, however, occurred in the intellectual sphere. Ottoman thinkers were divided into two main positions regarding how modernization should proceed: "Selective Westernization" and "Complete Westernization". The first approach, represented by figures such as Namık Kemal and Mehmet Âkif, argued for benefiting from universal science and technology while preserving religious and historical values -an idea close to the gradual British-style modernization. The second approach, advocated by Abdullah Cevdet and Celâl Nuri, called for a radical break with the past and the adoption of Western civilization in its entirety, aligning with a more revolutionary French Jacobin attitude (Ekinci, 2021).

These debates were not abstract ideas limited to journals; they took concrete spatial form in the city. The intellectual divide materialized through the symbolic opposition between Pera (Beyoğlu) and the Historic Peninsula. On one side stood "alaturka" Istanbul with its traditional values, privacy, and inward-looking organic neighborhoods; on the other stood "alafranga" Beyoğlu with its consumption culture, theaters, shop windows, and extroverted urban life. The same tension appeared in domestic architecture: The traditional inward-oriented Turkish house organized around the sofa contrasted sharply with the outward-facing apartment centered on the salon, which emphasized individuality and visibility. Ottoman modernization thus did not produce a uniform transformation but rather a plural spatial landscape where competing lifestyles clashed, coexisted, or blended (Uyanık, 2011).

Modernization extended from monumental state buildings down to the smallest components of daily life, including the neighborhood. The traditional Ottoman neighborhood -organized around the mosque, coffeehouse, fountain, and primary school, and based on communal intimacy- began to dissolve with the 19th Century Building Regulations. Road widening,

opening cul-de-sacs, and the shift from timber to masonry were rapid physical changes, yet social relations and rhythms transformed more slowly and with resistance. The replacement of winding organic streets with grid plans and wide boulevards paved the way for a shift from "community" to "society".

Meanwhile, newspapers and magazines such as *Musavver Terakki*, *Servet-i Fünun*, and *Resimli Gazete* reshaped how people "read" the city by popularizing science and technology. The city became not only a place to live but a space to watch, stroll, consume, and perform modern life (Dural, 2020). The tense, multilayered, and "still unfinished" character of Ottoman modernization found its clearest and most imaginative expression in the literature of the period, especially in scientific novels. The three works examined in this study can be seen as mental laboratories where modernization was tested and explored on a fictional ground.

In these texts, technology and space are not neutral backdrops but constructive elements that reshape social order, everyday life, and individual identity. Machines, trains, telegraphs, factories, and cinema compress traditional perceptions of time and space, redefining the modern subject's relationship with the world, while also placing new pressures on memory and identity (Tanju, 1999). *Seeing the Progress and Civilization of Islam in a Dream*, for instance, imagines an Islamic civilization of the 23rd century through technology, proposing a local and Islamic-modernist vision rather than a direct imitation of the West (Varol, 2023).

Scientific novels thus transform Ottoman modernization from mere imitation into a spatial simulation of how scientific progress could be reconciled with local values. Concepts such as civilization, progress, and advancement, seemingly universal, are reinterpreted within local historical conditions. Ultimately, Ottoman modernization can be understood not as a passive transfer of institutions but as an effort to respond to military, political, and social crises through new spatial arrangements and through the imaginative future designs embedded in scientific novels (Varol, 2023).

3. Methodology and Research Design

This study approaches Ottoman scientific novels not merely as literary narratives but as spatial documents that record the period's imaginaries of modernization, its social crises, and its visions of an ideal society. The methodological framework is based on a mixed-method analysis of selected texts, in which spatial indicators are examined through both qualitative and quantitative approaches.

Three major works were chosen to represent the developmental trajectory and ideological diversity of Ottoman scientific literature. Rather than random selection, the primary criteria were "variation in spatial focus" and "modernization strategy". Each selected novel represents a different paradigm capable of expressing modernization at a distinct spatial scale:

Ahmet Midhat Efendi*, A Scientific Novel, or The Doctors of America (1888):* A pragmatic and didactic work that reads modernization through the geography of the West (America). Its focus lies on the material "world" and its concrete institutions.

Molla Davutzâde Mustafa Nazım Erzurumi*, Seeing the Progress and Civilization of Islam in a Dream (1913):* An utopian narrative that synthesizes modernization with Islamic moral values. Its central concern is the “city”, imagined through a reconfigured Istanbul and an idealized social life.

Osman Nuri Eralp*, Are There Living Creatures on Other Worlds? (1918):* A scientific speculation that carries modernization beyond the earth, framing it through cosmic curiosity. Its focus is the “universe” and cosmological space.

These three works show that Ottoman modernization was never a single, unified vision. Rather, it unfolded through multiple spatial strategies-worldly/institutional, urban/utopian, and cosmic/scientific.

To demonstrate that “space” in scientific and utopian narratives is not a passive decorative element but an active narrative device shaping modernization ideology, this study develops a hierarchical model of spatial reading. Modernization is understood as a continuum extending from the smallest unit of daily life, such as a room or architectural element, to the broad imaginative horizon of the universe. To make this continuum measurable, spatial references in the texts were classified into five scales, arranged from macro to micro:

- **Universe Scale:** Cosmological references, planets, outer space (epistemic boundary of modernity).
- **World Scale:** Continents, regions, countries (geopolitical positioning).
- **City Scale:** City, square, street, neighborhood (public life and social organization).
- **Building Scale:** School, factory, house, hospital (institutional and functional space).
- **Structure Scale:** Door, window, wall, elevator, staircase (micro-architecture and technology of everyday life).

The universe-world-city-building-structure scale model is deliberately constructed as an analytical testing framework rather than as a descriptive or illustrative classification. Its purpose is to examine at which spatial level the fictional text anchors its physical reality and through which scale the author constructs the material ground of the narrative. In this sense, the model enables a systematic reading of how spatial imagination operates as a form of mental and architectural construction within fiction.

By identifying the dominant scale through which a narrative produces its sense of physical reality, the model reveals how space -and by extension architecture- is cognitively positioned within the fictional world. The scale framework is not imposed to normalize narrative structures, but to expose the spatial logic through which modernization, ideology, and material reality are mentally articulated.

This scaling system not only allows for a comparative analysis of the three novels but also makes visible the specific spatial level at which each author constructs the idea of modernization.

The research was carried out in five stages:

- **I. Stage:** Data Identification: Each work was read manually without digital tools, and all spatial references (nouns, adjectives, spatial phrases) were identified.
- **II. Stage:** Classification: The extracted data were placed into the five defined spatial scales (Universe to Structure).
- **III. Stage**: Quantitative Analysis: Word-type diversity and frequency were calculated for each scale, producing "spatial density graphs" for every novel.
- **IV. Stage:** Comparative Analysis: The numerical results across the three works were compared, identifying which novels concentrated on which scale and which scales were minimized or omitted.
- **V. Stage**: Qualitative Interpretation: The patterns revealed by quantitative data were interpreted in relation to the political atmosphere of the period, modernization debates, and architectural history.

It should be emphasized that the frequency-based quantitative analysis in this study does not function as a causal or determinist method. The numerical distribution of spatial terms is not interpreted as direct evidence of ideological or conceptual significance. Rather, quantitative data are used as heuristic indicators that make visible spatial tendencies, emphases, and absences within the texts. Interpretive conclusions are derived through qualitative reading, historical contextualization, and architectural reasoning, with quantitative findings serving as a supportive analytical layer rather than as an autonomous source of meaning.

Through this systematic approach, the study aims to map the spatial boundaries of Ottoman modernization as they appear in fictional narratives. The findings show that the spaces used in scientific novels, through their scientific, technological, and cultural references, are not merely fictional backdrops but symbolic environments deeply intertwined with the ideals and anxieties of modernization.

3.1. A Scientific Novel or the Doctors of America, Ahmet Midhat Efendi (1888)

- Subject of the Novel:

Ahmet Midhat Efendi's *A Scientific Novel, or The Doctors of America* (1888) focuses on the scientific experiments conducted by a group of doctors in America, including the applications they perform on their own bodies. The novel functions as a form of popular science writing that seeks to convey scientific developments in a language accessible to a general readership. Within this framework, the "community of doctors" is constructed as a collective representation of scientific curiosity and progress (for a detailed summary, see Bayrak, 2024).

- Spatial Construction of the Novel:

The spatial structure of the novel presents a dual-layered composition in which physical reality and ideological representation are closely intertwined. On the macro level, space is articulated through the urban and national image of "America", while on the micro level it is embodied in the architectural typology of the "apartment", a modern form of dwelling.

Macro Scale (America as a 'Spatial Utopia): In the narrative, America is presented not as a cartographic or empirical geography but, in Lefebvre's terms, as a conceived space. In contrast to Europe burdened with history and moral decline, America appears as the geographical embodiment of rational thought, technology, and transparency. For the Ottoman reader, this space functions as the materialized image of a civilization to be attained. Here, space does not operate as a passive ground; it becomes the very carrier of the ideology of progress.

Micro Scale (The Apartment as a Laboratory of Modernity): The apartment in which the narrative events unfold constitutes the architectural projection of the broader American ideal at the scale of everyday life. Unlike the traditional Ottoman house, privacy-oriented, inward-looking, and organically formed, the apartment is presented as the construction site of a "new life", defined by its vertical hierarchy, rational plan, and technological equipment. It serves as the domestic counterpart of the scientific order established in the public realm of America.

The selection of the apartment typology is not accidental. In the late nineteenth and early twentieth centuries, the apartment symbolized the dissolution of the extended family structure, the rise of the individual, and a functionalist mode of living in which every square meter was clearly defined (kitchen, bathroom, living room). The image of America is legitimized through the flawless operation of this architectural "machine". By placing its characters within this sterile and rational architectural enclosure, the author mobilizes the transformative power of space. The apartment functions as a protected environment where science and reason are insulated from external chaos. Consequently, space in the novel does not merely serve as a backdrop; it operates as a tectonic device that enables and shapes the characters' experience of modernization.

- Spatial Scale Groups and Analyses of the Novel:

As explained in the methodology section, the word counts belonging to the spatial scale groups -ranging from macro to micro levels (Universe-World-City-Building-Structure)- are presented (Table 1). In Ahmet Midhat's narrative, space functions not merely as a physical background but as a multilayered representational field that carries concepts such as modernity, science, ethics, and social order.

In the following analysis, spatial references in the text are examined of five hierarchical scales, from the universe to the architectural structure. This layered reading makes visible how the discourse of modernization is constructed and articulated through architecture and space.

Table 1. Word types and frequencies used in the text according to spatial scales (Bayrak, 2024)

Universe		**World**		**City**		**Building**		**Structure**	
Word Types	Word Count	Word Types	Word Count	Word Types	Word Count	Word Types	Word Count	Word Types	Word Count
4	12	15	114	34	90	34	157	12	58

- Universe Scale: The universe scale is represented by limited word-type diversity and low frequency levels (Figure 1).

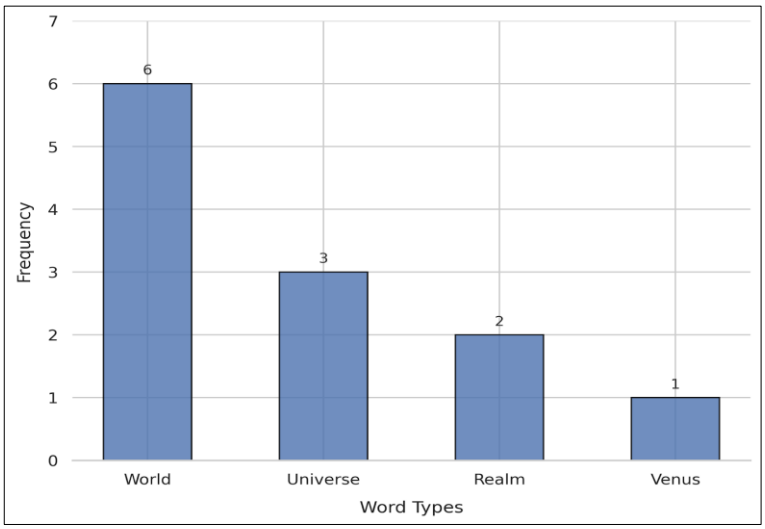

Figure 1. Word types and frequencies at the universe scale (Prepared by the authors).

The scarcity of cosmological references indicates that Ahmet Midhat constructs the idea of modernization not through a universal or cosmic imagination, but through more concrete and tangible spatial scales. The limited use of the cosmos suggests that the modernization imaginary is developed not from a metaphysical or universalist perspective, but within spaces that are directly experienceable. This tendency is consistent with the visibility of modernization ideas at architectural and urban levels.

- World Scale: The world scale constitutes one of the most dominant levels in the spatial construction of the novel. “America” is mentioned 71 times in the text (Figure 2).

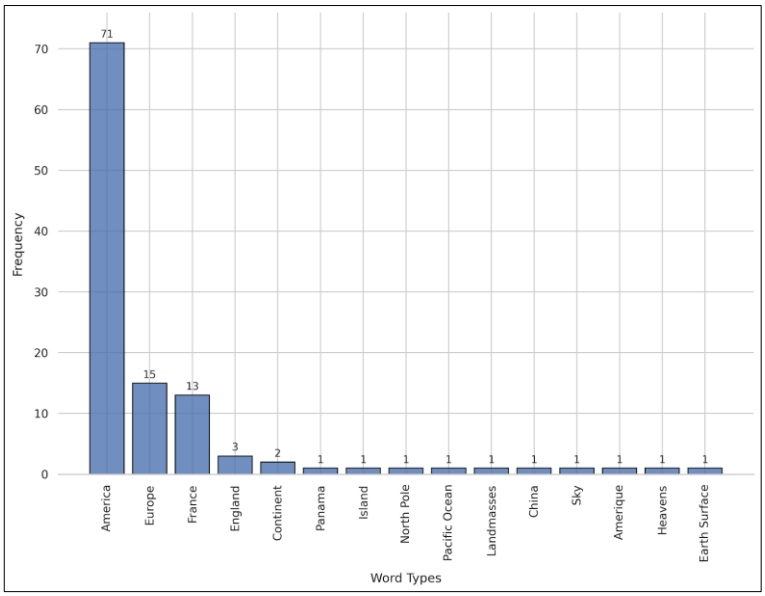

Figure 2. Word types and frequencies at the world scale (Prepared by the authors).

This indicates that geography is reproduced as an ideological space. This remarkable frequency suggests that America is configured as the spatial embodiment of concepts such as science, technology, morality, and progress.

In this context, Henri Lefebvre's proposition that "space is both the product and the producer of social relations" is particularly illuminating. America becomes a spatial metaphor for the new social relations that make modernization possible. At the world scale, modernity is positioned in the Ottoman imagination both as a center of attraction and as a site of tension and comparison. Geography thus transforms into the ideological space through which the discourse of modernization is constructed.

- City Scale: At the city scale, the novel presents its most intensive (Figure 3), diverse, and multilayered spatial configuration. As outlined in the theoretical framework, the city can be understood not as a passive backdrop for the narrative but as a showcase where the ideology of modernization is displayed and as an active actor that drives transformation. Through this approach, the author seeks to move modernity beyond an abstract idea and render it into a concrete and experienceable reality through urban morphology.

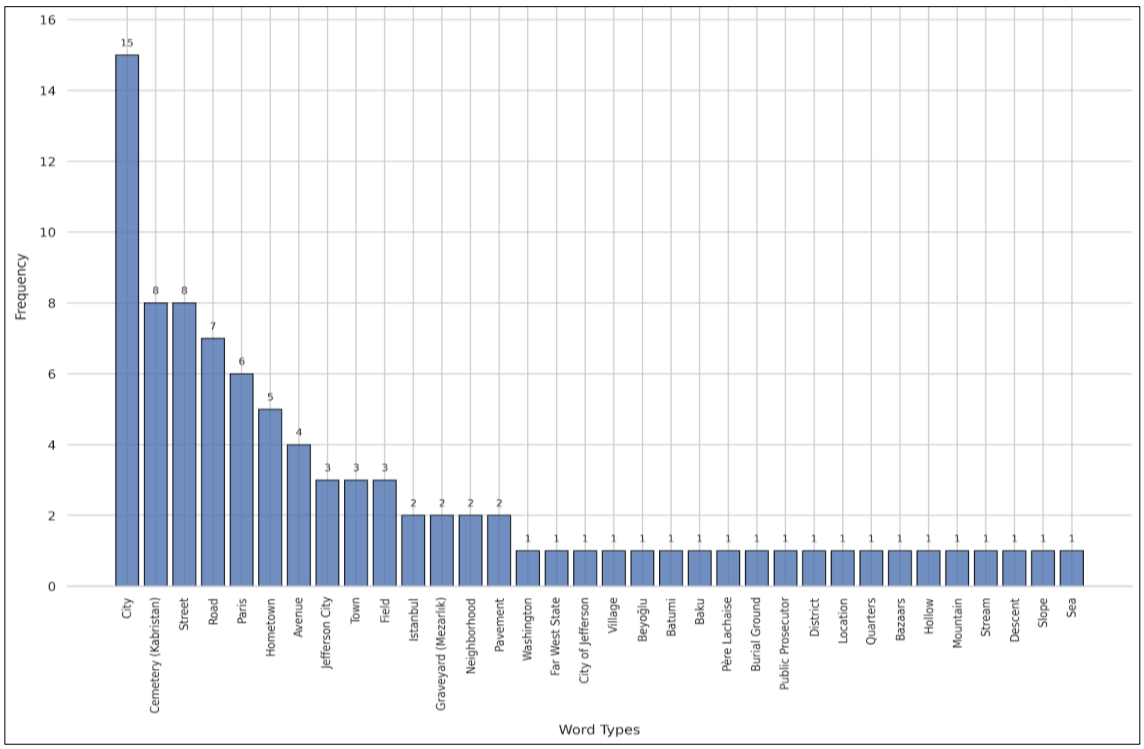

Figure 3. Word types and frequencies at the city scale (Prepared by the authors).

The urban geography of the novel is structured around a clear duality: The idealized West and the experienced East. Cities such as Paris, Washington, and Jefferson City function as reference points of modern urbanism, infrastructure, and rational order for the Ottoman intellectual imagination. These cities are presented as spatial evidence of the level of civilization to be achieved. In contrast, Istanbul and Beyoğlu embody the local reflections,

contradictions, and hybrid formations of this modernization desire. In this sense, the city simultaneously contains both the idealized image of the West and the internal tensions of the Ottoman transformation process.

An examination of the spatial data at the urban scale reveals that the city is not defined merely through buildings. Rather, it emerges as a dynamic circulation network articulated through streets, avenues, roads, and sidewalks. These high-frequency zones of movement can be interpreted as “micro-spaces” where the rhythm of the modern city is produced and where relationships between individuals and society are reconfigured.

- Building Scale: The building scale constitutes the most intensively articulated level in the text (Figure 4). This intensity reveals that modernization is primarily envisioned through institutions and architectural typologies. Buildings such as the medical school (tıbbiye), asylum, theater, factory, and municipal offices demonstrate that social transformation is constructed through architecture.

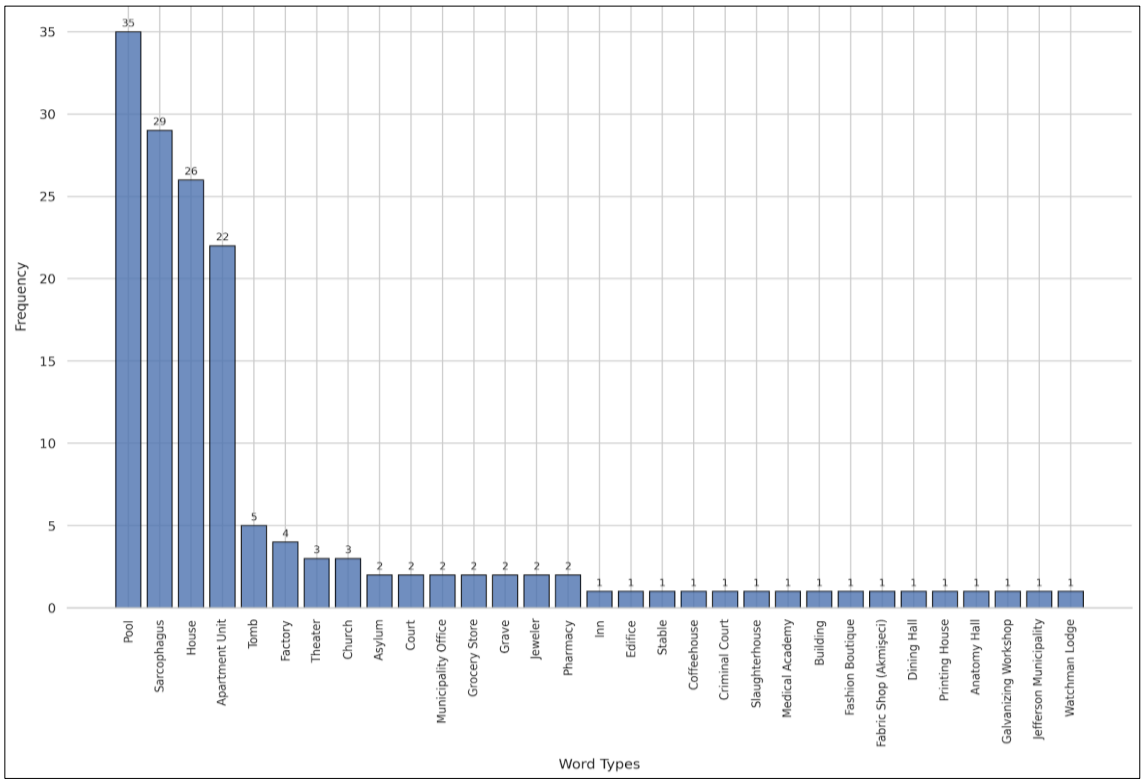

Figure 4. Word types and frequencies at the building scale (Prepared by the authors).

The variety of spatial typologies at the building scale shows that the modernization imaginary extends beyond housing and expands through institutional structures that organize and regulate society.

The presence of disciplinary spaces such as the asylum, anatomy hall, courthouse, and factory indicates that modernity is conceived as a system that reshapes both the body (through medicine and anatomy) and society (through law and production) according to rational norms. This transformation is also reflected in domestic terminology. The close frequency of the

traditional term hane (26) and the modern, bureaucratic unit daire (22) documents a radical rupture and transitional phase within Ottoman spatial culture.

At this scale, the spatial politics of modernization become clearly visible:

Factory: Modernization of production relations and transformation of the labor regime
Court and municipal office: Legal rationality and bureaucratic order
Theater: Cultural modernity and public representation
Asylum: Medicalized society and regimes of reason and morality
Domestic spaces such as house (hane), apartment (daire), and pool: Westernization of everyday life

Within this framework, architecture emerges as a material instrument representing the institutional infrastructure of modernization. The building scale thus becomes the most direct spatial expression of the desire to construct a modern society.

- Structure Scale: The structure scale constitutes the smallest yet most meaningful level shaping the novel's interior spatial configuration (Figure 5). These spatial elements reveal how Western everyday life practices become embedded within the Ottoman imagination of modernization. Architectural components such as the fireplace, staircase, kitchen, and living room illustrate how Western domestic codes penetrate the narrative structure of the novel.

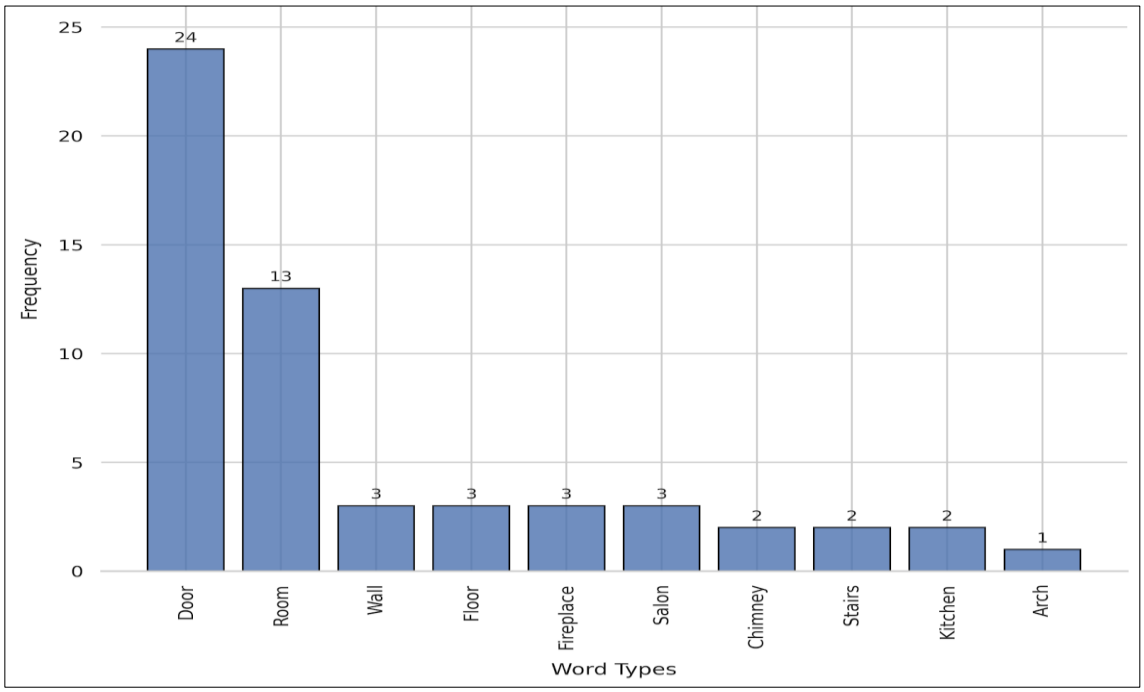

Figure 5. Word types and frequencies at the structure scale (Prepared by the authors).

This scale demonstrates that modernization operates not only at the level of the state, the city, or institutions, but also manifests itself within the micro-architecture of everyday life. Modernity is thus represented as a transformative process that permeates space down to its smallest units.

3.2. Seeing the Progress and Civilization of Islam in a Dream, Molla Davutzade Mustafa Nazım Erzurumi (1913)

- Subject of the Novel:

Seeing the Progress and Civilization of Islam in a Dream, written by Molla Davutzade Mustafa Nazım Erzurumi in 1913, is one of the important examples of Ottoman "scientific literature". The work was produced after the deep disappointment and pessimistic atmosphere created by the Balkan Wars, and it reflects concerns about backwardness and the search for solutions in the late Ottoman context. In the story, the author himself, Nazım, falls asleep and in his dream meets his grandfather, Molla Davut. Through the dialogue between grandfather and grandson, a critical reflection is made on the mistakes of the Ottomans in the past, relations with Europe, and the future of the Islamic world. Molla Davut takes his grandson to Istanbul four hundred years later and describes a civilization where the moral and social values of Islam are united with science and technology. In this utopia, diligence, justice, equality, and moral commitment are presented as the main principles, while the moral corruption of the West is emphasized beside its scientific progress. In this way, it is underlined that Islam is not an obstacle to progress, but rather the foundation of advancement (for a detailed summary see Bayrak 2024).

- Spatial Construction of the Novel:

The spatial construction of the novel is shaped around a redesigned Istanbul of the 23rd century. The city does not sever its ties with the past; structures such as Hagia Sophia, the Sultan Ahmed Mosque, and the Galata Tower preserve its historical identity. At the same time, Istanbul is transformed into a modern metropolis with multi-story buildings, glass façades, high bridges, advanced transportation systems, and factories. One of the most radical architectural ideas in the novel is the removal of streets from the ground level. As buildings rise, streets are reconceived as "broad balconies" attached to their façades. Instead of relying solely on the ground plane, circulation routes are lifted upward, forming balcony-streets connected by multi-level bridges. This suggests an understanding of the city not only as a horizontal expanse but as a three-dimensional organism that lives vertically as well.

In the narrative, Istanbul becomes more than a setting; it functions as a symbol of the progress of Islamic civilization. The origin of this advancement is placed on a symbolic "deserted island", where a selected group engages in moral, scientific, and artistic work, establishing factories and institutions that eventually spread their development to Istanbul and then to the wider Ottoman world. Public order and moral discipline are maintained through giant mirrors installed in city squares, allowing all spaces to be observed. This reflects a fusion of modernity's desire for "transparency" with Islamic moral principles. These mirrors evoke Bentham's Panopticon, presenting a city where social and moral order is continuously visible and subject to surveillance.

Despite the adoption of Western technology, social space remains strictly divided into "haremlik" and "selamlık". Even with technological integration, the organization of public space departs significantly from Western models; from transportation systems to parks, the city is

structured according to a dual spatial regime. Thus, modernization does not unify space but categorizes it according to moral boundaries.

The novel also describes public places such as the “Purple Sheep Milk Restaurant”, the Water Administration Building, bread factories, and libraries, emphasizing how technology penetrates every aspect of daily life. Istanbul is ultimately imagined as a utopian city that carries both its historical legacy and the scientific advancements of the future, surpassing the West while preserving Islamic values.

- Spatial Scale Groups and Analyses of the Novel:

In *Seeing the Progress and Civilization of Islam in a Dream*, space is not constructed merely as a narrative backdrop but as a multilayered architectural framework through which different dimensions of modernization are developed. The hierarchy between these scales suggests that modernity is produced through a spatial logic extending from universal imaginaries down to the micro-spatial practices of everyday life. The vocabulary diversity and total frequency of the universe-world-city-building-structure scale groups, arranged from macro to micro in the novel, are presented (Table 2).

Table 2. Word types and frequencies used in the text according to spatial scales (Bayrak, 2024).

Universe		**World**		**City**		**Building**		**Structure**	
Word Types	Word Count	Word Types	Word Count	Word Types	Word Count	Word Types	Word Count	Word Types	Word Count
12	195	42	165	76	436	82	326	51	465

- Universe Scale: The diversity and frequency of words used at the universe scale indicate that the novel’s spatial imagination extends beyond Istanbul and opens toward a cosmic understanding of space -the highest level of architectural thought (Figure 6). The noticeable density of the terms “âlem” (realm/universe) and “cihan” (world) suggests that the imagined civilization in the novel is not limited to a specific urban structure but offers an ideological and architectural model spread across a comprehensive spatial universe. In this sense, it can be argued that Molla Davudzade transforms space from a merely physical ground into a constitutive subject of social imagination.

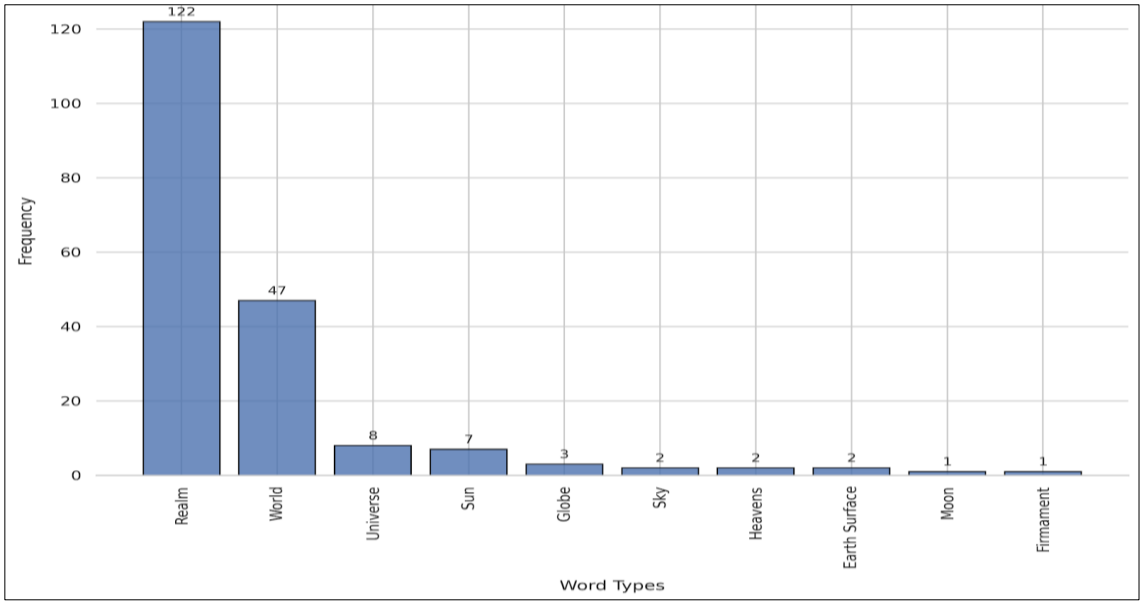

Figure 6. Word types and frequencies at the universe scale (Prepared by the authors).

This cosmic expansion functions almost like a master plan: The transformation of Istanbul into a 23rd century Islamic metropolis equipped with science, technology, and rational infrastructure becomes meaningful only when understood as part of a larger spatial vision at the universal scale. The author does not simply construct a city; he designs a broader spatial basin woven with values, science, belief, and technology. Thus, the preference for the concept of “âlem” over “world” shifts space away from a geographically bounded surface and turns it into a spiritual-spatial topography where culture, science, and metaphysics intersect.

This universal scale is directly connected to the dual nature of Ottoman modernization often discussed in the theoretical literature. The tension between admiration for Western modernity and anxiety over cultural dissolution finds a new architectural expression in this cosmic dimension. The modernization imagined by Molla Davudzade does not remain a local alternative to Western models; instead, it proposes a universal spatial order that addresses all humanity. Istanbul’s positioning as a “central base” and the extension of its influence across the entire cosmos show that architecture here operates not as a geopolitical tool but as a medium for creating a universal living environment (habitat). In this framework, the universe scale transforms the novel’s discussion of modernity and civilization from a political issue into a problem of spatial design at a universal level. This design forms a coherent architectural hierarchy that begins at the cosmic scale, finds its counterpart on earth, and materializes through the city-building-structure levels.

World Scale: The diversity and density of spatial terms used at the world scale reveal that the novel’s spatial strategy is not merely a form of geographic mapping but a project of spatial reconfiguration (Figure 7). The near-equal frequency of the terms “Europe” (29) and “Homeland” (26) makes visible the tension between the external space that Ottoman modernization takes as a reference and the internal space with which it forms an emotional and cultural bond. As Türkmenoğlu (2014) notes, the trauma of the Balkans becomes tangible

in the text through repeated references to “Rumelia” (10) and “the Balkans” (7). Although these regions were lost physically, they continue to exist in the narrative as “phantom spaces”, a literary counterpart to what architectural theory often describes as “a spatial memory that is lost yet cannot be erased”.

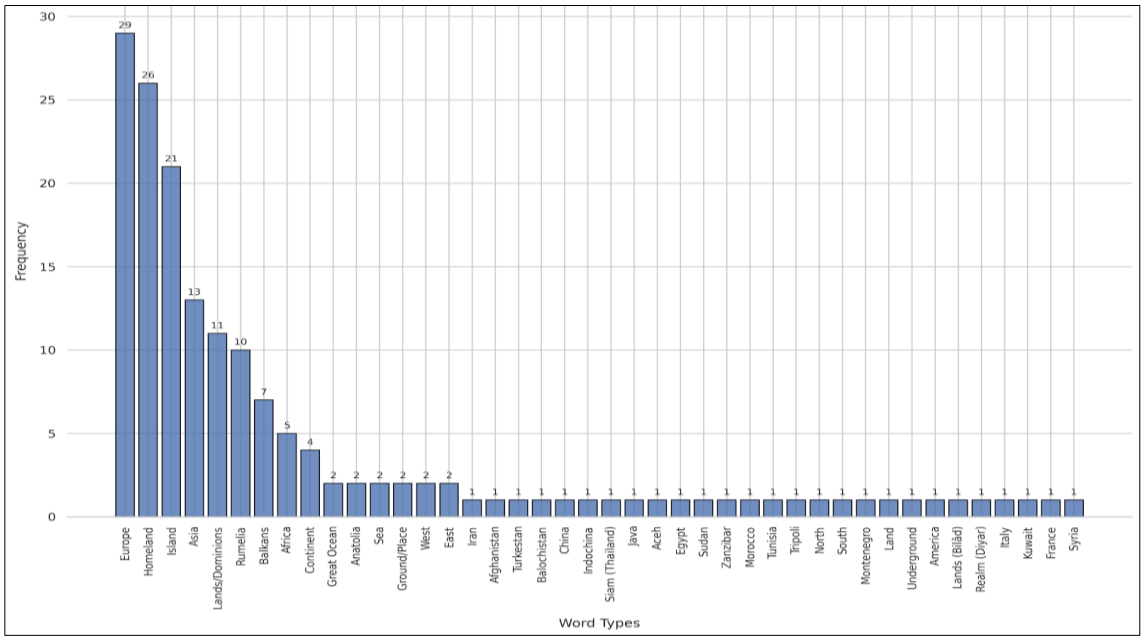

Figure 7. Word types and frequencies at the world scale (Prepared by the authors).

Territorial loss is not only a political rupture but also the creation of a spatial void. The author appears to compensate for this void by constructing a Pan-Islamist “spatial network” that encompasses distant geographies such as Zanzibar and Turkestan. In this way, the novel proposes an alternative spatial hinterland organized around Islamic geographies, standing in contrast to the Western-centered world map. The world scale thus becomes more than a reflection of geographic variety; it forms a multi-scalar architectural imagination linking lost spaces (Rumelia/Balkans), expanded spatial networks (the Pan-Islamist hinterland), and newly created spaces (the Island). These spatial constructs suggest that the novel transforms its modernization debate from a purely political discourse into a global-scale project of reimagining the spatial future.

- City Scale: The spatial data at the city scale form the most visible layer of the novel’s utopian imagination (Figure 8). The high frequency of references to Istanbul (53) indicates that the city is not merely a backdrop but the spatial core of the modernization ideology. Nazım’s experience of a 23rd-century Istanbul within a dream suggests that modernization is constructed here as a direct spatial encounter. The density of terms such as Square (39), Bridge (32), Avenue (21), and Road (29) demonstrates that the utopia is built upon a rational circulation framework. These terms function as morphological indicators showing that the modernization discourse is articulated in the city through discipline, order, and infrastructural visibility.

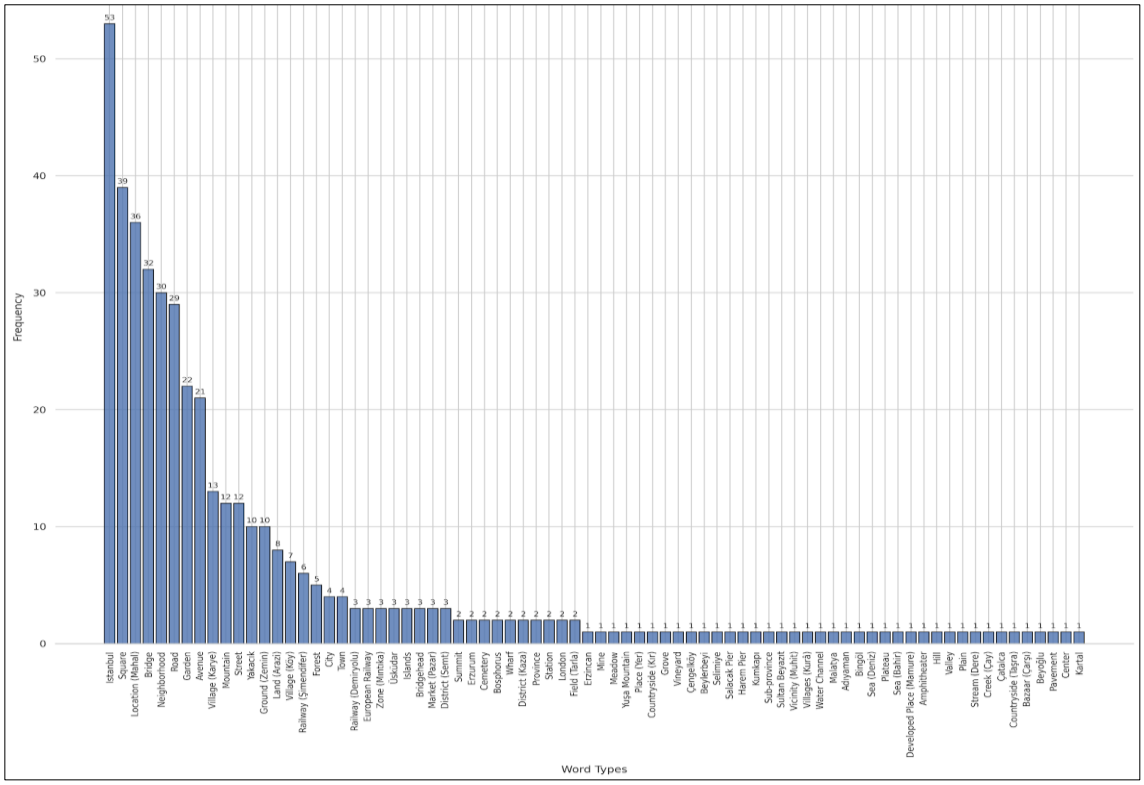

Figure 8. Word types and frequencies at the world scale (Prepared by the authors).

Bridges, in particular, emerge not only as structures linking two shores but also as tectonic metaphors for progress and integration. In contrast, the strong presence of the terms Neighborhood (30) and Location (36) reveals that the utopia does not propose a tabula rasa break. Rather, it presents a hybrid urban morphology in which the traditional Ottoman fabric is layered with modern infrastructure. This suggests that while the historical urban texture is preserved as a model of social organization, it is refunctioned through modern transportation and public-space networks.

The city scale thus becomes a comprehensive spatial field where the desired physical face of Ottoman modernization is envisioned. In this imagined city, the rationality of public space and the continuity of the traditional neighborhood coexist with the forward-directed impulse of modern technology, all within the same urban stage.

- Building Scale: The spatial concepts at the building scale indicate a shift in Molla Davudzade's utopia from a traditional, house-centered spatial order toward one structured around production, regulation, and public consumption (Figure 9). The dominance of the term Factory (36) over House/Home (4) suggests that the ideal society is no longer defined through the household but through an industrial labor force; industrial buildings emerge as the new urban landmarks. This can be read as the utopian projection of the Ottoman Empire's nineteenth-century industrialization efforts.

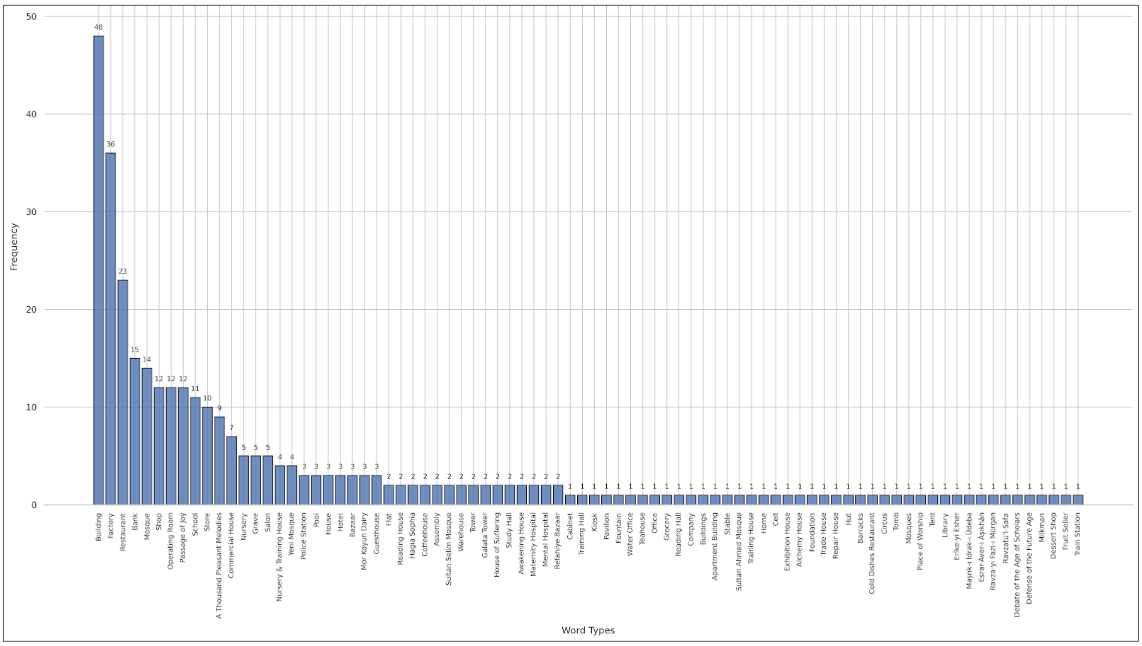

Figure 9. Word types and frequencies at the building scale (Prepared by the authors).

Economic institutions such as Banks, Commercial Houses, Shops, and Stores, along with consumption spaces like Restaurants (23), signal the institutionalization of modern capitalist relations within the urban environment and the transformation of everyday life through its increasing public character. In this context, the restaurant is not merely a place for eating but a new stage for modern social encounters.

The most striking feature of the building scale is the strong presence of biopolitical institutions such as the Maternity House, Training House, Operating Room, and Mental Hospital. These structures reveal the emergence of a modern body politics in which birth, health, and mental condition are spatially regulated. At the same time, religious buildings -such as Mosques, Hagia Sophia, and the Sultan Selim Mosque- are not erased in the novel's future vision; instead, they coexist alongside factories and banks, showing that material progress and spiritual memory are reconstructed within a shared spatial framework.

Thus, the building scale represents a spatial imagination in which Ottoman modernization is materialized through the simultaneous transformation of industry, economy, education, health, and religion. It merges traditional typologies with modern institutions, forming a hybrid architectural morphology that projects a comprehensive spatial future.

- Structure Scale: The ways in which Ottoman modernization transforms everyday practices become spatially evident at the structure scale of the novel (Figure 10). The high frequency of terms such as Door (82), Floor (62), Apartment (60), and Wall (39) indicates that space is redefined through a modern logic of order and control, both geometrically and functionally. The fluid, sofa-centered plan scheme of traditional Ottoman architecture is replaced in this utopia by a controlled interior layout divided by walls, delimited by doors, and vertically extended through multiple floors. Thus, modernization emerges not only in the visible

façade of the city but also as a strategy that produces social discipline directly within the building.

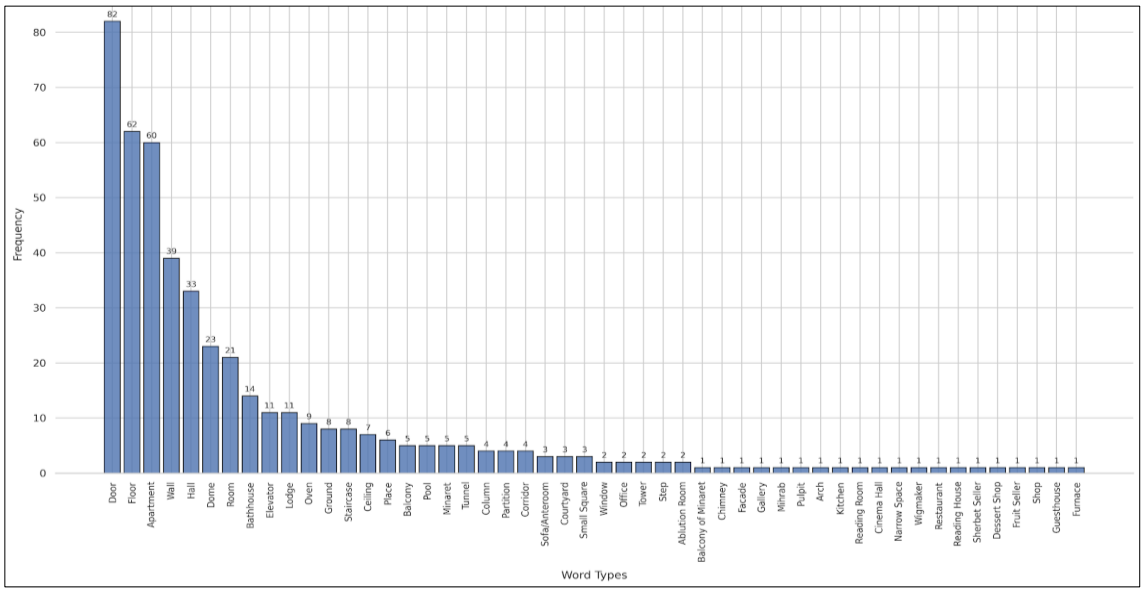

Figure 10. Word types and frequencies at the structure scale (Prepared by the authors).

Technological elements appear most clearly through terms like Elevator (11) and Tunnel (5). These features show that vertical and horizontal circulation, essential components of modern life, form the new spatial backbone of the structure. Modern accessibility is no longer organized through the traditional stair–sofa relationship but through technological carriers.

At the same time, the strong presence of religious architectural elements such as Dome (23), Minaret (5), Mihrab, and Minbar demonstrates that tradition is not excluded from this modern configuration. Rather, it is preserved and reinterpreted as a foundational component that gives identity to the architectural setting. As Bayrak (2024) notes, the simultaneous use of modern elements (elevator, balcony, salon) and traditional ones (dome, bath, courtyard) is not a random eclecticism but a deliberate search for tectonic hybridity. This hybridity reflects the Ottoman modernization ideal of establishing a synthesis that carries both technological progress and the Islamic architectural heritage together.

3.3. Are There Living Creatures on Other Worlds?, Osman Nuri Eralp (1918)

- Subject of the Novel:

Are There Living Creatures on Other Worlds?, written by Osman Nuri Bey in 1918, is one of the first examples of science fiction in the Ottoman context. By making use of the knowledge of physics, chemistry, astronomy and biology of the period, it discusses whether life on other planets is possible. It argues that beings adapting to the different natural conditions of planets may exist, and that life is shaped according to evolution and environmental conditions. From Mercury to Neptune, the possibilities of past or future life are considered; it is also foreseen that even the Sun will cool down in time and end life. The work is an original product of scientific literature, which aims to direct the people to science by combining scientific data with fictional elements.

- Spatial Construction of the Novel:

The spatial choices of the work do not refer to a concrete urban or architectural setting; instead, they turn toward abstract and open environments-namely, the surfaces of different planets. The primary concern of the novel is to describe the natural conditions of these planets in light of scientific data and to question whether life could exist under such conditions. For this reason, detailed architectural or urban constructions do not come to the forefront; rather, cosmic and geological descriptions dominate the narrative.

The spatial concepts used in the text often function metaphorically. For example, expressions such as “trees taller than minarets” (for a detailed discussion of such metaphors, see Bayrak 2024) or “a sea of metal” do not refer to actual physical spaces but emphasize scale or abundance. Similarly, the comparison of a dragon to “a bridge built over the sea” is not a structural depiction but a metaphor that intensifies the imagined landscape. In this sense, space in the novel is constructed on a plane where scientific observation intersects with literary imagination.

The planets are described through vast volcanoes, oceans of molten metals, snow-covered dead lands, or atmosphereless voids. These depictions open a new spatial horizon for the reader but do not offer realistic designs at the scales of city, building, or structure. The novel’s understanding of space functions primarily as a cosmic backdrop grounded in scientific possibilities rather than as a concrete architectural proposal.

- Spatial Scale Groups and Analyses of the Novel:

In *Are There Living Creatures on Other Worlds?*, neither an urban environment nor an architectural setting is organized in the conventional sense; instead, the reader is guided through a cosmic expanse. From an architectural perspective, Osman Nuri’s text does not engage with elements that define the built environment -such as plan, volume, structure, or typology- but rather focuses on a physical-parametric conception of space shaped by the conditions of habitability. For this reason, space in the novel is constructed not as a city or a building but as a “matrix of life” defined by each planet’s temperature, density, atmosphere, and geological components. The diversity and total frequency of the terms belonging to the universe-world-city-building-structure scale groups, arranged from macro to micro within the text, are presented (Table 3).

Table 3. Word types and frequencies used in the text according to spatial scales (Bayrak, 2024).

Universe		**World**		**City**		**Building**		**Structure**	
Word Types	Word Count	Word Types	Word Count	Word Types	Word Count	Word Types	Word Count	Word Types	Word Count
57	576	33	114	8	11	6	10	1	2

- Universe Scale: The high number of repetitions of the term “Earth” at the universe scale (Figure 11) indicates that even when reading cosmic space, the Ottoman intellectual centers the planet he inhabits as a spatial point of reference. Here, Earth functions not merely as a

celestial body but as a unit of measurement through which all other planets are interpreted. In contrast, the frequent use of terms such as “Sun”, “Planet”, “Venus”, “Mars”, and “Jupiter” shows that Western astronomical methods of defining space had entered the Ottoman intellectual sphere, allowing the universe to be read as a kind of scientific spatial typology. Terms such as “Realm”, “Cosmos”, “Infinite Worlds”, and “Other Worlds” further demonstrate that the understanding of space during the modernization period expanded not only at the scale of the city or building but at the cosmic scale as well.

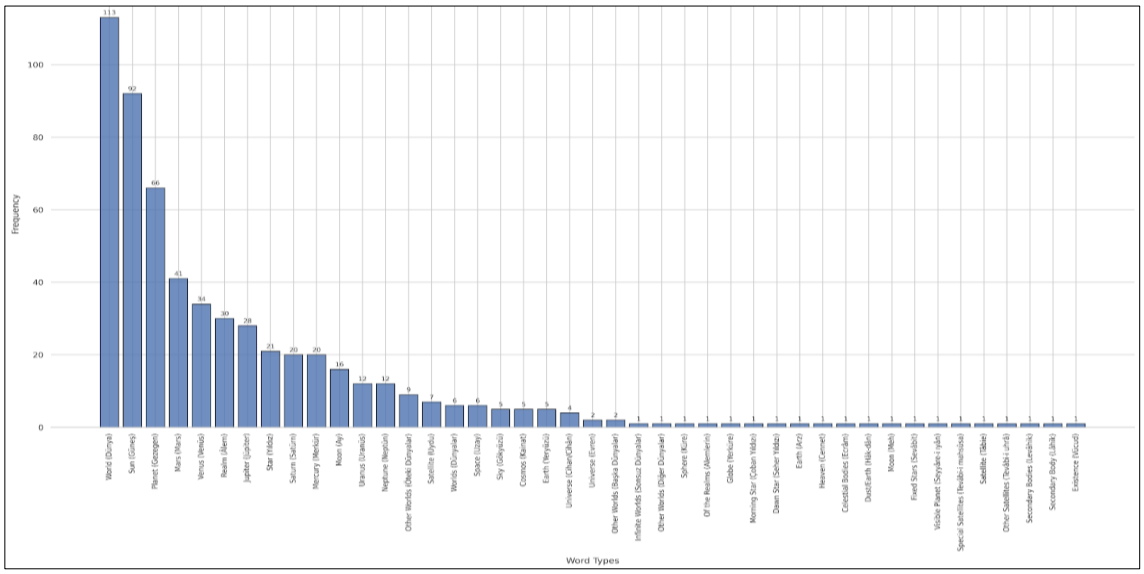

Figure 11. Word types and frequencies at the universe scale (Prepared by the authors).

These concepts transform the universe from a simple physical void into an ideological and mental representational space for Ottoman thought. Thus, modernization becomes a spatial practice that enlarges the boundaries of spatial imagination: the human subject is now positioned not only within the city or the building but within the cosmos itself. The diversity of cosmic terminology in scientific novels confirms, through spatial representation, the utopia–science fiction hybridity discussed in the theoretical section of this study. In this context, space is constructed not through the concrete volumes familiar to architecture but through physical conditions, astronomical distances, and geological differences that define an abstract environment. The universe becomes, in Bakhtin’s sense of the chronotope, a cosmic spatial stage where time and ideology intersect.

- World Scale: The spatial data at the world scale show that, in the intellectual horizon of Ottoman modernization, the natural environment is not imagined merely as a romantic landscape but as a “field of exploration” that must be redefined through scientific knowledge (Figure 12). The use of geographical terms such as “Volcano”, “Icebergs”, and “Pole” demonstrates how scientific novels carried the spirit of science and discovery into society through literature. The author does more than describe these uncanny geographies; he imagines them as “bio-experimental zones” where future orders can be established and alternative forms of life can be tested.

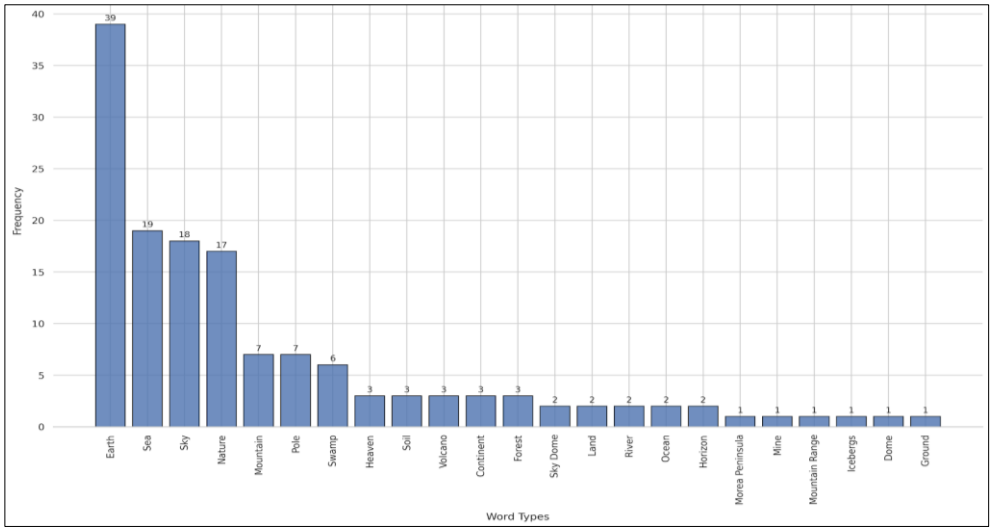

Figure 12. Word types and frequencies at the world scale (Prepared by the authors).

The world scale is the most concrete expression of the utopia–science fiction hybridity emphasized in the theoretical section. In contrast to the abstract cosmic expansion at the universe scale, space here is grounded in tangible and observable elements of nature. The spatial construction of the world scale is not built with walls or roofs but with lava, ice, water, and the horizon line -forming a speculative architecture of nature.

- City Scale: The scarcity of city-scale data is itself an indicator of the text's spatial ideology (Figure 13). The work constructs a post-urban spatial imagination that does not center urban order, but relegates the human-made environment to a secondary position, and prioritizes cosmic conditions of life. The limited presence of city-related terms shows that the spatial focus of the novel has completely shifted away from the built environment; its definition of "civilization" is no longer grounded in urban organization but in planetary biology.

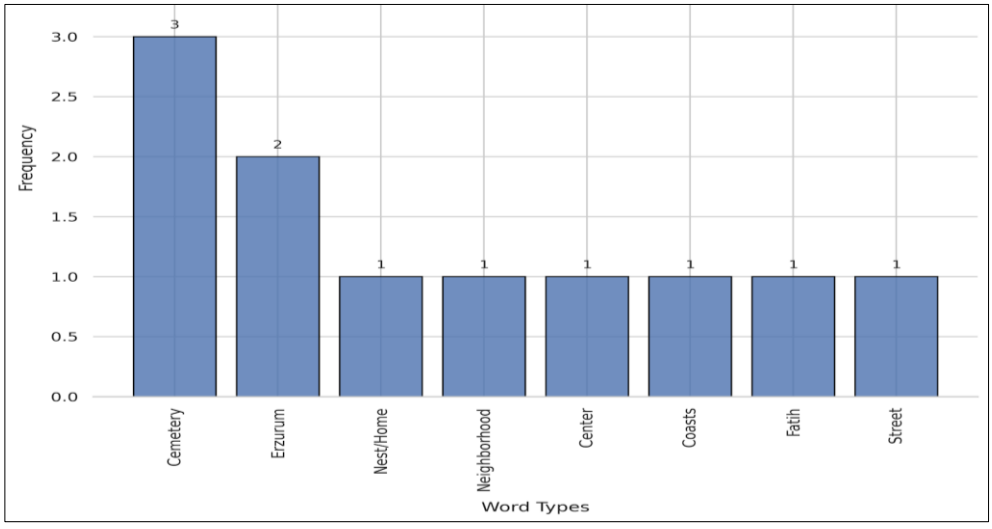

Figure 13. Word types and frequencies at the city scale (Prepared by the authors).

The few specific place names that do appear -such as Erzurum (2) and Fatih (1)- do not serve to establish an urban setting. Instead, they function as "climatic and geographical reference

points" used by the author to help the reader grasp unfamiliar cosmic conditions (e.g., "Mars is as cold as Erzurum"). Thus, the city is not depicted as a lived space but as a unit of measurement for making the cosmos intelligible.

- Building Scale: The numerical scarcity of building-scale data indicates that architectural form is almost entirely erased in the novel, giving way instead to biological and geological formations (Figure 14).

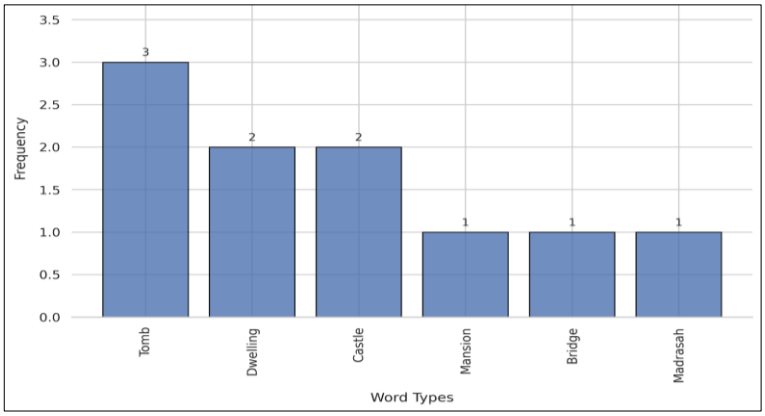

Figure 14. Word types and frequencies at the building scale (Prepared by the authors).

Despite this "lack of terminology", the appearance of concepts such as Dwelling (2), Castle (2), Tomb (3), and Madrasah (1) should not be viewed as random choices. Rather, they can be understood as deliberate examples of "architectural anachronism". By inserting building types belonging to the Ottoman past (such as the madrasa or fortress) into a futuristic and cosmic narrative, the author seems to domesticate the unfamiliar expanse of outer space through recognizable historical imagery.

- Structure Scale: The presence of only a single element at the structure scale (Figure 15) may at first appear to signal a lack of data; however, it actually provides a strong clue about how the novel instrumentalizes architecture.

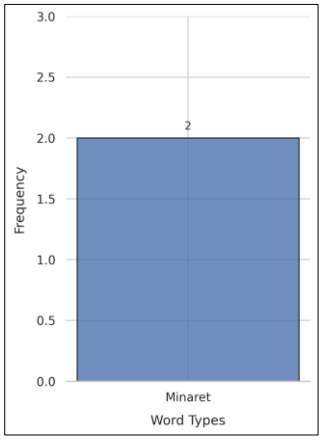

Figure 15. Word types and frequencies at the structure scale (Prepared by the authors).

In the author's cosmic narrative, architecture is used merely as a "scalar reference tool". When expressions such as "trees as tall as minarets" are considered, it becomes evident that the

"Minaret" is not employed as a religious or structural entity but as a familiar standard of verticality and height for the Ottoman reader. Through this reference, the author conveys the immense proportions of an unfamiliar cosmic landscape by comparing them to the most recognizable tall structure in the reader's architectural memory-the minaret.

4. Comparative Findings and Discussion

The comparison of the three works examined in this study is not merely a quantitative distribution analysis; it also reveals, through the application of one of architecture's fundamental concepts –scale- to literary texts, the spatial layers in which the discourse of modernization is constructed. Word lists in all works were scanned using the same method, independently of context, and only expressions indicating space were included in the analysis. Therefore, the differences between scales can be understood as genuine spatial projections of the representational strategies of the texts (Table 4).

Table 4. Word types and numbers used in the text according to spatial scales in the analyzed novels (Bayrak, 2024).

	Universe		**World**		**City**		**Building**		**Structure**	
Novel Num.	Word Types	Word Count	Word Types	Word Count	Word Types	Word Count	Word Types	Word Count	Word Types	Word Count
Novel-1	4	12	15	114	34	90	34	157	12	58
Novel-2	12	195	42	165	76	436	82	326	51	465
Novel-3	57	576	33	114	8	11	6	10	1	2

When the spatial scales of the three works are compared, it becomes clear that they differ significantly in their use of the universe scale. In *A Scientific Novel, or The Doctors of America*, the universe scale remains quite limited. This is because the author's narrative aim is not to construct a cosmic spatial imagination but to introduce Western science and modern institutions at the architectural and institutional scales of social space. Here, space is drawn toward the "middle-scale environment" of human life-city, institution, and building. In contrast, *Seeing the Progress and Civilization of Islam in a Dream* employs the universe scale much more prominently. This usage signals that the project of Islamic civilization is imagined not only as situated within Ottoman territories but as extending toward a universal spatial horizon. As Varol (2023) notes, the novel expands the idea of the nation-state into a cosmic domain through the concept of a "collective dream"; space becomes an ideological plane of representation. *Are There Living Creatures on Other Worlds?*, however, places the universe scale at its core. In this work, the idea of modernization is constructed not through architectural or urban forms but through large-scale spatial laws shaped by scientific reasoning and cosmological imagination. As Uyanık (2011) emphasizes, such scientific novels functioned as "cosmic laboratories" for Ottoman intellectuals, enabling architecture to exceed its usual building–city scales and turn toward understanding the physical order of the universe.

Differences at the world scale offer important clues for understanding how Ottoman modernization positioned itself in relation to global space. In *A Scientific Novel, or The Doctors of America*, the world scale appears with moderate intensity, suggesting that the Earth is used primarily as a contextual and referential surface. In this sense, the world scale aligns with

architectural concepts such as “environment”, “site selection”, and “natural context”. *Seeing the Progress and Civilization of Islam in a Dream* presents the most comprehensive vision at the world scale. Mustafa Nazım Erzurumi situates modernization not only within the Ottoman realm but across the entire Islamic geography, thereby placing it within a global spatial framework. Here, the world is reimagined as a civilizational landscape. Varol’s (2023) notion of the “collective dream” underscores this global spatial imagination. In *Are There Living Creatures on Other Worlds?*, the world scale is comparatively limited. Earth is treated not as an architectural or settlement-based space but as a scientific reference planet used to test the possibility of life elsewhere in the universe. Thus, the world scale becomes a “foundational spatial model” for the cosmic comparisons developed in the narrative.

The city scale is a decisive layer for understanding how the three works spatialize Ottoman modernization. In *A Scientific Novel, or The Doctors of America*, the city functions as the visible face of modernization. Ahmet Midhat introduces the Ottoman reader to a modern urban organization by illustrating how Western cities establish spatial relationships with scientific institutions. Here, the city becomes a spatial framework in which modern knowledge, social transformation, and institutional structure are enacted. *Seeing the Progress and Civilization of Islam in a Dream* is the work that employs the city scale most intensely. In Erzurumi’s utopia, the city transforms into an ideological spatial composition where transportation networks, public buildings, squares, educational institutions, and technical infrastructure come together. The city becomes the architectural and social representational surface of a modern Islamic civilization. In *Are There Living Creatures on Other Worlds?*, the city scale is extremely limited. This is because the spatial construction moves away from the city–building-structure scales and shifts toward the universe and world scales. As a result, the city appears not as a spatial unit of modernization but as a secondary element pushed into the background.

The building scale reveals more concretely how modernization relates to social institutions. In *A Scientific Novel, or The Doctors of America*, the building scale is prominent; structures such as schools, hospitals, and laboratories function as architectural tools through which Western modernity is introduced to the Ottoman reader. These building types play a didactic role in the narrative as the spatial embodiments of modern science. In *Seeing the Progress and Civilization of Islam in a Dream*, the building scale is much richer and more structurally pronounced. From educational institutions to places of worship, each building is not merely a functional unit but an architectural representation of the utopia’s ideological program. Erzurumi materializes the idea of a modern Islamic civilization at the building scale; architecture becomes the carrier of the utopia itself. By contrast, *Are There Living Creatures on Other Worlds?* offers almost no data at the building scale. In this cosmic narrative, architecture is replaced by the natural environment and the physical laws of the universe, leaving no space for the production of conventional built forms.

The structure scale is the level at which spatial differentiation among the three works becomes most pronounced. In *A Scientific Novel, or The Doctors of America*, the structure scale is visible; the concrete spaces of modern science -such as operating rooms, laboratories, and clinics- demonstrate how modernization enters everyday life. *Seeing the Progress and*

Civilization of Islam in a Dream offers the richest examples at this scale. In Erzurumi's utopia, the structure scale represents the micro-architectural organization of the modern order. Details related to educational and health care facilities, and places of worship form a spatial system that integrates with the city scale. In *Are There Living Creatures on Other Worlds?*, the structure scale provides almost no data. This absence aligns with the novel's cosmic orientation, which shifts space away from human-made enclosed volumes and toward the open environmental conditions of planetary surfaces.

5. Conclusion

This study examined three late Ottoman "scientific novels" through the lens of spatial scales in order to understand how the boundaries of modernization were constructed within literary texts. The central question was whether space in these novels functions merely as a descriptive backdrop or as an ideological spatial order in which modernization ideals, political utopias, and technological imaginaries are materialized. Although Ottoman modernization is often discussed at the level of institutions, political reforms, and social transformation, literary texts, particularly scientific novels, serve as "intellectual laboratories" that make visible the mental, cultural, and spatial dimensions of this process. For this reason, the study compared how each novel constructs space across different scales and representational strategies.

The selected corpus includes Ahmet Midhat Efendi's *A Scientific Novel, or The Doctors of America* (1888), Molla Davudzâde Mustafa Nazım Erzurumi's *Seeing the Progress and Civilization of Islam in a Dream* (1913), and Osman Nuri Eralp's *Are There Living Creatures on Other Worlds?* (1918). These works were chosen because each constructs the idea of modernization at a different spatial scale. Ahmet Midhat frames modernization at the level of the city and the building, presenting Western institutions as practical architectural models. Mustafa Nazım designs a detailed and integrated spatial system -ranging from the city to the building and the interior- through which an Islamic utopia is articulated. Eralp, by contrast, shifts modernization away from social or architectural environments and reimagines it within a cosmic, scientific spatial framework. This diversity illustrates that scientific novels are not only literary forms but also epistemological, ideological, and spatially distinct imaginaries.

The methodology combined qualitative and quantitative techniques. The qualitative analysis examined how spaces were represented, coded, and assigned ideological functions within the narrative. The quantitative analysis systematically extracted spatial vocabulary, eliminated repetitive variants, and classified all spatial terms under five scales: Universe, world, city, building, and structure. This approach allowed the spatial patterns of scientific novels to become visible not only descriptively but also statistically. Its originality lies in combining literary analysis with the architectural logic of scale.

The findings show that each spatial scale contributes differently to the discourse of modernization. At the universe scale, *Are There Living Creatures on Other Worlds?* is the strongest example, grounding modernization in cosmic terms. *Seeing the Progress and Civilization of Islam in a Dream* expands the universe scale through a global–cosmic vision of Islamic civilization, while *A Scientific Novel, or The Doctors of America* uses it minimally,

focusing instead on the world and city layers. At the world scale, *Seeing the Progress and Civilization of Islam in a Dream* offers the broadest spatial horizon; Ahmet Midhat adapts Western institutions into a localized model of modern space; Eralp treats the world as a comparative reference point within a cosmic system. At the city scale, *Seeing the Progress and Civilization of Islam in a Dream* constructs an elaborate urban utopia with public spaces, transportation networks, and civic institutions. Ahmet Midhat uses the city as a site of observation and comparison, while Eralp largely abandons the city scale. At the building scale, *Seeing the Progress and Civilization of Islam in a Dream* presents the richest organizational scheme; Ahmet Midhat positions buildings as architectural carriers of modern knowledge; Eralp scarcely uses this scale. At the structure scale, *Seeing the Progress and Civilization of Islam in a Dream* reveals modernization penetrating daily life through micro-architectural elements such as doors, floors, domes, and elevators, while Ahmet Midhat remains moderate and Eralp omits the scale entirely.

Overall, the study demonstrates that scientific novels offer more than a literary genre; they present a spatial mode of thinking within Ottoman modernization debates. The multi-layered environments constructed from the universe to the structure scale show that Ottoman intellectuals reproduced the idea of modernization through architecture, geography, science, and ideology. These novels reveal that modernization was not only a matter of political reform or institutional transformation but also of spatial imagination of the everyday life structured by micro-architecture, and of the social order envisioned at the urban scale. Positioned at the intersection of literature and architecture, these texts make visible the spatial modernity imagined during a period of profound social and ideological transformation.

Declaration of Ethical Standards

This article complies with national and international research and publication ethics.

Ethics Committee Approval was not required for the study.

Conflict of Interest

There was no conflict of interest between the authors during the research process.

Authors' Contributions

All authors contributed equally to the article.

Declarations

The authors take full responsibility for the content and any modifications made during this process.

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Originality Report

The article has been confirmed that it does not contain any plagiarism according to the originality report obtained from the iThenticate software.

Notes

This study is evaluated under the double-blind peer review system.

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References

Ahmet Mithat Efendi. (2020). *Fenni bir roman yahut Amerika doktorları*. M. F. Andı (Ed.), Ankara, Türkiye: Türk Dil Kurumu Publications.

Andı, M. F. (1993). Fenni roman. *Dergâh,* 37, 11–18.

Asiliskender, B. (2004). Kimlik, mekân ve yer deneyimi (Identity, space and spatial experience). *Kültür ve İletişim*, *7*(14), 73–94. https://izlik.org/JA65CH84JM

Bakhtin, M. M. (1981). *The dialogic imagination*. M. Holquist (Ed.), C. Emerson & M. Holquist (Trans.), Austin, USA: University of Texas Press.

Balcı, U. (2012). Franz Kafka'da mekân ve yabancılaşma (Place and enstrangement in Franz Kafka). *The Journal of Academic Social Science Studies*, *5*(39), 35–41.

Bayrak, M. (2024). *Osmanlı fenni romanlarında mekan analizi*, (Unpublished master's thesis). Karadeniz Technical University, Trabzon, Türkiye.

Berkes, N. (2002). *Türkiye'de çağdaşlaşma*. İstanbul, Türkiye: Yapı Kredi Publications.

Dağ, N. (2017). *Utopia in Turkish novel during the Republican Period (1923–1950)* (Doctoral thesis, Adıyaman University, Adıyaman, Türkiye). Retrieved from https://tez.yok.gov.tr/UlusalTezMerkezi/tezDetay.jsp?id=f96LWrfDvDc6FOdvk3IlyQ&no=EV7pfMrjCojUi7DC9CyQHQ

Dener, A. (1995). Yazında mekân. *Kuram*, *7*, 73–79.

Dural, G. E. (2020). *Modernleşme sürecinde Osmanlı mahallesinin dönüşümü: İstanbul-Üsküdar ve Saraybosna-Stari Grad örnekleri* (Master's thesis, Üsküdar University, İstanbul, Türkiye). Retrieved from https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp

Durak, M. İ. (2018). *An Ottoman intellectual in science and modernization perspective: Doctor Abdullah Cevdet* (Master's thesis, Abant İzzet Baysal University, Bolu, Türkiye). Retrieved from https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp

Ekinci, A. (2021). *Son dönem Osmanlı ıslahat ve reform tartışmaları: Namık Kemal'in fikirleri çerçevesinde bir modernleşme önerisi* (Master's thesis, Medipol University, İstanbul, Türkiye). Retrieved from https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp

Eralp, O. N. (2019). *Başka dünyalarda canlı mahlukat var mıdır?* M. Köken (Trans.), İstanbul, Türkiye: Karakarga Publications.

Foucault, M. (2015). Mekânın ötekileri. In I. Ergüden (Trans.), *Özne ve İktidar* (pp. 355–368). İstanbul, Türkiye: Ayrıntı Publications. (Original work published 1986)

Hasol, D. (1975). *Ansiklopedik mimarlık sözlüğü*. İstanbul, Türkiye: YEM Publications.

Kara, İ. (2020). *Din ile modernleşme arasında: Çağdaş Türk düşüncesinin meseleleri*. İstanbul, Türkiye: Dergâh Publications.

Lefebvre, H. (1991). *The production of space*. D. Nicholson-Smith (Trans.), England: Blackwell. (Original work published 1974)

Lefebvre, H. (2014). *Mekânın üretimi*. I. Ergüden (Trans.), İstanbul, Türkiye: Sel Publications.

More, T. (1968). *Ütopya*. S. Ertüzün (Trans.), İstanbul, Türkiye: Can Publications.

Narlı, M. (2002). Romanda zaman ve mekân kavramları (Concept of time and place in novel). *Balıkesir University The Journal of Social Sciences Institue*, *5*(7), 91–106. https://izlik.org/JA22MM49GH

Simpson, J., & Weiner, E. (Eds.). (1989). Space. In *The Oxford English dictionary*. Oxford, England: Clarendon Press.

Soja, E. W. (2019). *Postmodern coğrafyalar: Eleştirel toplumsal teoride mekânın yeniden ileri sürülmesi.* I. Ergüden (Trans.), İstanbul, Türkiye: Sel Publications.

Sözen, M., & Tanyeli, U. (1994). *Sanat kavramları ve terimleri sözlüğü.* İstanbul, Türkiye: Remzi Publishing House.

Tanju, B. (1999). 1908–1946 The Conceptual Frame of the Architecture in Turkey (Doctoral thesis, İstanbul Technical University, İstanbul, Türkiye). Retrieved from https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp

Türkmenoğlu, S. (2014). Bir ütopya romanı: Rüyada terakki ve medeniyet-i İslamiyeyi rü'yet (An utopia novel: Ruyada terakki ve medeniyet-I Islâmiyeyi rü'yet). *The Journal of International Social Research*, *7*(31), 289–295.

Uyanık, S. (2011). The Reason in Tendency Towards Science and Designation of Future in Ottoman-Turk Narrations Late 19th and Early 20th Centuries (Doctoral thesis, İhsan Doğramacı Bilkent University, Ankara, Türkiye). Retrieved from https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp

Uyanık, S. (2013). *Osmanlı bilim kurgusu: Fenni edebiyat*. İstanbul, Türkiye: İletişim Publications.

Varol, A. (2023). The boundaries of Ottoman utopianism in "Rüyada terakki ve medeniyet-i İslamiyeyi rü'yet" (Doctoral thesis, Yıldız Technical University, İstanbul, Türkiye). Retrieved from https://tez.yok.gov.tr/UlusalTezMerkezi/tezSorguSonucYeni.jsp

Westphal, B. (2011). *Geokritik: Edebi mekânın teorisi*. Y. Erkan (Trans.), İstanbul, Türkiye: De Ki Publications.