

**field:**

a free journal for architecture

PRINT ISSN: 2753-3638

ONLINE ISSN: 1755-0068

[www.field-journal.org](http://www.field-journal.org)

vol.II(I)

## A LYDIAN TUMULUS AND ITS ENTANGLED NEIGHBOURS: ARCHITECTURE IN/AS STRATIFIED GROUND

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This article traces the parallel operation of additive and subtractive forces across the territory and the participation of ritual layering, industrial extraction, maintenance, and neglect in the long durations of soil. Focusing on two sites in the Gediz River Basin in western Anatolia — Laletepe, a Lydian tumulus, and Çakalazmağı, a landscape shaped by decades of industrial clay extraction — the study reads them within a shared stratigraphy as regimes where continuity and rupture are intertwined. At Laletepe, an additive burial technique forms a stratum in which life, death, agriculture, and geology converge across time. Its integration with vineyards, alluvial flows, and ritual memory reveals soil as a co-producer of cultural and ecological temporality. By contrast, the extraction pits and artificial lakes of Çakalazmağı function as subtractive interventions that reorganise the ground's temporal fabric. These voids produce hybrid stratigraphies of sediment, debris, and erosion where weathering continues to inscribe time beyond formal construction. The article advances a stratified understanding of temporality in which the past is materially retained in the present and architectural action unfolds across layered, interscalar durations. Climate is thus reconceived as the temporal expression of these entanglements, rather than an external parameter against which architecture is measured. In this light, the Gediz Basin becomes both a site of inquiry and a conceptual ground for rethinking architecture's relation to the earth.

The environmental ruptures accentuated by the anthropocene require reconsidering architecture's relationship with climate and ground beyond instrumental metrics that treat climate as an external parameter and ground as a stable backdrop. This study conceptualises *climate as temporality*: climate exceeds measurable datasets; it is a relational process produced through the entanglement of space, time, and matter. Accordingly, to read architecture's *climaticity* is to examine how material practices are shaped through, and in turn reshape, the ground as a material-temporal mediator in which geological and social processes intersect.<sup>1</sup> To conceive climate as a fixed milieu enveloping our surroundings obscures our participation in its making, as bodies that weather along with it.<sup>2</sup> Its rhythms and cumulative effects operate across scales and through time, binding geological, ecological, and social processes together. Seen in this way, climate is a thick temporal fabric that ties the past to the present and the present to a plurality of possible futures; architecture emerges, transforms, and leaves traces within this fabric. This article proposes reframing the architecture-climate relationship through this thick time, that is, through the entanglement of space-time-matter, or *spacetime-matter*.<sup>3</sup>

Such a position requires approaching the ground as an active stratified formation. Soil extends beyond the surface upon which things *rise*: across its layers it is a stratum that traces political, cultural, ecological processes; it is also a material actor capable of transforming those processes. Kathryn Yusoff's *geosocial stratification* frames the Earth's geological strata as a substrate that constitutes and constrains social and political formations, beyond economic interests.<sup>4</sup> Architecture would thus encompass object

production within a wider material practice embedded in temporal relations with the ground — relations that precede and exceed the moment of construction.

Architecture is framed as a material practice that reorganises the ground through diverse forms and methods. It designates operations through which the ground is exposed, accumulated, stabilised, excavated, maintained across time. These operations include additive practices such as burial, cultivation, and construction, as well as subtractive practices such as extraction and material sourcing. Both modes of intervention reconfigure the temporal structure of the ground in distinct ways. Alongside spatial form, they regulate which strata become visible, accessible, protected, commodified, or erased.<sup>5</sup> Architecture thus operates as a practice of temporal inscription, reorganising accumulated layers while remaining conditioned by prior formations. As architectural theory has long suggested, what appears as stable construction depends upon displaced ground and concealed absences.<sup>6</sup> Mark Wigley, for example, has argued that architectural stability is inseparable from the grounds it removes and renders invisible; architectural intervention therefore unfolds across connected locations, reconfiguring matter and terrain far from the visible site of building.<sup>7</sup> For this reason, both the tumulus and the extraction pits are approached as architectural formations: they reconfigure the stratigraphic ground through distinct material regimes, one through accumulation and stabilisation, the other through excavation and redistribution.

This theoretical position informs the methodology. The study conducts a stratobiographical reading of two spatially adjacent yet temporally differentiated

1. I use the term *climaticity* here to describe the two way relationship between architecture and climate, that is, the ways in which the material practices of architecture are shaped by climatic processes and, in turn, contribute to their formation.

2. Astrida Neimanis and Rachel Loewen Walker, 'Weathering: Climate Change and the "Thick Time" of Transcorporeality', *Hypatia*, 29.3 (2014), pp. 558–75 (p. 559).

3. The term *spacetime-matter* is introduced by Karen Barad to describe the iterative reconfiguring of space, time, and matter through intra-action; see Karen Barad, *Meeting the Universe Halfway: Quantum Physics and the Entanglement of Matter and Meaning* (Duke University Press, 2007), pp. 179–82. Astrida Neimanis and Rachel Loewen Walker mobilise this formulation in their account of thick time; see Neimanis and Loewen Walker, 'Weathering', p. 561.

4. Kathryn Yusoff, 'Geosocial Strata', *Theory, Culture & Society*, 34.2–3 (2017), pp. 105–27.

5. Such regulation is also sustained through the broader cultures of construction, norms, pedagogical frameworks that shape how matter is valued and mobilised. Architecture therefore includes both the physical reworking of the ground and the cultural mechanisms through which extractive and constructive logics are normalised and reproduced.

6. See, among others, Jane Hutton, *Reciprocal Landscapes: Stories of Material Movements* (Routledge, 2019); and Kenny Cupers, *The Earth That Modernism Built: Empire and the Rise of Planetary Design* (University of Texas Press, 2024).

7. Mark Wigley, 'Returning the Gift: Running Architecture in Reverse', in *Non-Extractive Architecture: Designing without Depletion*, ed. by Space Caviar (Sternberg Press, 2021), pp. 41–57 (p. 47).

formations in the Gediz Basin. By *stratobiography*, I refer to a mode of narration in which socio-historical trajectories are read as interwoven with geo-historical strata. Nigel Clark introduces the term to describe how lives and events become intelligible through their entanglement with deep geological time.<sup>8</sup> Stratobiography therefore shifts attention from chronological sequence to layered temporality, to ask where something belongs is also to ask when it belongs within the stratified time of the earth. In this sense, Laletepe, a Lydian tumulus in the Bin Tepe necropolis, and Çakalazmağı, artificial lakes formed through illegal clay extraction, are approached as two material formations operating through distinct temporal regimes. While the tumulus mound materialises the entanglement of animate and inanimate, or nature and culture, through additive burial practices that accumulate soil over time, Çakalazmağı exposes an alternative temporal condition in which the ground is cut, displaced, and reorganised through industrial extraction. Read together, the two sites foreground contrasting modes of inscription: one sustaining durational accumulation, the other reorganising that duration through excavation and void.

On both banks of the Gediz River, the Bin Tepe [thousand mounds] necropolis, sprawling over the ancient city of Sardis, offers a landscape in which the entanglement of built form, ground, and temporal duration can be read directly in situ.<sup>9</sup> Here, the site is approached as a necropolis landscape composed through mound-building practices that materially reorganise ground. Stretching along an east-west axis

starting from Ahmetli, this area has drawn attention since antiquity, noted by Herodotus and Strabo. In the nineteenth century, the tumuli were surveyed and in some cases opened by diplomatic figures such as Ludwig and Frederick Spiegelthal, serving as consuls in Smyrna, and George Dennis, the British consul, whose activities combined documentation, excavation, and collection.<sup>10</sup> In the early twentieth century, Howard Crosby Butler, director of the first Sardis Expedition, identified seventy-two tumuli in the region and suggested that the total number exceeded one hundred, leading to more systematic archaeological campaigns in the basin.<sup>11</sup> These interventions unfolded within expanding networks of diplomacy and scholarship, thus Bin Tepe moved from archaeological site to terrain rendered visible and measurable within transnational circuits of knowledge and collecting.<sup>12</sup>

At Bin Tepe, burial operates through an additive stratigraphic technique that builds a mound with local clay and soil, producing a positive mass co-constructed with the ground. Adjacent to Bin Tepe, the second scene is organised around a materially distinct mode of ground inscription, where the basin's soils are displaced and rendered legible through industrial transformation. Turgutlu, located within the *fertile* soils of the Gediz Plain, is a centre of brick production; here, the ground intersects with modern industry as soil is recast from an agricultural medium into a standardised construction material.<sup>13</sup> Once part of this highly productive agricultural plain and surrounded by thousands of acres of vineyards within Manisa's famous grape-growing basin, Çakalazmağı

8. Nigel Clark, 'Politics of Strata', *Theory, Culture & Society*, 34.2–3 (2017), pp. 211–31.

9. At the time of writing this article, Sardis and the Lydian Tumuli of Bin Tepe were inscribed on the UNESCO World Heritage List during the 47th session of the World Heritage Committee, 6–16 July 2025. UNESCO World Heritage Convention, 'Sardis and the Lydian Tumuli of Bin Tepe', *World Heritage List*, 2025 <<https://whc.unesco.org/en/list/1731>>.

10. Barış Gür, 'İzmir'de Spiegelthal Kardeşler Tarafından Gerçekleştirilen Arkeolojik İncelemeler ve Oluşturdukları Eski Eser Koleksiyonu', in *Smyrna-İzmir Kazı ve Araştırmaları III*, ed. by A. Ersoy, H. Göncü, and D. Akar Tanrıver (Ege Yayınları, 2019), pp. 421–28.

11. Howard Crosby Butler, *Sardis: Publications of the American Society for the Excavation of Sardis* (E. J. Brill, 1922), pp. 9–10.

12. Scholarship on late Ottoman heritage governance and on the antiquities trade foregrounds the extractive dimensions of excavation, documentation, collecting, and museum acquisition — clarifying how assemblages such as the Lydian Hoard were materially and

institutionally constituted and circulated. See Ceren Abi, 'Digging Deeper: Cultural Property in the Ottoman Empire During the Great War and Allied Occupation 1914–1923' (doctoral thesis, UCLA, 2019), p. 31; Morag Kersel, 'Editorial Introduction', *Journal of Field Archaeology*, 31.2 (2006), p. 185; Howard Crosby Butler, *Sardis* (E. J. Brill, 1922), p. 9; and Christopher H. Roosevelt and Christina Luke, 'Mysterious Shepherds and Hidden Treasures', *Journal of Field Archaeology*, 31.2 (2006), pp. 185–98. On the legal history of the Lydian Hoard, see Jeannette Greenfield, *The Return of Cultural Treasures* (Cambridge University Press, 2007), p. 420. For extraction as a conceptual frame encompassing both material displacement and epistemic mobilisation, see Anthony Powis, 'Architecture as the Practice of Accountability: Extractivism, Externalities and Alternatives', *The Journal of Architecture*, 30.6–7 (2025), pp. 965–86.

13. I use *fertile* in its conventional agronomic sense while marking how this vocabulary renders soil legible as productive capacity and therefore as an object of optimisation. On fertility as a socio-technical construct, see Maria Puig de la Bellacasa, *Matters of Care: Speculative Ethics in More than Human Worlds* (University of Minnesota Press, 2017), pp. 170–79. See also *Constitution of the Republic of Türkiye* (1982), art. 44, which



Figure 1. Canal and *Tumulus*: irrigation canal winding through olive groves near Salihli, with Lydian tumulus from the Bin Tepe necropolis in the background, photograph by Manny Moss (2013).

has undergone a significant transformation. In the 1980s, brick and tile factories in the nearby urban periphery extracted large amounts of soil from this area.<sup>14</sup> The clay industry has taken precedence over agricultural use, establishing a regime that infringes on the rights of farmland. Extraction for factory production has created nearly a hundred pits, each between five and ten metres deep, which have subsequently filled with rainwater and groundwater, forming artificial lakes. Around thirty hectares of agricultural land have been lost in the process, and the surrounding farmland is threatened by pests, diseases, and a rising water table. Introduced in these terms, the two sites establish the empirical frame for the readings that follow, allowing continuity and rupture to be traced as layered processes of accumulation and subtraction inscribed in the same ground.

## STRATIFICATION, ONTOLOGY AND CLIMATE

Modern architectural thought has often privileged surface and form, treating the ground as passive infrastructure.<sup>15</sup> Yet the ground is a temporal-material formation that carries sedimented relations and generates both continuity and rupture. The political ontology of stratification holds that the ground as a layered field in which geophysical accumulation and social and political relations sediment over time. A *geosocial* perspective on stratification reads layers both as records of politico-economic processes and as a field of forces that enables or constrains those very processes.<sup>16</sup> The politics of strata allows the ground to be read as a stratobiography, in

which historical relations, property, infrastructural interventions, technological speeds, and market regimes are inscribed into stratigraphy.<sup>17</sup>

The modern logic of the flat surface (a techno-administrative gaze that organises the surface while rendering deep layers invisible) thus operates in alignment with paradigms of control and extraction.<sup>18</sup> A layer is both a mode of stabilisation and a site of tension. While it is being fixed, it remains open to dissolution and engagement with other forces. The ground emerges as a politically-charged site of encounter.

If stratification discloses the ground as a politically charged temporal formation, the question shifts to how climate participates in the organisation of this layered time. Rather than treating the ground as an external environmental condition, an atmospheric backdrop, or a *medium*, I read it as an entanglement through which multi-scalar rhythms articulate and generate time.<sup>19</sup> Following Hannah Knox's call to *think like climate*, this shift resists technocratic solutionism by positioning climate as an ontological lens on modern modes of knowing and governing.<sup>20</sup> Rather than reducing climate into a *crisis narrative*, it treats it as a concept enacted within the entanglement of space, time, and matter.<sup>21</sup> Thinking climate in this way reconfigures architecture's relation to ground and materiality: design and intervention move from responding to performative indicators toward practices in which the temporal processes of the ground intersect with those of architecture. Climate thus appears as a field of mutual becoming.

defines the protection and 'efficient' cultivation of soil as a constitutional responsibility of the state, framing land primarily through its productive function.

14. Mehmet Üzülmüş, 'Orta Gediz Havzasında Turgutlu ve Salihli Şehirlerinin Mekansal Gelişiminin Tarımsal Arazî Üzerindeki Etkileri' ['The Effect of Spatial Development of Turgutlu and Salihli Cities in the Middle Gediz Basin on Agricultural Land'] (doctoral thesis, Uşak Üniversitesi, 2019), pp. 86–87.

15. See Charlotte Malterre-Barthes, 'The Devil is in the Details', in *Non-Extractive Architecture* (Sternberg Press, 2021), pp. 86–96; Hans Ibelings, *Modern Architecture: A Planetary Warming History* (Architecture Observer, 2023), pp. 30–32; and Susannah Hagan, *Revolution? Architecture and the Anthropocene* (Lund Humphries, 2020). All of these foreground the material and extractive conditions underpinning architectural production.

16. Kathryn Yusoff, *Geologic Life: Inhuman Intimacies and the Geophysics of Race* (Duke University Press, 2024), pp. 1–26.

17. Clark, 'Politics of Strata', p. 220.

18. On the production of technical lands through techno-administrative regimes, see Jeffrey S. Nesbit and Charles Waldheim, eds, *Technical Lands: A Critical Primer* (JOVIS, 2023).

19. On *climate as a medium* of shared immersion in atmospheric and material processes, see Tim Ingold, *Being Alive: Essays on Movement, Knowledge and Description* (Routledge, 2011). While Ingold foregrounds generative flows and relational immersion, the present argument extends this approach by introducing stratified temporal depth, treating climate not simply as the field of flows but as a temporal apparatus organised in and with the ground.

20. Hannah Knox, *Thinking Like a Climate: Governing a City in Times of Environmental Change* (Duke University Press, 2020), pp. 6–7.

21. Neimanis argues that moving away from a *stop climate change* narrative does not weaken political commitment but reorients it toward an ethics of attunement and a politics of possibility grounded in transcorporeal relationality. See Neimanis and Loewen Walker, 'Weathering', p. 561.

One ontological consequence of this shift is the displacement of nature/culture dualisms in favour of relational multiplicity. Astrida Neimanis' notion of *weathering* gives form to this position: a world in which human and more-than-human bodies affect one another, participate in each other's temporalities, and make time together within the generative flows of climate.<sup>22</sup> Weathering names exposure and erosion as well as a relational practice of time-making through which ground, bodies, atmospheres co-constitute one another. This allows us to conceptualise climate as a patterning of *spacetime-matter* that both shapes and is shaped by these relations.<sup>23</sup> In this light, architecture's climaticity is no longer reducible to a *crisis/solution* binary; instead, it reframes the discipline's organisation of time and matter as ongoing processes of formation with the ground. Put differently, climaticity names the temporal condition through which architectural material practices take form and transform in relation to ground processes. The discussions that follow trace how contrasting regimes of ground inscription render continuity and rupture legible across layered durations.

The theoretical lens offered by this perspective can be articulated through three thresholds. The first is *stratigraphic thinking*: reconsidering the concepts of ground and layer within architectural theory in a context where geological continuity and social processes are intertwined.<sup>24</sup> The second concerns the compositions of *deep time*, understood as a temporal topography where different durations coincide, fold, and bend one another. In this topography, geological processes and human practices shape one another across material and technical registers. As Elizabeth Grosz emphasises, after Henri Bergson, the present carries the excess of the past: each moment does not belong solely to itself; past temporalities endure rhythmically in matter, in bodies, and on surfaces.<sup>25</sup> In this sense, deep time reveals an ontological condition in which geological and human temporalities fold into one another, operating through interscalar

transitions that link planetary formations to material circulation and cultural practices.<sup>26</sup> The third threshold is the inscription of *climate as temporality* in the ground: weathering suspends binaries such as nature/culture, inside/outside, and body/environment, foregrounding a field of continuity where human and more-than-human bodies co-constitute each other through intra-action.<sup>27</sup> Architecture, too, weathers and reconfigures within this thick time as materials decay and forms are continually reworked.

Within this framework, climate operates as a temporal lens through which soil's multiple roles become legible within a unified space-time-matter configuration. To think climate as temporality, ground as temporal-material subject, and architecture as their interface is to adopt an ontology attuned to thick time. The following sections elaborate this orientation through the political ontology of stratification and the entanglement of soil and climate in the readings of Laletepe and Çakalazmağı.

## LALETEPE: CONSTRUCTED GROUND AND CLIMATIC WEATHERING

This framework of thick time becomes materially legible in the Gediz Basin, where the basin's clay-rich alluvium forms a stratum shaped by tectonic uplift, sediment transport, calcification, climatic variation, and agricultural construction. Within this layer, material flows and the politics of property are simultaneously inscribed. This clay circulates across technical and symbolic domains, from tumulus mounds to ancient terracotta systems and modern brick industries. The ground operates as montage, where geological and social durations fold together. On one face of this montage, continuity is legible: the slow stratification of tumuli through burial, cultivation,

22. Neimanis acknowledges the practical necessity of distinguishing between climate and weather, yet emphasises the need to blur this distinction within the context of her discussions. See Neimanis and Walker, 'Weathering', p. 562.

23. Barad, *Meeting the Universe Halfway*, pp. 234–35.

24. Yusoff, *Geologic Life*, pp. 1–26.

25. Elizabeth Grosz, *Time Travels: Feminism, Nature, Power* (Duke University Press, 2005), p. 48.

26. Jussi Parikka, 'Deep Times of Planetary Trouble', *Cultural Politics*, 12.3 (2016), pp. 279–92.

27. Neimanis and Walker, 'Weathering', p. 561.



Figure 2. Sequential images of Laletepe and its surroundings: vineyards, olive trees, paved road, industrial buildings. Photographs by the author (2023).

and climatic rhythms. On the other, rupture emerges: the voids left by uncontrolled clay extraction in Çakalazmağı and their seasonal sedimentations.

What distinguishes Bin Tepe today are the stratigraphies constructed within its mounds and the additive spatial logic they embody. More than a hundred tumuli, dispersed over the terrain north of Sardis, form a built stratum above the ground, turning funerary architecture into landscape and blurring built and natural environment. The technique used in Bin Tepe forms a mound with local clayey soil, often burying the dromos and stone burial chamber beneath layers stabilised by a krepis or circular wall, in contrast to the rock-cut or excavated burial types seen in many traditions. In this way, the tomb becomes a positive mass co-constructed with the ground as a temporal-material subject. Indeed, in Bin Tepe, accumulation thus operates both as a construction technique and as a landscape regime at the geographic scale. The tumuli, functioning as a sequence of micro-reliefs, redirect wind and flow, shape the traces of vineyards and paths. Thus the living necropolis stratifies while remaining intertwined with agricultural production. This reading sharpens the necropolis's challenge to architecture: against the modern view of earth as resource, it frames the necropolis as a constructed ground-form that unsettles the divide between architecture and landscape.

Laletepe, one of the examples of this additive construction, is a tumulus approximately fifty-three metres in diameter and eleven metres high, rising above the surrounding agricultural fields.<sup>28</sup> Its location near a branch of the river, surrounded by vineyards and olive groves, places it at a node where geographical and cultural scales intersect. Dating to between the sixth and fifth centuries BCE, Laletepe contains the typical features of Lydian burial architecture (a dromos, a limited entry section, and a stone burial chamber) and takes its name from

the red tulips that once covered its slopes, thereby marking a visible continuity between botanical growth and funerary architecture on its surface.<sup>29</sup>

Reading Laletepe through its construction techniques and material composition foregrounds the political ontology of the ground. The collective labour organised through construction and burial rituals, the displacement of materials, the extraction and arrangement of stone, and regimes of property and power are inscribed into these layers. With the ground conceived as a field of force that both records and enables economic and political processes, Laletepe's stratobiography emerges as a political-social archive.<sup>30</sup> Here, the layer acts as a tense montage, while being fixed, remains open to dissolution and interaction with other forces. The tumulus configures the ground as a material record of encounters among ritual, labour, and power — its temporal depth entangled with the region's geo-chronology. The clay rich alluvium, the tectonic shifts of the Bozdağ range, the sediment movements of the Gediz, calcification, and climatic oscillations together compose a deep temporal record layered over millennia.

In this context, climate appears as a temporality materially expressed in the ground. On the mound's surface, wind marks, erosion channels, infiltrating roots, seasonal swelling and shrinking of clay, and circulating dust and pollen situate the tumulus within the Gediz Basin's thick time. Weathering moves beyond loss into time-making: clay's rhythm with water, microbial films, surrounding viticulture, and the red tulips that once covered its slopes all participate in its ongoing formation. The tumulus emerges as a processual architecture operating within climatic temporality, embodying the entanglement of culture and nature in the geo's stratifications. Its layers, however, are also shaped by modern disruptions: looting was first reported in 1999.<sup>31</sup> Though tunnels were filled by museum

28. Christopher H. Roosevelt, 'Lale Tepe: A Late Lydian Tumulus near Sardis, I: Introduction, Excavation, and Finds', in *Love for Lydia: A Sardis Anniversary Volume Presented to Crawford H. Greenewalt, Jr.*, ed. by N. D. Cahill (Harvard University Press, 2008), pp. 1–24 (p. 1).

29. Roosevelt, 'Lale Tepe', p. 1.

30. Clark, 'Politics of Strata', p. 220

31. Roosevelt, 'Lale Tepe', pp. 5–7.

officials, the tomb was later re-looted through a roof breach that destroyed the klinai. From a stratigraphic perspective, looting reconfigures the mound as it subtracts and produces voids, inscribing human violence as a negative stratigraphy in geological time.

To read Laletepe today thus requires these stratifications together. The soil filled in by museum officials, the tunnels dug by looters, the vineyards of Manisa, the geological movements of the Menderes Massif, and the sediments carried by the Gediz River all converge on tumulus mound's surface as knots of *spacetime* matter. This composition, in which multiple temporalities and spatialities, as well as multiple intra-active entities (more-than-human, other-than-human, and inhuman), are assembled, allows Laletepe to be understood as both a Lydian funerary monument and a stratified ground narrative in which human interventions and natural processes are interwoven and overlapping times become visible.<sup>32</sup> To comprehend Laletepe is to grasp how earth-life relations are continually constructed and rewritten. The continuity of nature and culture, understood as structures emerging with and through the ground, becomes materially legible in the tumulus' co-formation with soil and cultivation.<sup>33</sup> The *stratobiography* of Laletepe offers a historical narrative from antiquity to the present, as well as a critical lens for examining the entanglements of ground, climate, architecture in both ancient and contemporary contexts, including present-day spatial practices and material economies shaped by extractive regimes.

Situated alongside the D300 highway, Laletepe is neighboured by two other tumuli, forming a trio located on the edge of an international highway connecting the country's two largest cities, İzmir

and Ankara, with origins tracing back to the urban morphology of ancient Sardis.<sup>34</sup> Within this continuity, it becomes a nodal point for examining temporal layering and modernity's relation to ground; the tumulus is shaped both as an ancient monument and as a product of modern industrial regimes.

The three tumuli are situated within a narrow infrastructural corridor defined by the D300 highway to the south and the nineteenth-century railway line to the north. Completed in 1866, the railway initially connected İzmir to Turgutlu (then known as Kasaba).<sup>35</sup> This strip, shaped by logistical accessibility and proximity to the Gediz River, has gradually transformed into an industrial zone since the 1960s. Approximately thirty metres east of one of the mounds, a prefabricated concrete factory was established to manufacture irrigation canal elements for the Salihli–Turgutlu plain, linking the alluvial ground to modern hydraulic regimes.<sup>36</sup> Subsequent zoning decisions intensified industrial development: the Ahmetli Small Industrial Site was completed in 2004, followed by two large-scale international facilities.

Among these, a quartz composite manufacturing plant, built in 2016 on the site of the former canal factory, occupies a prominent position immediately south of the tumuli. Producing quartz-based surfaces for global construction markets, it is embedded in mineral extraction networks dependent on silica and related aggregates. While the Lydian tumulus emerged through the accumulation and stabilisation of earth, the plant transforms mineral matter into standardised architectural commodities. As Charlotte Malterre-Barthes argues, architectural agency extends beyond the visible site of construction, implicating distant territories of mineral extraction and political

32. Donna Haraway, 'Anthropocene, Capitalocene, Plantationocene, Chthulucene: Making Kin', *Environmental Humanities*, 6.1 (2015), pp. 159–65.

33. Grosz, *Time Travels*, p. 48.

34. I first engaged with this site through the essay film *A Stroll Through What Gediz Has Promised Us* (2024), which is discussed in Bihter Almaç, Nilsu Altunok, Oya Yeşim Armağan Atacan, and Nazlı Giritinoğlu, 'Three Disentanglements for the Exhausted Geographies', *Journal of Architectural Education*, 79.1 (2025), pp. 268–84 (pp. 274–77).

35. Kasaba is the former name of the modern day Turgutlu district in Manisa province. The Smyrna Cassaba Railway, a British company, began constructing the İzmir–Kasaba railway line in 1864 under a concession granted by the Ottoman Government and completed the line in 1866, preceding the Aydın railway. This was the first railway line to

be operational in the Anatolian territories of the Ottoman Empire and remains active to this day. See Rowland Macdonald Stephenson, *Railways in Turkey: Remarks upon the Practicability and Advantage of Railway Communication in European and Asiatic Turkey* (J. Weale, 1859).

36. Demirağ Prefabricated Concrete Industry is a factory established by a family renowned for their investments in the early years of the Republic, particularly in the railway and aviation industries. See Şahabettin Demirağ, 'Cumhuriyetin Mühendislik Çınarları, Şahabettin Demirağ: 84 Yaşında Bir Genç', interview in *Türkiye Mühendislik Haberleri*, 2000.1 (2000), pp. 23–27. With the construction of this factory, the area was designated as an 'Industrial Zone' in the 1:1000 scale 'Implementation Zoning Plan' prepared in 1987. See Çakanşimşek Planlama, *Manisa İli Ahmetli İlçesi 365 Parsel 1. Derece Arkeolojik Sit Alanı 1/5000 Ölçekli ve 1/1000 Ölçekli Koruma Amaçlı İmar Planı: Plan Araştırma ve Açıklama Raporu* (İzmir, 2017), pp. 6–8.



Figure 3. Laletepe and two neighbouring tumuli are situated near the D300 highway, locally known as 'Ankara Asphalt'; the site is surrounded by industrial facilities, including a quartz composite manufacturing plant to the south, a food production factory to the north, and the Ahmetli Small Industrial Zone to the east. Google Earth (2024).



Figure 4. The quartz composite plant and the looted burial mound within the same industrial parcel. Enclosed by factory buildings and photovoltaic arrays, the tumulus reveals the spatial intimacy between additive earth construction and contemporary extraction and processing. Google Earth (2025).

economy.<sup>37</sup> Here, that extractive continuum collapses into a single section of ground. Both tumulus and plant intervene materially in the ground, yet according to radically different temporal and economic logics. The looting tunnels carved into the tumuli introduce another stratigraphic incision. If the mound once configured the ground as a constructed positive mass, and the plant reorganises mineral matter through global supply chains, looting produces negative cavities that accelerate decay and detach artefacts from their sedimented context. These overlapping regimes of burial, extraction, violation render the site a condensed section through which distinct logics of ground intervention become legible.

The solar panels installed on the factory roofs further complicate this configuration. Promoted as infrastructures of sustainability, they rely on silicon refined from quartz, binding renewable energy systems to global mineral extraction chains.<sup>38</sup> Rather than eliminating mineral dependency, renewable energy infrastructures remain materially tied to extraction processes.<sup>39</sup> The stratified ground that bears the marks of extraction thus also supports infrastructures presented as solutions, folding crisis and technological remedy into a single site.<sup>40</sup> The tumulus endures industrial pressure and coexists with infrastructures that both rely on and transform the material substratum from which it was once assembled. Ritual traces, agricultural rhythms, erosion channels, looting tunnels, transport corridors, ducts, pipelines, photovoltaic arrays converge to produce a geosocial section in which continuity and rupture unfold simultaneously. Stratification appears as an active apparatus through which each incision, accumulation, and technological overlay rearticulates architecture's entanglement with ground and time.

## ÇAKALAZMAĞI: EXTRACTION AND TEMPORAL VOIDS

The preceding discussion provides a framework for reading the layered temporalities embedded in a contemporary section of the Gediz Basin. Within this layered temporality, stratification is understood as a process in which each layer reorganises the previous one, and soil is understood as both archive and living body.<sup>41</sup> Within this perspective, the basin's stratobiography is refracted through the modern manifestation of its clay-rich soils, long central to settlement, agriculture, and construction, and now mobilised through the terracotta industry. The position of architecture's material regimes, including modern construction materials and techniques, within this stratification is read in the context of commodification processes and the reduction of soil to a mere economic resource, as enacted through contemporary spatial practices in western Anatolia within the broader Turkish construction economy.<sup>42</sup> These dynamics crystallise in the artificial landscape of Çakalazmağı, where the soil-space-time relationship can be discussed through its temporal dimension as well as through spatial commodification. Weathering here unsettles nature/culture divisions and reveals matter's participation in time-making, while extraction operates as a subtractive regime that interrupts and reverses the inscription of the ground.

Since the 1980s, large-scale clay extraction for brick and tile production around Turgutlu has transformed fertile agricultural land into a terrain of pits and artificial lakes. Çakalazmağı condenses this shift from agricultural continuity to industrial extraction into a single stratigraphic scene, exposing the consequences of treating soil primarily as economic resource.

37. Charlotte Malterre-Barthes, 'Details as Evidence: Architectural Extractivism and the Politics of Provenance', *Future Anterior*, 22.1–2 (2025), pp. 144–157.

38. In Türkiye, the rapid proliferation of industrial rooftop solar installations is supported by state incentive regimes including tax exemptions, customs exemptions, and green industry grants, reducing capital costs and enhancing industrial competitiveness. Their expansion therefore cannot be understood solely through the rhetoric of sustainability.

39. See Mark Jarzombek, 'Molecules, Money and Design: The Question of Sustainability's Role in Architectural Academe', *Thresholds*, 18 (1999), pp. 32–38; Mark Jarzombek, 'Sustainability: Fuzzy Systems and Wicked Problems', *Log*, 8 (2006), pp. 7–12; and Stacy Alaimo, 'Sustainable This, Sustainable That: New Materialisms, Posthumanism, and Unknown Futures', *PMLA*, 127.3 (2012), pp. 558–64.

40. On the invisibility of infrastructural support systems and the privileging of innovation over maintenance, see Hélène Frichot, 'Technologies of Holding, Containing, Maintaining, and Caring', *Technology | Architecture + Design*, 9.2 (2025), pp. 267–70.

41. Seth Denizen, 'Three Holes: In the Geological Present', in *Architecture in the Anthropocene: Encounters Among Design, Deep Time, Science and Philosophy*, ed. by Etienne Turpin (Open Humanities Press, 2013), pp. 29–46 (p. 42).

42. Brick remains a major masonry material within Türkiye's construction sector. Historically, the Manisa–Turgutlu–Salihli axis accounted for roughly 20 per cent of national brick production capacity in the early 2010s, indicating a marked regional concentration within the Gediz Basin. See Devlet Planlama Teşkilatı, *Dokuzuncu Kalkınma Planı (2007–2013): Taş ve Toprağa Dayalı Sanayiler – Tuğla ve Kiremit Sanayii Altı Özel İhtisas Komisyonu Raporu* (Ankara, 2008), pp. 266–67.



Figure 5. Artificial lakes formed in the *fertile* soils of the Gediz Plain as a result of clay extraction for Turgutlu's brick industry, shown in close and distant satellite images; the dark red strips indicate Sultani grapes laid out to dry. Google Earth (2025).



Figure 6: Aerial photograph of extraction induced lakes near Çakalazmağı. This fragmented waterscape, formed through subtractive industrial processes, renders extractive voids legible within the agricultural ground of the Gediz Plain. Photograph by Hasan Yıldız, (2026).

This reconfiguration departs from earlier ground relations, exemplified by the Bin Tepe tumuli, where soil sustained continuities between life and death, landscape and architecture. In the modern period, such continuities are displaced by commodification and ecological degradation. Architectural production is materially implicated in this regime, both through brick and terracotta and through supply chains that convert geological matter into construction economy.

When climate is framed primarily as an environmental management issue, the discourse around the post-extraction lakes tends to move toward technocratic solutions: water is redirected, pits are backfilled under rehabilitation schemes, or the landscape is aestheticised.<sup>43</sup> Anthropocentric confidence reduces the temporal-material reality of soil to short-term managerial techniques. As Grosz suggests, such gestures reflect a modernist arrogance that treats nature as raw material to be managed rather than as a force with its own agency, thereby reproducing the extractive logic they claim to resolve.<sup>44</sup> Donna Haraway's call to mourn irreversible losses redirects attention to what is interrupted in these sites: ecological continuity and, with it, the temporal inscription of stratification itself.<sup>45</sup> For this reason, the priority must be to read the stratigraphy of rupture before prescribing solutions, and to render architecture's material story visible at its sites of sourcing and intervention. The extraction void is a temporal knot where *spacetime* relations and climatic rhythms converge. As Seth Denizen argues, a hole acquires duration through the thing that does the digging, making time materially legible.<sup>46</sup>

Extraction pits are temporal formations shaped by digging, deposition, erosion, and decay. They participate in producing the *geological present*, as dynamic interfaces where cultural and epistemic forces intersect.<sup>47</sup> In Çakalazmağı, the pit functions as a contemporary geological inscription that

reorganises the basin's temporal grammar, introducing a negative stratification into the ground. Weathering accelerates this process through wetting and drying cycles, salt residues, root expansion that generate new air-water-soil interfaces along the edges. Fine sediments and mixed backfill around the artificial lakes form hybrid stratigraphies that fold human action into geological time. Within this section, agricultural rhythms, hydrological oscillations, industrial demands, and legal-administrative practices converge, rendering climate as a thick fabric binding these processes through time.

Read alongside the layered memory of Laletepe, the void landscape of Çakalazmağı reveals that ground inscription continues simultaneously but through different regimes within the basin. While burial rituals, viticulture, and alluvial processes at tumulus mounds intensify an additive stratum, extraction at Çakalazmağı forms a negative stratum through subtraction. Together, these two modes of inscription suggest that architecture's relation to climaticity can be understood through the lens of thick time: material rhythms articulated with cycles of labour and supply. In this context, the lakes at Çakalazmağı appear as ruptures within thick time and as articulating surfaces that bend climatic inscription and open new interfaces within the flow of *spacetime*. While agricultural cycles and local production practices continue slow layerings in the ground, extractive economies generate negative spaces. Thus, climate emerges as a temporality operating in synchrony with the rhythms of the ground. Architectural decisions regarding material sourcing, ground intervention, or maintenance are thus situated within a politics attentive to the temporal claims of both ground and climate. Weathering thus binds the accumulated continuity of the tumuli and the negative stratification of extraction into a time-matter section, the ground on which architecture's material relations unfold.

43. This tendency can be observed in local attempts to artificially replenish drying lakes or reframe them as aesthetic assets rather than addressing their material and temporal transformations. Turgutlu Manşet, 'Kurumaya Yüz Tutan Çakalazmağı Gölü'ne Su Verilecek' ['Water to Be Reintroduced to the Drying Çakalazmağı Lake'], 17 July 2023, <https://www.turgutlumanset.com/kurumaya-yuz-tutan-cakalazmagi-golu-ne-su-verilecek/46526> [accessed 1 September 2025]; Turgutlu Haber, 'Çakalazmağı Göllerinde Gün Batımı Renk Cümbüşü Oluşturuyor' ['Sunset Color Spectacle over the Çakalazmağı Lakes'], 11 August 2023, <https://www.turgutluhaber.com/cakalazmagi-gollerinde-gun-batimi-renk-cumbusu-olusturuyor/24545/> [accessed 1 September 2025].

44. 'Time Matters: Elizabeth Grosz in Conversation with Heather Davis and Etienne Turpin', in *Architecture in the Anthropocene: Encounters Among Design, Deep Time, Science and Philosophy*, ed. by Etienne Turpin, pp. 129–138 (pp. 131–32).

45. Haraway, 'Anthropocene, Capitalocene, Plantationocene, Chthulucene', p. 160.

46. Denizen, 'Three Holes', pp. 33–35.

47. Denizen, 'Three Holes', pp. 30–32.

## ARCHITECTURE AS STRATIGRAPHIC AND TEMPORAL PRACTICE

The argument developed here culminates in a stratobiographical reading through two figures in the Gediz Basin that are spatially adjacent yet temporally differentiated: tumuli formed through agricultural and funerary accumulation, and a series of pits excavated by industrial processes. These two formations, embedded within a shared stratigraphic ground, move the conception of climate beyond an external condition towards a dense temporality materialised through sedimentation, erosion, and disruption. In this framework, architecture must be considered in relation to ground as a geological, social, and temporal agent. Here, the ground operates as a shared medium through which form and meaning are co-produced across rhythms and durations, within a climate understood as thick time. It is through this thickness, in its accumulation and erosion, that spatial practices take form.

The tumulus emerges through ritualised and durational acts: accumulative gestures that encode memory and agriculture into the soil. In contrast, the pits are carved through extractive and subtractive operations, leaving behind water-filled voids, collapsing embankments, and abandoned industrial remnants. Both are fragments of a shared stratigraphic language through which architecture's relation to ground can be traced. Infrastructure corridors, backfilled galleries, illicit excavations further complicate this ground; ritual, violence, accumulation, erasure become entangled within this material continuity. The constructed landscape can thus be understood as a palimpsest of differentiated inscriptions, a montage of sedimented temporalities across layers.

Architectural practice here is itself a sedimented act: a further layer inscribed into a ground already shaped by prior gestures of accumulation and extraction. Both the tumulus, assembled through additive practices of burial and cultivation, and the pits, carved out through industrial subtraction to supply materials for construction, position architecture as an embedded force within ongoing material transformations. Architectural practice participates in these material inscriptions; it relies on the brick, it formalises the mound, it operates through practices of piling and clearing. The stratigraphic approach taken here reads spatial practices as always already stratified, written into and with the ground. What follows from this is a conception of architecture as an ongoing practice of inscription, shaped by and shaping thick temporalities of matter. Displacing architecture as autonomous form or spatial projection, this reframing renders the discipline as a mode of attunement to material durations: an entanglement with layers, rhythms, and voids that carry social, ecological, and political meanings. Such a view unsettles distinctions between building and ground, figure and field, or even between past and present, recognising architecture as a continuous negotiation with the temporal densities it both inherits and alters.

## ACKNOWLEDGEMENTS

I would like to thank Anthony Powis, editor of this special issue, for the attentive engagement with the manuscript and for the thoughtful guidance throughout the review process. I am also grateful to the anonymous reviewer for the careful reading of the article and for the constructive feedback that strengthened its argument.

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