CHAPTER 2

From Mass to Void: The Theoretical Boundaries of the Carved and A-Tectonic Space

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ABSTRACT

This study reexamines an approach that defines architecture primarily through adding, joining, and building, focusing instead on spaces created through carving and excavation. Architecture should be viewed not merely as a built object, but as a process, a product, and a tool that establishes spatial possibilities. Ludger Schwarte's philosophy of architecture interprets the production of space through the tectonic-a-tectonic distinction developed through discussions of void, boundary, ownership, and visibility as exemplified by Cappadocia's troglodytic spaces. In this context, he interprets "a-tectonic" not as the opposite of "tectonic" or as a lack of structure, but as the production of void through extracting material from geological mass and through the material identity and continuity between the shell and the ground. Architectural existence is established through negative volume rather than positive objects. It discusses how the carved-out space destabilizes the dichotomies of natural/artificial, ground/structure, interior/exterior, visible/invisible, and ownership/use. Ultimately, "a-tectonic" is less a style or typology than an analytical concept that helps rethink the conditions of architecture's existence and production.

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1. Introduction

Definitions of architecture are based on the act of construction; that is, the question of how a building is created. It is defined as the process of laying walls, installing load-bearing elements, flooring, erecting a roof, and assembling materials within a specific framework. For these reasons, the product of architecture is identified with the rise of a new mass on a pre-existing foundation. Nevertheless, in the history of space-making, there are places and spaces that this linear process of addition cannot explain. Cappadocian troglodyte spaces are formed by excavating, carving, and hollowing out the earth, rock, and mass. These spaces direct our attention to what must be removed to create a space, rather than what has been added to architecture.

Rather than merely producing a formal distinction, this inquiry also opens up a discussion of architecture's ontological status. While the root "arche" in "architecture" carries meanings such as beginning, source, principle, and power, "architectura" involves establishing and organizing a beginning (Schwarte, 2019). Within an etymological and philosophical framework, architecture is not merely the construction of an object; rather, it consists of the acts of separation, classification, and making visible that enable the emergence of a specific order. Foucault's discussions of knowledge orders and forms of representation also make it possible to interpret spatial order not as a neutral backdrop but as a structure that determines the conditions under which things appear and are classified (Foucault, 1970). The relationship established by Aristotelian urban thought between the environment, the form of governance, and social distribution also shows that space is as much a political arrangement as a physical one (Vilatte, 1995).

Hegel occupies a significant place in architectural discourse. In examples such as the Tower of Babel, Hegel views the structure not merely as a functional building but as the material expression of the desire for community and unity (Hegel, 1875).

More importantly, in his distinction spanning from symbolic architecture to classical and romantic architecture, he locates caves, hollows, and subterranean spaces at the historical and conceptual boundaries of architecture, suggesting that enclosure and framing can be achieved not only as walls of isolation but also by opening a void within the existing mass (Hegel, 2016). Thus, it shows that structure and space are not the same thing and that, in some cases, space even precedes the structural object; in utopian thought, architecture's role in making the social order visible similarly underscores the relationship between space, property, and community (Mach, 2014).

In classical architectural theory, Vitruvius's triad of firmitas, utilitas, and venustas provides a foundational framework for evaluating architectural works in terms of strength, functionality, and beauty (Vitruvius, 2016). Alberti emphasizes the unity of drawing and materials, while Palladio expands this to include modern tools, materials, and craftsmanship as components of architectural practice (Alberti, 2004; Palladio, 1980). This tradition strongly emphasizes the quality of architectural planning and construction; however, it deprioritizes carved space in both planning and construction. Here, architecture is formed not by the assembly of architectural parts but by the selection and revelation of potential voids within a solid mass. Consequently, this study approaches the difference between tectonic and non-tectonic not as a formal opposition but as two distinct ontologies of space production.

This study primarily examines how the architecture of carved space redefines its theoretical framework by bringing together conceptual threads. First, the study examines the philosophical and ontological foundations of architecture through the concepts of arche, artifact, place, void, and experience. Second, the distinction between tectonic and a-tectonic will be explored in greater depth through the specific spatial logic of the Cappadocia example. In the third chapter, the discussion will focus on why relationships involving boundaries, law, property, and belonging become a more visible problem in carved space. In the fifth chapter, the theoretical thresholds of a-tectonic space will be analyzed along the axes of natural/artifact, mass/void, ground/structure, interior/exterior, visible/invisible, and property/use. Thus, this study aims to position a-tectonics not as a negative image of tectonics, but as an independent analytical framework that questions the conditions under which architecture emerges.

2. Material and Method

From the philosophy of architecture, the fundamental issue is that the question "What is architecture?" cannot be answered solely in professional or flexible terms. Heidegger's consideration of the relationship between building, dwelling, and thinking highlights architecture's connection to the way humans exist in the world (Führ & Heidegger, 2000). In this approach, a building is not an object added to life at a later stage; rather, it is a material condition for how humans give meaning to their environment, establish distance and closeness, produce, and settle in a place. Fischer and Delitz's assessments of architecture's capacity for social communication also emphasize that every building conveys

a worldview, whether explicit or implicit (Fischer & Delitz, 2009). Therefore, while architecture organizes the physical environment, it also establishes a communicative environment for social behaviors, values, and expectations.

Architecture's act of establishing order distinguishes it from mere functional organization; order reveals values, hierarchies, and relationships that go beyond mere purposes. For this reason, architectural order has a cultural dimension (Neumeyer & Rohe, 1995). Illies' philosophy of architecture is embedded in a broad definition that extends from design and construction practices to a building's function, its impact on nature, user safety, its influence on social behavior, and its cultural and symbolic meaning. Conceiving architecture as an activity, a product, and a tool shows that even the unbuilt, or so-called natural, environment can be related to architectural processes. The idea of negativity and the revelation of latent qualities evident in Adorno's aesthetic thought allows architecture to be interpreted not merely as a positive object serving specific purposes, but as an arrangement that makes the as-yet-undefined visible (Adorno, 1995).

In this context, ontology is a central tool for understanding the freedom of carved space; the ontological question of "being as being" raises questions about the conditions under which an architectural entity exists on its own and the conditions under which it depends on another entity (Borchert, 2006). While physical materials, structural elements, and spatial boundaries constitute the realm of real existence, the layer that imparts meaning, function, and aesthetic integrity to the structure is conceived as a real ontological order. This framework is linked to aesthetic ontology, which emphasizes the distinction between the work of art and its material carrier (Yetişkin, 1991). Studies interpreting Hartman's layered ontology also help explain the connection between the physical carrier and meaning, value, and aesthetic perspective through a non-unilayered ontological model.

The carved space turns this ontological framework on its head: in traditional construction, elements such as the structural system, walls, floors, and roof are brought together to create a container, and the void is defined within this shell; in a troglodytic space, however, the shell already exists: the geological mass is physically present before any architectural action. Rather than adding to the mass, the architectural intervention subtracts from it. Thus, the relationships between the enclosing and the enclosed material, space, structure, and ground differ from those of the conventional architectural object. Architectural existence is now read not only from the arrangement of added material but also from the traces of removed material. This situation requires establishing

the ontology of carved-out space not as an ontology of absence but as a positive spatiality produced by the act of subtraction.

2.1. Space, Place, and Emptiness: From Khora to Experience

The philosophical history of space makes it difficult to view the carved space merely as a technical form of production; along the historical line traced by Schwarte, concepts such as khoro, topos, and kenon demonstrate that space does not have a single meaning (Schwarte, 2019). While khora is conceived as a gap, a space between things, or a clearing, emptiness is not merely an absence where nothing exists, but rather an interval that makes it possible for things to appear and be distinguished from one another. In Giordano Bruno's conception of an infinite, ever-changing universe, space is not merely the sum of objects, but an openness that enables their separation and emergence into view (Bruno, 1987). From this perspective, carving does not so much adorn an already existing volume as bring into view an as-yet-undefined spatial possibility by selecting it.

In this context, it is important to consider Heidegger's concept of space alongside the processes of making space, situating, and dwelling (Führ & Heidegger, 2000). To build is not merely to position an object within space, but to bring places into being; in a carved-out space, this act of "making a place" directly transforms into a material process: the creation of a void within a mass of rock removes the surrounding material while simultaneously producing the distinction between interior and exterior, pathways of movement, and a living space. Bachelard's discussion of the poetic nature of space through the imaginative relationship between the interior and the exterior also shows that spatial images such as caves, hollows, niches, and depths are not merely geometric volumes; they are experienced alongside memory, protection, and imagination (Bachelard, 1958).

Foucault's approach, which interprets space as a series of relationships, makes visible the connections subjects establish with one another; however, the carved-out space brings to the fore not only relationships but also material continuity and discontinuity (Foucault, 1984).

Even if a room enclosed by a wall and a room carved out of a rock mass have geometrically similar volumes, the form of existence of the boundaries of these two spaces is not the same. In the former, the boundary has been added; in the latter, the boundary is the mass remaining after the act of carving. In the first, the surface functions primarily as an element separating two different materials or environments, whereas in the second, the surface is a trace cut

out of the mass. Consequently, a-tectonic space requires us to conceive of the boundary not as a ready-made line or a subsequently added shell, but as a thick, continuous threshold that emerges through the subtraction of matter.

2.2. From Mass to Void

In architectural theory, "tectonics" is strongly linked to the expression of building, assembling, and construction. The Greek word "tekton" means "carpenter" or "builder"; historically, the concept embodies the unity of craft, material, and structural order.'s discussion of tectonic culture emphasizes that architecture is not merely a visual composition but a cultural and poetic expression of building logic (Frampton, 1995). Within this framework, connection, assembly, and support are the foundational elements of architectural meaning. The strength of tectonic thinking lies in making how a structure stands and how its elements come together an integral part of architectural expression. However, the same conceptual framework becomes limiting when it assumes space is always produced by adding elements.

In this study, the concept of "A-tectonics" does not refer to a formless or disordered architecture in the sense of being the opposite of tectonics. Rather, it describes a mode of production that reverses the direction of construction. Within the natural geological formation of Cappadocian tuffs, the production of space involves creating voids by drilling, digging, and carving into the mass rather than adding a new load-bearing skeleton to it; therefore, an "a-tectonic" space is not a state devoid of any technique, but rather a state in which technique is organized around operations of subtraction rather than addition. This work attempts to explain the fundamental ontological difference between troglodític space and above-ground space constructed on the ground using these two distinct concepts (Akcan, 2017).

The most significant consequence of this distinction is the shift in the relationship of priority between mass and void. In a tectonic approach, the designer typically creates a mass within an empty lot or open space; space forms both within and between the parts of this mass. In the A-tectonic context, however, the designer's starting point is solidity. The architectural act involves deciding which parts of the solidity to preserve and which to remove. At this stage, the designer must be considered not in the conventional sense but in terms of the user's action. In this context, the fundamental problems of design also change: instead of asking "where should the wall be placed?" the question becomes "which part of the wall should be left standing?"Instead of asking "how should an opening be added?" the question becomes "which mass should

be removed to create an opening?"And instead of asking "how should the structure be built?" the question becomes "to what extent should the continuity of the existing mass be preserved?" Thus, architecture shifts from constructing objects to selecting a void and subtracting mass.

Schwarte's approach,, which argues that reducing architecture solely to the organization of geometric space is insufficient, supports this reversal (Schwarte, 2019). The architectural experience is an environment shaped by the interplay of numerous elements, such as surface, material, light, humidity, sound, temperature, color, texture, and movement. These elements are particularly evident in carved spaces: the thick mass of rock delays temperature changes; the limited number of openings determines the intensity and direction of light; the continuity of the surface alters the experience of sound and touch; and depth creates a threshold in the space's relationship with the outside. For this reason, a-tectonics can be understood not only as a construction technique but also as a distinct environmental and sensory architectural regime.

The theoretical significance of spaces carved out in Cappadocia lies in the difficulty of distinguishing between ground and structure. Classical architectural representation treats a structure as an object rising above the ground line: the plan, section, and elevation define the structure's boundaries, while the lot, walls, and roof make ownership and use visible. In a triglodite space, however, the architectural shell continues the ground. It is impossible to distinguish with a clear line where the wall begins, where the structure ends, and where the natural mass becomes architectural. Norberg-Schulz's concept of "genius" can explain the reciprocal relationship between a place's physical qualities and how humans interpret them (Norberg-Schulz, 1982). However, in Cappadocia, the spirit of the place is evident not only in an architectural style that harmonizes with the landscape but also in the place's direct transformation.

Norberg-Schulz's concept of natural sites transformed into settlements through human intervention defines shelter as part of the relationship between people and place (Norberg-Schulz, 1982). However, troglodytic spaces show that this transformation does not necessarily take the form of a natural environment combined with added structures; settlement can also occur by creating an interior space within a natural mass. For this reason, a-tectonics is not a proposal for a return to nature or romantic primitivism; its true significance lies in relaxing the categorical distinction between the architectural object and the natural terrain, and in transforming the initial design data from a vacant lot into a filled, historical mass.

3. Findings and Discussion

In architecture, a boundary is never merely a physical line. Defining the interior and exterior, regulating access, separating activities, and determining who may enter a space and under what conditions are all social and legal decisions. Pierre Caye's approach, which views architecture as the art of creating space through distancing, reminds us that walls do not merely enclose; they generate distance, openness, and usable space (Caye, 2000). Kevelson's work on the relationship between space and meaning also suggests that legal representation is less an abstract system than something that materializes through spatial distinctions and signs (Kevelson, 1996). From this perspective, architecture and law perform a similar function, albeit with different tools: they establish boundaries, define roles, and create spaces for access and behavior.

Viewing law as a communication system makes the common ground it shares with architectural order more evident. Van Hoecke approaches law as a communicative structure that helps regulate the interactions of its social effects (Hoecke, 2002). Viewing law through the lenses of accessibility and communicability highlights the importance of rules not merely existing but being understandable and enforceable (Cartier, 2008). Together, these perspectives make clear that architectural form is not a neutral shell that follows the law; rather, it is often the material manifestation of legal recognitions and classifications.

Property is one of the strongest focal points of this relationship. According to Schwarte, property is not merely a production relationship or a legal definition, but a system of ownership linked to the world's architectural division (Schwarte, 2019). For a place to become possessable, one must define its boundaries, qualities, and usability. Locke's approach, which links property to the individual's body and labor, demonstrates how ownership is established between the subject and the object (Locke, 1997). Rancière's discussions on the distinctions between the public sphere and the private, meanwhile, remind us that property is always a political distribution (Rancière, 1995). This distribution becomes even more complex due to the disconnect between surface and depth in the played-out space.

The legal issue surrounding troglodytic spaces is related to the fact that architectural representation and property registration are often based on the logic of the surface, the assumption that the parcel boundary, title deed, and plan can be divided into two dimensions. Yet, a lived-in space can extend from beneath one parcel to another, overlap with different codes, or share the same vertical axis with another tectonic structure on the surface. In such a situation,

different users can use the same place across different historical periods and within different spatial systems, both on the surface and in depth.

In this context, the "troglodytic space" challenges the model of the visible, measurable, and surface-fixed object assumed by modern property systems. Marx's discussion linking private property to labor and the means of production reveals the connection between property and the possibilities of use and disposal (Marx, 1893). Lefebvre, by contrast, shows that space is not merely an object but an order produced and reproduced by social relations (Lefebvre, 1974). Consequently, the legal definition of carved-out space cannot be limited solely to the question of "which parcel it lies beneath"; it must also encompass relationships such as access, use, maintenance, preservation, historical layers, and partnership. Here, the third dimension of architecture inevitably leads to the expansion of property into this third dimension as well.

The political establishment of a space is not solely a matter of private property; how public space is constituted also depends on architectural boundaries and modes of access. In Schwarte's discussion of public space, publicness is not merely a void within a pre-programmed reality of use, but rather a space of possibility where people come together to perceive one another and where unforeseen actions can emerge (Schwarte, 2019). This approach emphasizes not only architecture's power to establish order but also its capacity to make room for uncertainty. From this perspective, a troglodytic space cannot automatically be considered private simply because it is narrow, dark, or enclosed; rather, publicness is a more complex network of uses and relationships than mere physical visibility.

Lefebvre's discussions of urban and social space show that community boundaries and spatial divisions give concrete form to social relations (Lefebvre, 1970). Debord's critique of modern urban planning, by contrast, highlights the commodification of space and the control of everyday life through representations (Debord, 1976). Houellebecq's critique of the reduction of human relationships in modern culture to quantitative and economic criteria implies that the built environment, too, can become part of this logic of quantification (Houellebecq, 2015). In this context, eroded spaces should not be romanticized; however, measuring, certifying, and transforming them into tourist attractions risks reducing their layers of invisible historical use to a single category of ownership or consumption.

For this reason, property should be conceived as more than mere ownership in a tectonic space. Property also encompasses intangible relationships such as duration of use, memory, maintenance, access, neighborliness, ritual, and the

common good. Architecture's role is not merely to represent these relationships; it also influences which relationships are possible. The invisible depth of the carved-out space sharpens the distinction between ownership and use by demonstrating that legal boundaries do not always coincide with physical ones. Thus, a-tectonic space transforms ownership from merely a matter of a parcel delineated on the surface; it presents it as a spatial relationship to be interpreted through access, continuity, shared use, and visibility.

Conceptually delimited land involves a sense of belonging within a legally defined area. In this way, land division defines a boundary that is both legal and geographic. Conceptually, each represents a geographic area defined as a continuous ground line connecting Euclidean points. (Fitzpatrick, 2009). Deductive research can determine the ownership status of a built form. A plot of land is defined as a component of the urban form. A plot of land is one of the elements of urban morphology within a city (Whitehand, 2009).

Until the 1960s, the archives contained no cadastral maps of the region. Title deeds were issued based on individual declarations. For underground spaces, ownership continued through division upon the titleholder's death. Where boundaries were variable, parties reached solutions through mutual agreements. As a result of the Disaster Law, which was implemented in many parts of the region in 1969, a committee was appointed in the 1970s to conduct studies in the area. Various problems were encountered in all spaces formed by excavating rock above and below ground (Ozkan, 2009).

This document (Figure 1) was prepared based on information obtained from the Nevşehir Land Registry and Cadastre Directorate. The shaded areas indicate underground spaces. Entrances leading from the surface to underground are marked with arrows. No data is available for these areas; they are shown for illustrative purposes only.

July 1, 1970—Report No. 2.1.6.33/1808: Surveys were conducted in the neighborhoods under the jurisdiction of Ürgüp District. The decisions made are as follows:

"The corner points of the building facade boundaries within the rocky areas shall be marked on the existing property sketches in accordance with the polygon routes surrounding the plot; if this is not possible, the corner points of the building facade boundaries shall be measured and determined, and the results shall be indicated on the property sketches; and the boundaries of the plots shall be determined approximately in accordance with Article 47 of the Cadastral and Land Registry Regulations" was decided (Ozkan, 2009).

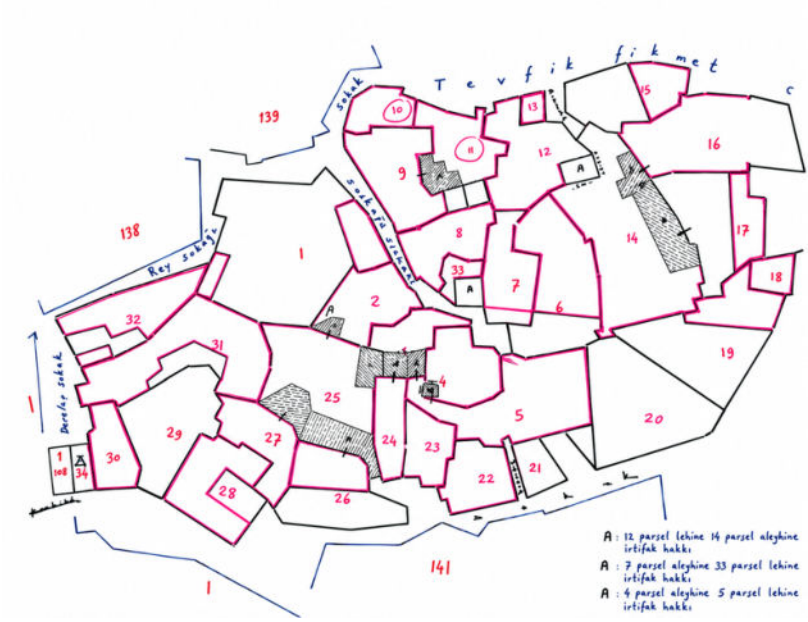


Figure 1 Urgüp Cadastral Map (A cadastral map from 1970 showing the boundaries of above-ground and underground areas) This document was prepared based on information obtained from the Nevşehir Land Registry and Cadastre Directorate.

On a plot-by-plot basis, the survey sketches schematically showed areas measured in meters. For example, in Plot 140 in the Dereler Neighborhood of Urgüp District, the rock carvings were used to prepare survey sketches in accordance with the aforementioned decision, and measurements were taken for the areas above ground. For areas located underground or beneath another's parcel, we drew two-dimensional shapes resembling the actual area on boundary maps with clearly defined outer limits, and granted easement rights through mutual agreements (Fig.1).

4. Conclusion and Suggestions

The biggest risk of the "a-tectonic" concept is that it homogenizes all rock-carved spaces into a single typological category. The rock-carved dwellings, places of worship, storage areas, and underground spaces in Cappadocia have distinct historical contexts, modes of use, and construction techniques. Therefore, "a-tectonic" should not be a formalistic approach that supplants this diversity. The concept's scope lies in understanding, through an analytical perspective, how a structure exists and how its boundaries are established

through a certain type of continuity. In this sense, "a-tectonics" is not a style, but a theoretical tool that describes the relationship between mass, void, and production. It should not be regarded as a primitive or incomplete form of tectonics. The load-bearing behavior, climatic performance, and usability of a carved space also require serious technical expertise. The fact that structural joints are not visible does not mean that there is no structural logic. On the contrary, the structure relies on the mass's continuous behavior rather than on jointed elements.

This study reinterprets the binary distinction by introducing the logic of subtraction and carving alongside the dominant notion of architecture as a process of addition and combination; in architecture's relationship with the "arche," ending the existing condition is as significant as establishing the beginning. To build is to reveal one thing while concealing or eliminating another.

The carved-out space makes this duality visible; the emergence of a new space depends on reducing physical material. Therefore, the a-tectonic absence is not the absence of architecture but the material production of void. This concept defines architecture not as an added object but through the void created within existing mass.

The troglodytic spaces of Cappadocia offer a field that simultaneously challenges architectural definitions of object, site, and ownership within this theoretical framework. The shell and the site form a single material continuum. The interior space cannot be fully read from the surface; depth transcends two-dimensional parcels and representational techniques; and ownership and use may not fully coincide with physical boundaries. These characteristics make the invisible relationship between architecture and law emerge more clearly in the carved-out space. Consequently, a-tectonic discourse is not merely an aesthetic and morphological issue but a framework that addresses existence, representation, registration, ownership, and publicness collectively.

Consequently, a-tectonics is more powerful not as an absolute category opposed to tectonics, but as a conceptual tool that defines the architect's theoretical boundaries. The dichotomies between the natural and the artifact, mass and void, ground and structure, interior and exterior, visible and invisible, and ownership and use cease to have definitive correspondences within the carved space. They are transforming into thresholds that generate one another. Therefore, the transition from mass to void is not merely a description of a construction technique but a re-examination of the assumptions that define architecture's existence through added material as a positive object and a form

legible from the outside. The carved space demonstrates that architectural research must consider not only what is built but also what is removed; not only what is visible but also what is hidden in depth; and not only the structure itself but also the void that makes the structure's emergence possible.

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

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There is no conflict of interest

Declaration on the Use of Artificial Intelligence and AI-Enabled Technologies

Alternatively, during the preparation of this chapter, artificial intelligence or AI-powered technologies were used as tools to correct language and grammar errors.

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