Reading the City From Below. Representation as a Tool for Unveiling Urban Morphology

Book of Proceedings

7th ISUFitaly International Conference | Naples, 19-21 February 2026

CITY RENEWAL AND URBAN ARCHAEOLOGY

The morphological values of city traces

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The morphological values of city traces

BOOK OF PROCEEDINGS

edited by

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Contents

Naples and 7th ISUFItaly International Conference

ISUF Italy decided to hold its 7th International Conference in Naples, hosted by the Department of Architecture at the University of Naples "Federico II". The topic, *City Renewal and Urban Archaeology. The Morphological Value of City Traces*, has prompted a wide-ranging reflection on the role that traces – material but perhaps also immaterial – accumulated over time can play in the processes of interpretation, conservation and transformation of the contemporary city, understood as a space in which the various layers of history coexist and overlap.
The choice of this topic originates from the awareness that the challenges posed by our times – in which cities and territories are undergoing rapid and profound transformations driven by environmental, economic and social dynamics that are often indifferent to the values of the urban form – cannot be addressed exclusively through approaches focused on technological innovation, functional efficiency and the speed of intervention processes. Rather, they require a renewed focus on the historical and morphological complexity of urban and territorial contexts, reaffirming the value of a tradition of study to which Italian research has made theoretical and methodological contributions of the highest importance throughout the 20th century, and which regards the city as a complex historical organism, whose significance also lies in the capacity of its forms to preserve, transmit and reinterpret over time the traces of the transformations that have shaped its structure.
In this sense, discussing the *Morphological Value of City Traces* has meant not only addressing material remains of the past to be protected for their 'documentary' value, but interpreting such evidences as active elements in the construction of urban forms, whose 'monumental' value – that is, their formal value – should often be revealed through the project. The notion of 'trace' has proved, in the richness and variety of the contributions presented, to be a particularly fruitful interpretative category within the different theoretical and methodological approaches that characterise the field of urban morphology studies today. Road alignments that survive functional changes, land divisions that continue to guide the organisation of the built environment, typological continuities, settlement systems that maintain recognisable structural relationships with geographical forms, spatial configurations and relationships between the built environment and open space that

help define the identity of places were just some of the themes addressed during the conference.
The relationship between *City Renewal and Urban Archaeology* played a central role in the debate that unfolded over the three days of the conference. Whilst, on the one hand, the reference to urban archaeology was not interpreted exclusively in a disciplinary sense but was adopted as a thinking paradigm capable of guiding a stratigraphic reading of the city – in which the various temporalities that accompanied its formation emerge as essential components of its current structure – on the other hand, particular attention was devoted to the role of architectural and urban design in engaging with such legacies.
As the archaeologist Andreina Ricci observed, when fragments of the past emerge within the contemporary city, they often produce a sort of 'wound', as their morphological structure conflicts with the systems of order of the city on the surface. Furthermore, it is not uncommon that these remains do not appear because they are 'sought' through excavation, but resurface suddenly during infrastructure works, natural disasters or urban regeneration processes. In this sense, urban archaeology poses a question to the project that is as complex as it is urgent, concerning the composition of spatial systems belonging to different temporalities that are sometimes mutually in conflict. Precisely from this perspective, one of the most original aspects to emerge from the conference concerns the role attributed to the architectural project as a tool for knowledge and interpretation, as well as for the transformation, of the stratified city. Far from being regarded as a subsequent and separate phase from morphological and archaeological analysis, design was frequently presented in the papers as a critical tool capable of revealing latent relationships, recognising hidden continuities and constructing new forms of dialogue between different temporalities. Urban traces, in fact, never present themselves as mere objective data to be recorded or preserved but require an interpretative process that grasps their meaning within the city's overall structure. In this process, the project plays an essential role: it not only protects or enhances what remains but re-situates it within new systems of spatial relations that represent shared values. In this sense, the project does not take the form of an act of superimposition upon the existing but proves to be a practice of critical interpretation of duration, capable of transforming urban memory into an active resource for the construction of the city of the future.
The choice of Naples as the venue for the conference has lent further significance to these reflections. Few European cities, in fact, demonstrate with equal clarity the depth of the stratifications that characterise the relationship between urban form and history. From the Greek-Roman city to the processes of modern and contemporary expansion, Naples offers an emblematic example of how the traces of the past continue to operate within current urban configurations, influencing their spatial organisation, settlement dynamics and possibilities for transformation. In this sense, the city represented not only the physical venue of the conference, but also a significant cultural reference.
The response from the academic community has been particularly significant. The proceedings bring together 182 papers, organised into the conference's three main thematic areas – *Theory*, *Reading* and *Design* – and their respective sub-sections, offering a comprehensive overview of the current state of research on urban form and the relationships between urban archaeology, morphology and design. The conference also confirmed the international dimension of the academic community associated with ISUF. Although the event was organised as part of ISUFItaly's activities, alongside the participation of scholars from numerous Italian universities, the volume brings together contributions developed within European and non-European contexts, demonstrating the network's ability to connect different research experiences, cultural traditions and geographical contexts around a shared reflection on urban form.
We entrust these Proceedings to the academic community in the hope that the reflections gathered here may help to stimulate further research into the morphological value of urban traces and their role in urban renewal processes. At a time in history when the pressure for change appears ever more intense, recognising and interpreting the forms of permanence represents not merely an exercise in knowledge, but an essential condition for building transformations capable of combining memory, identity and a responsible vision of the future.

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Urban Archaeology and Design

In recent years, the relationship between urban archaeology, urban morphology and contemporary design has returned to the center of international architectural debate. At a stage where the project mainly engages with the existing city – with its layered structures, permanences, and discontinuities – the material traces of the past no longer appear merely as testimonies to be preserved, but as active components through which the transformative possibilities of the contemporary city may be critically interpreted.

It is within this framework that the seventh ISUFItaly Conference, *City Renewal and Urban Archaeology. The Morphological Value of City Traces*, takes place, focusing on the morphological value of urban traces and on the role that archaeology and design may assume within processes of urban renewal. The proceedings collect contributions from different disciplinary, geographical, and cultural fields, united by a shared attempt to interpret the city as a complex organism shaped by permanences, fractures, superimpositions, and rewritings.

As Aldo Rossi wrote, "the city is in its history", and its form coincides with the sedimentation of urban facts capable of traversing time and constructing permanences within transformation. From this perspective, archaeological traces are not merely residual materials belonging to concluded historical epochs, but elements capable of orienting new interpretations of urban structure, revealing deep continuities between the ancient and the contemporary city.

In this sense, the reference to urban archaeology takes on a central meaning. Not as a practice aimed at the enhancement of the individual artifact or of one historical phase prevailing over another, but as a design-oriented gaze directed toward the urban phenomenon as a whole, understood through the continuity of its transformations and stratifications. The city is thus interpreted as a processual organism, in which different temporalities coexist within a single evolutionary process, making archaeology not a separate field, but a structural component of reflection on the design of the existing city.

Many of the contributions included in the volume emphasize on the layered and processual nature of the city, on the dialectic between void and built form, between surfacing and concealment, between fragment and urban order. What emerges are readings that interpret ruins, substructures, historical infrastructures, ancient traces, and typological permanences

as matrices capable of generating new spatial configurations and new social relationships. The archaeological city is therefore understood not as a specialist *enclave* detached from urban life, but as an integral part of an inhabited and continuously re-signified environment. The archaeological issue, approached in terms of continuity rather than as the mere enhancement of the isolated fragment, may thus become an opportunity to orient directions of urban development capable of working through relationships between parts, structural permanences, and connections among different temporalities of the city, opposing logics of isolation and separation of urban materials.

Within this framework, the morphological issue takes on a central role. It is not simply a matter of recognizing the persistence of forms over time, but of understanding the processes through which such forms are transformed, reinterpreted, and reactivated. The morphological approach, recalled transversally in many of the studies collected in the volume, does not coincide with a static description of the city; rather, it constitutes an interpretative method capable of reading the relationships between settlement structure, topography, use, temporality, and transformation. Urban morphology thus becomes both a critical and a design tool: it allows latent continuities, resistant geometries, structural permanences, and evolutionary possibilities within historical and contemporary fabrics to be identified.

Research developed within the Italian typomorphological school has shown, in this regard, how the city may be interpreted as an organism in continuous transformation, within which typological processes do not constitute static elements but structures capable of adaptation, mutation, and permanence. Urban form therefore appears as the outcome of multiple and overlapping layers, in which erosion and deposition, continuity and fracture, absence and recomposition coexist within the same transformative dynamic.

The contemporary city thus emerges as a complex morphological structure in which different temporalities coexist in conditions of reciprocal interference. Michel Foucault recalled how history does not proceed through linear sequences, but through "series of discontinuous depths", while Michel Serres described time as a "lacunary and sporadic" matter, composed of returns, suspensions, and accelerations. Urban traces therefore do not appear as fixed or completed elements, but as unstable materials continuously exposed to processes of transformation, reuse, and re-signification.

Many of the contributions in the volume move precisely within this tension: between memory and design, permanence and mutation, continuity and discontinuity. The notion of the "trace" is continuously redefined: no longer a simple material residue, but an ordering principle, a latent figure, an invisible infrastructure, threshold, margin, urban void. In some cases, the trace guides processes of urban recomposition; in others, it acts as an element of resistance or as an opportunity to redefine the relationship between the consolidated city, landscape, and public space.

Through this plurality of positions, the proceedings convey an image of the contemporary city as an intrinsically stratified and relational reality, in which architectural and urban design are called upon to engage not with not isolated objects, but with complex systems of permanences and transformations. Urban archaeology is thus removed both from a purely specialist dimension, confined to archaeological expertise alone, and from an exclusively technical one, to be relocated within a broader reflection on the social and spatial meaning of design.

As Vittorio Gregotti recalled, conservation without design risks becoming a form of immobilization of reality; on the contrary, design may restore an operative dimension to archaeological traces by reinserting them into the living processes of the city. What emerges is therefore an idea of design as an interpretative and processual practice, capable of operating through relationships between different times, between surfaces and subsoil conditions, between memory and contemporary use, between lost fragments and new forms of urban continuity.

In this sense, urban archaeology is not interpreted as a practice aimed at the simple conservation of the past, but as an integral part of a design reflection on the existing city, on its processes of transformation and on the continuities that can still be built between different urban temporalities and strata.

Bruna Di Palma
Francesca Coppolino
Valeria Defilippis
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Call and organization

City Renewal and Urban Archaeology
The Morphological Value of City Traces

ISUFitaly, International Seminar on Urban Form, Italian Network, organizes its seventh Conference in Naples on 19-21 February 2026. The theme of the conference is "City Renewal and Urban Archaeology. The Morphological Value of City Traces". Following the previous ISUFitaly conferences themes, dealing mainly with the relationships between urban morphology, history and architectural design, the seventh Conference aims to pose the problem of the relationship between the emergence of urban archaeological traces and the often conspicuous morphological value that this formal legacy can potentially generate through urban design as tool to establish links between contemporary city and artefacts from the past: through the creation of large-scale urban archaeological parks or the construction of archaeological roofs; through establishing unprecedented relationship with infrastructures related to underground level different form those of the city 'in surface'.
The theme of urban continuity/discontinuity in the contemporary city and the role of urban architecture as a necessary intermediary, or condition of possibilities, between the historical city, the public space and possible congruent transformations in the contemporary age, are thus re-proposed.

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Conference Themes

T_Theory of city's interpretation

T.1 Theory of urban form
T.2 Composition of urban orders
T.3 Ancient city/contemporary city
T.4 Theories and methods of morphological analysis in the historical cities

R_Reading urban form

R.1 Morphological analysis of historical fabrics
R.2 Spatial analysis of the urban form
R.3 Reading urban archaeology as a tool for the regeneration and renewal of the city
R.4 Dialectical relationship between underlying forms (*Ichnoi*) and emerging forms

D_Urban design for urban archaeology

D.1 Ancient city, consolidated city and contemporary project
D.2 Historical fabric and contemporary project
D.3 Archaeological parks in the consolidated city
D.4 Urban archaeology and public space
D.5 Urban archaeology and infrastructures

Paper list

Reading the City from Below
Representation as a Tool for Unveiling Urban Morphology

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***Keywords**: Underground city form, Subterranean city representation, City three-dimensionality, Progressive city's understanding*
***Conference theme**: Reading urban form. Spatial analysis of the urban form*

***Abstract.** The article investigates the role of underground space in understanding the city as a three-dimensional morphological structure, considering representation as a central epistemic device in the process of spatial knowledge production. The research is grounded in the abstraction model developed by Milica Muminović (2019), here reinterpreted by assigning representation the role of the final stage of analysis, through which abstract knowledge acquires spatial localisation and urban legibility. Within this framework, representation is not conceived as a merely descriptive outcome, but as an active instrument in the construction of morphological knowledge. Adopting a non-chronological approach, the study examines a selected corpus of maps, sections, diagrams, and three-dimensional representations to investigate how underground space has been rendered intelligible within urban form. The analysis is structured around three interrelated morphological dimensions: the connection between parts, understood as relational infrastructure; the stratigraphic composition, interpreted as a dynamic process of material and temporal accumulation; and the three-dimensional relationship between parts, read as an integrated volumetric assemblage. The case studies demonstrate how urban depth has been conceptualised and organised through representational practices capable of describing urban morphology. Overall, the findings contribute to a reading of the city as a volumetric continuum, in which the underground emerges not as a residual or purely technical domain, but as a structuring component of the city's form.*

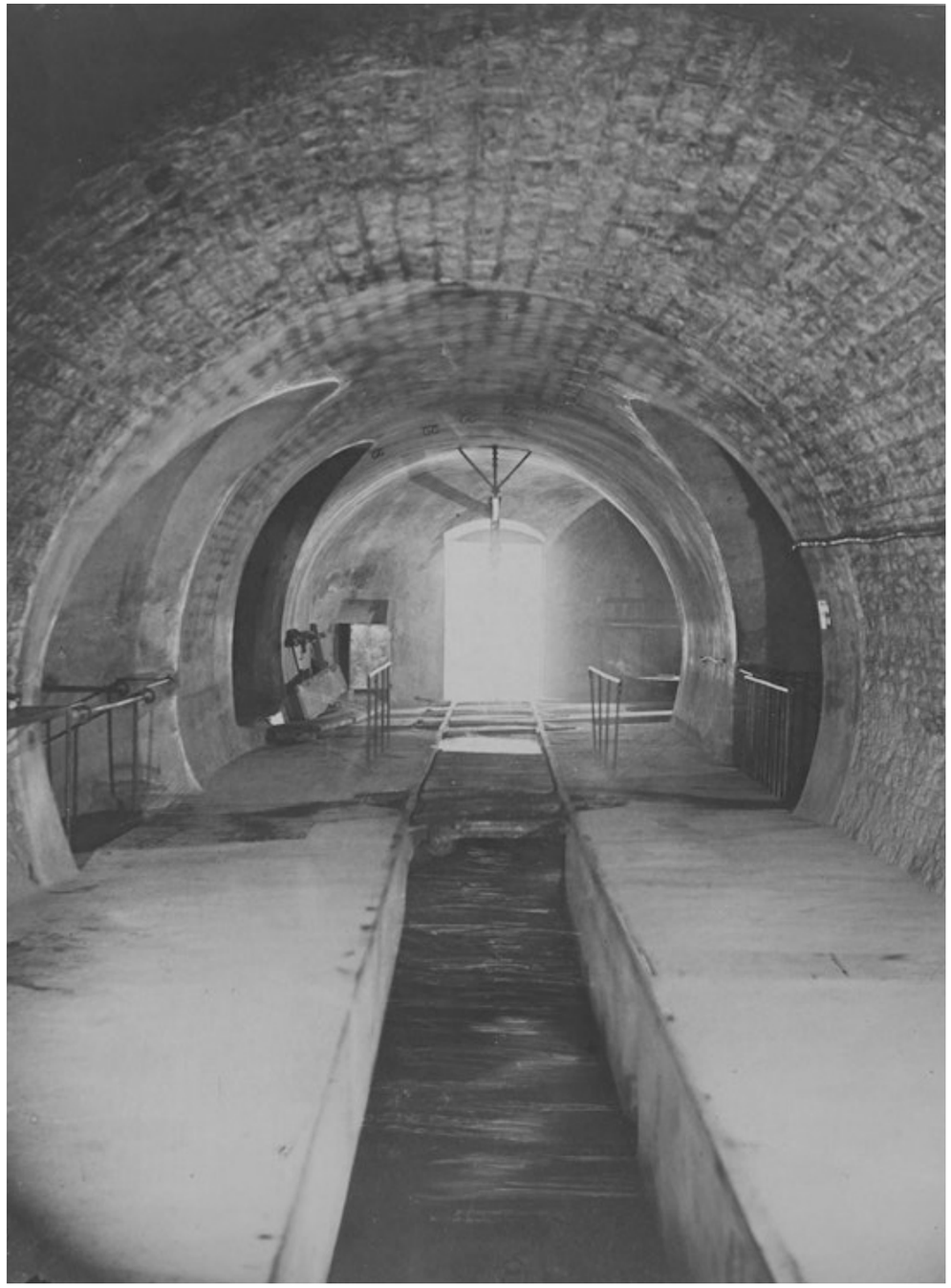

Figure 1. First underground picture - Paris sewers.
Photo by Felix Nadar 1856-1878).

Introduction

Throughout history, the subterranean realm has been linked to elements that evade direct observation. In Greek mythology, Hades governs an invisible realm, hidden beneath the surface of the world of the living. His very name, deriving from the negation of sight, evokes the idea of darkness and of that which cannot be immediately perceived. However, this invisibility does not coincide with an absence of value: Hades is the one who confers wealth, favours vegetation, and makes the mineral resources of the Earth available. Already in myth, therefore, the underground appears as an ambivalent space, simultaneously a place of death and loss, of generation and production (Jacob, 2025).

This ambivalence has long accompanied humanity's relationship with the underground. In Campania, between Naples and Cumae, the widespread presence of natural and artificial cavities has contributed to constructing an imaginary in which the underground landscape overlaps with the myth of the Afterlife. Volcanoes, sulfurous lakes, tunnels excavated in tuff, and networks of cavities have fostered a perception of the territory as a layered space, traversed by invisible forces. Even in the 18th century, travellers such as Charles Burney described this region as a place where the natural landscape evokes infernal images, confirming the persistence of a symbolic reading deeply rooted in the materiality of the soil (Bobrick, 1981). In this context, the underground is not merely a geological space, but a structuring component of territorial experience.

The symbolic centrality of the underground is also traceable in the founding rituals of Etruscan-Roman cities. The mundus or umbelicus urbis represented the point of contact between the world of the living and that of the dead, an opening in the ground that conferred order and meaning to the urban space. Digging was not a purely technical act, but a foundational gesture, capable of establishing a relationship between humans, city, and Earth (Pavia, 2019). The soil thus assumed social and cosmological value, becoming an active element in the construction of urban form.

It is from the mid-17th century that the underground becomes the object of systematic reflection. The models of the Earth developed by René Descartes (1644) or Athanasius Kircher (1665) represent attempts to make the planet's internal structure intelligible through diagrams. In these representations, the Earth is conceived as a body composed of layers, traversed by flows of water, air, and fire. Although speculative, such images introduce a fundamental notion: depth can be thought and organised even before being measured. This intuition has decisive morphological significance, as it allows space to be imagined as thickness, not merely as surface.

Nevertheless, the modern city has developed a predominantly two-dimensional knowledge. Urban planning and design practices have long favoured the surface, relegating the underground to a technical domain. The underground urbanism introduced by Eduard Utudjian, while recognising the importance of depth, has often contributed to reinforcing a functional separation between above and below, organising the city according to autonomous levels (Parisi, 2015). To this, a persistent feeling of distrust toward underground space has been added, perceived as a claustrophobic and disorienting place (Bobrick, 1981).

It is through representation that the underground begins to become legible as urban form. Henry Beck's map for the London Underground does not reproduce the physical reality of the underground space, but organises its relationships, making an invisible structure understandable (Garland, 1994). In this sense, representation acts as a cognitive tool that allows the perceptual inaccessibility of the underground to be transformed into spatial knowledge.

The article examines the role of underground space in understanding the city as a three-

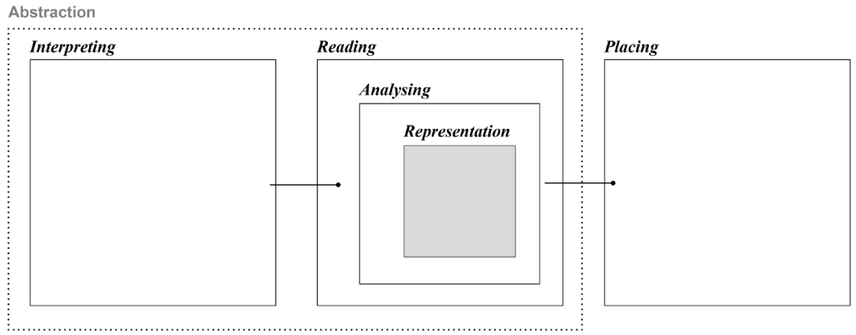

Figure 2. Genealogy of spatial knowledge. Graphic based on Muminovic, M. (2019): 74.

dimensional organism. Through a non-chronological approach, the research highlights how the representation of levels below the ground line has contributed to clarifying connective, volumetric, and interrelational relationships among the different parts of urban space, understood in its complexity. In this perspective, representation assumes not only a descriptive function, but also a critical one, allowing the construction of an urban vision that takes the underground as the starting point for morphological analysis.

Methodology

The research adopts a qualitative methodology, aimed at understanding the underground city as a morphological construction that emerges through representation. Rather than considering representation as a descriptive or illustrative outcome of the analysis, it is assumed as an epistemic device, through which urban form is abstracted, organized, and made intelligible.

The methodological framework is based on the abstraction process outlined by Milica Muminović (2019), according to which spatial knowledge develops through a sequence of operations leading from reading to the localization of the object. In this research, this process is further specified by assuming representation as the final stage of abstraction (Figure 2), that is, as the moment when abstract knowledge acquires spatial consistency and becomes locatable within the urban structure. Representation is therefore not understood as a subsequent translation of analysis, but as a cognitive threshold through which the underground city acquires form and morphological recognizability.

As highlighted by Christopher Alexander (1967), the cognitive process does not proceed by the accumulation of data, but by selection, integration, and configuration, through which complexity is reduced without being trivialized. In this sense, abstraction does not eliminate reality, but makes it readable. This step is particularly relevant in the case of underground space, whose perceptual inaccessibility requires representational mediation in order to recognize it as an integral part of the city.

Within this methodological structure, the research identifies three elements of urban analysis through which the underground city is examined in its morphological complexity. These elements do not constitute separate domains, but complementary analytical dimensions that, considered together, allow a three-dimensional reading of urban form.

- *Connectivity between parts*. This analytical dimension considers the city as a relational system,

in which form emerges through networks, pathways, and accessibility devices. Attention is focused on connection structures rather than isolated objects, and representations prioritize topological clarity over geographic fidelity.

- *Stratigraphic composition*. This dimension analyzes the vertical organization of the city and the process of material and temporal accumulation that characterizes the urban soil. Stratification is understood as a dynamic condition, in which infrastructures, historical sediments, and geological transformations contribute to constructing a complex urban thickness.

- *Relationship between the different parts*, understood as three-dimensional assembly. This dimension simultaneously considers connectivity and stratification, interpreting the city as an integrated volumetric whole. Surface and underground, infrastructure and architecture, movement spaces and stationary spaces are read as components of a single continuous spatial system.

The proposed methodology does not aim to produce an objective image of the city, but to construct a morphological knowledge capable of making its structures, relationships, and spatial thickness explicit.

Reading Phase

«Not only is it easy to lie with maps, it's essential», observes M. Monmonier in his book *How To Lie With Maps* (2018), arguing that cartography never fully represents reality, but instead constructs a model defined through processes of selection, abstraction, and distortion. A map is effective not when it is faithful to physical reality, but when it succeeds in making a spatial structure intelligible with respect to a specific function (Monmonier, 1991). In this sense, representation operates according to three fundamental dimensions: abstraction, which constructs the representational elements; integration, which organises data into a coherent system; and configuration, the device through which the concept is made explicit (Alexander, 1967).

Before its graphical codification, the subway constituted a disorienting and scarcely legible underground experience. The loss of contact with the surface landscape interrupted the perceptual continuity of urban space, producing a non-identitarian, non-relational, non-historical space, which required signage and artificial devices to be traversed: a *non-lieu* (Augé, 2025).

Connectivity between parts

The difficulty of orientation in underground space can also be interpreted through Henri Lefebvre's (1976) conceptual triad: *perceived space, conceived space, and lived space*. In the early 19th-century subway experiences, conceived space (designed and narrated as a symbol of progress) came into conflict with lived space, characterised by noise, smoke, claustrophobia, and the sensation of being treated like cargo (Ashford, 2013 and Pike, 1963). In the absence of an adequate representational device, underground space remained abstract and hardly intelligible.

It is in this context that Henry Beck's London Underground map, designed in 1933, assumes decisive morphological value. Early underground maps, produced from 1908 onwards, attempted to maintain geographic correspondence with the urban surface, integrating surface and underground networks. However, the growth of the city and of the transport network made these maps increasingly complex and challenging to read: spatial distortions multiplied, labels overlapped, and orientation was compromised (Burwood *et al.*, 1982).

With *The Diagram* (Figure 3), Beck introduced an epistemological rupture: he removed the cartographic background, preserved only the River Thames as a symbolic reference, and adopted a rigorous geometric grammar based on horizontal, vertical, and 45°/90° diagonal

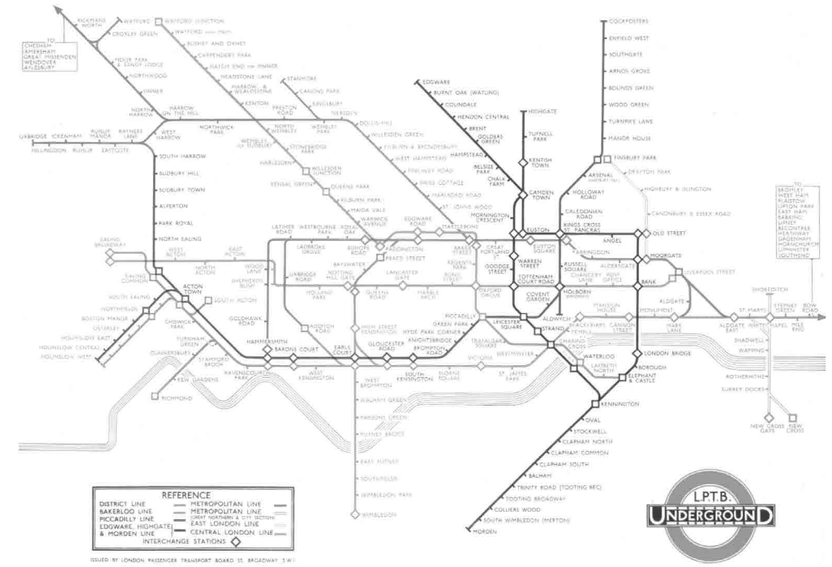

Figure 3. Map Of London's Underground Railways. Henry Beck, *The Diagam* (1933).

lines.

Distances between stations were standardised, routes straightened, and the network was organised as a topological rather than geographic system (Garland, 1994). This operation of radical abstraction made it possible to transform an invisible infrastructure into a legible structure.

From a morphological perspective, Beck's map makes the city explicit as a system of connections. Depth is not represented as geographic data, but as a relational condition: what matters is not where stations are located in physical space, but how they are connected to each other. In this sense, *The Diagram* can be interpreted as an intermediate device between thought and reality, according to Aureli's (2005) definition of a diagram: a tool that combines an objective organisation of data with a conscious interpretive choice.

This relational reading of the underground city finds further theoretical grounding in the concept of *isovist*. Hillier and Hanson (1984) define it as the visual field accessible from a point in space and show how urban perception is constructed through a dynamic sequence of visual fields. While above-ground isovists gradually change, accompanying the continuous experience of urban space (Hillier et al., 1984), underground, by contrast, the isovist is reduced, standardised, and independent of the subject's real position in the city.

Isochrone maps further clarify this perceptual discontinuity. With Francis Galton's *Isochronic Passage Chart* (1881), space is reorganised according to travel time, anticipating a reading of space as a field of accessibility rather than geographic proximity (Figure 4).

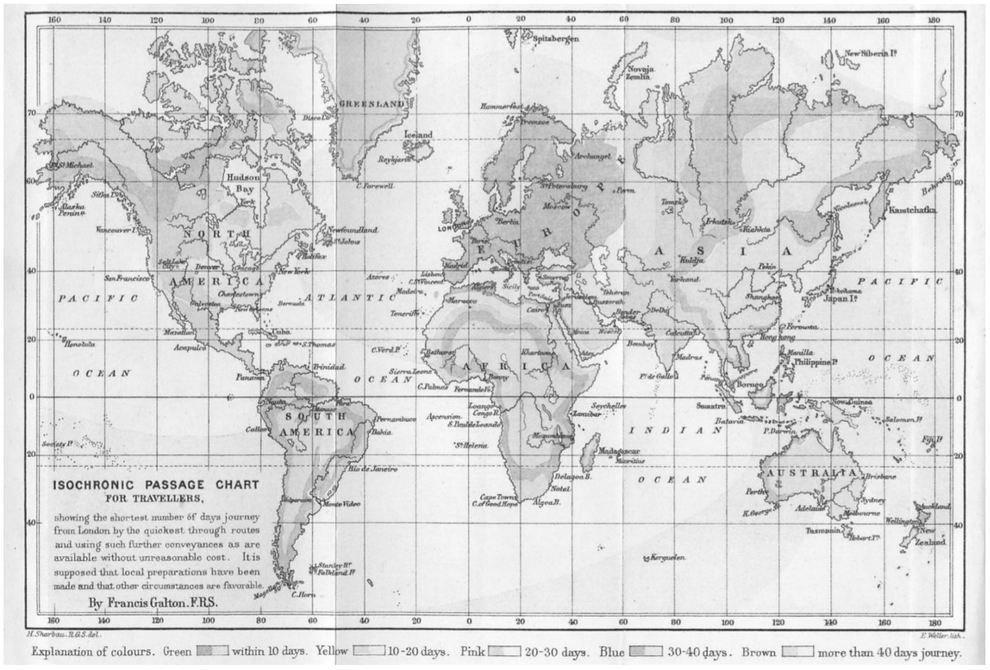

Figure 4. Map map of the world according to travel time.
Francis Galton, *Isochronic Passage Chart* (1881).

Stratigraphic composition

Before being an urban condition, stratification is a conceptual construction. Speculative representations of the Earth elaborated by René Descartes (Figure 5) and Athanasius Kircher (Figure 6) in the 17th century introduce a mode of thought that makes depth intelligible through

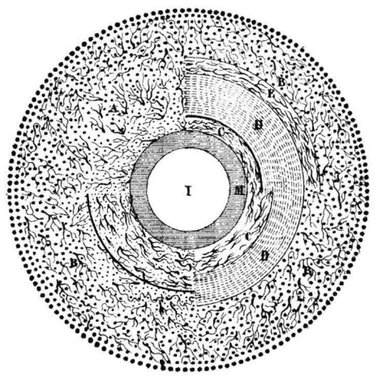

Figure 5. Earth's interior structure map.
Renè Descartes, *Über die Erde* (1644).

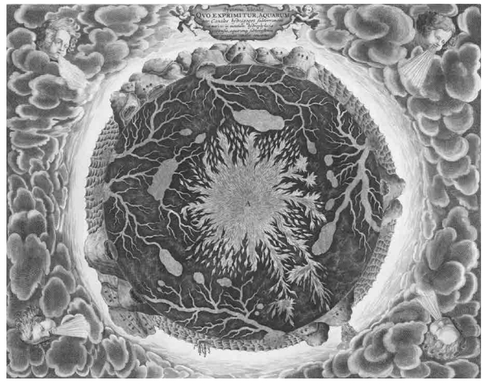

Figure 6. Earth's interior structure map.
Athanasius Kircher, *Il Mondus Sotterraneus* (1665).

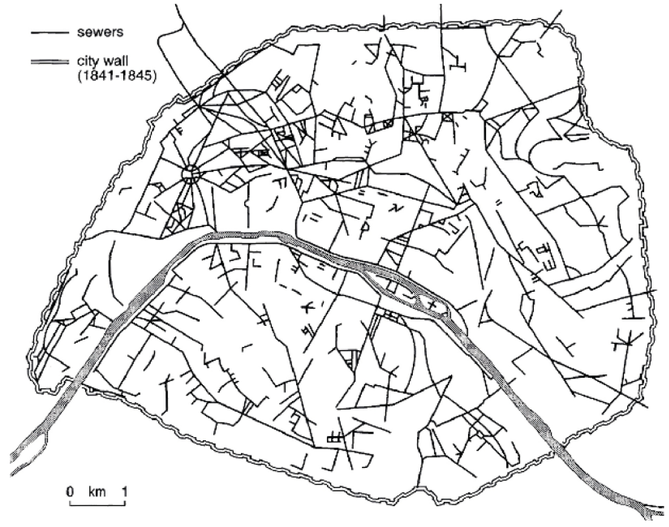

Figure 7. Paris sewers map.
Eugène Belgrand, Paris sewers system (1856-1878).

decomposition into functionally differentiated layers. In these diagrams, the Earth is conceived as a body traversed by flows, cavities, and internal circulations, organised in overlapping levels that follow physical and cosmological logics. Depth is not yet measured or excavated, but it is already conceived, ordered, and represented as a spatial structure founded on thickness.

Although these representations were not urban, they introduce a crucial morphological intuition: depth precedes direct experience and is constructed as a concept before becoming inhabited space. Stratification thus emerges as a cognitive operation through which the invisible is made legible.

The Parisian sewer system, designed by Eugène Belgrand between 1857 and 1870, constitutes a paradigmatic example. The construction of the sewers responded not only to sanitary needs but also implied a profound reorganisation of the city, in which the underground was integrated as a structural level of the urban organism (Gandy, 1999). Belgrand's maps (Figure 7) make visible a stratified city, in which technical infrastructures, artificial soil, and inhabited space coexist without coinciding. The city no longer develops exclusively on the surface but is articulated along depth according to a systemic logic (Gandy, 2014).

Urban soil is defined not only by geological characteristics but also by archaeological processes generated by social, cultural, and political influences. Most cities are built on artificial ground composed of historical debris, which can reach considerable depths: up to ten meters in Manchester, about eight meters in York, while Rome has been progressively rebuilt atop its own ruins to find itself approximately fifteen meters above its original level. Other metropolises rise above vast burial and infrastructural systems: beneath Paris extends an underground network of over two hundred miles, hosting the remains of around six million people (Graham, 2016).

In this perspective, stratification cannot be interpreted as a simple ordered superimposition of independent levels. On the contrary, it is configured as a process of temporal and material accumulation, in which layers of past urban forms, buried infrastructures, and geological

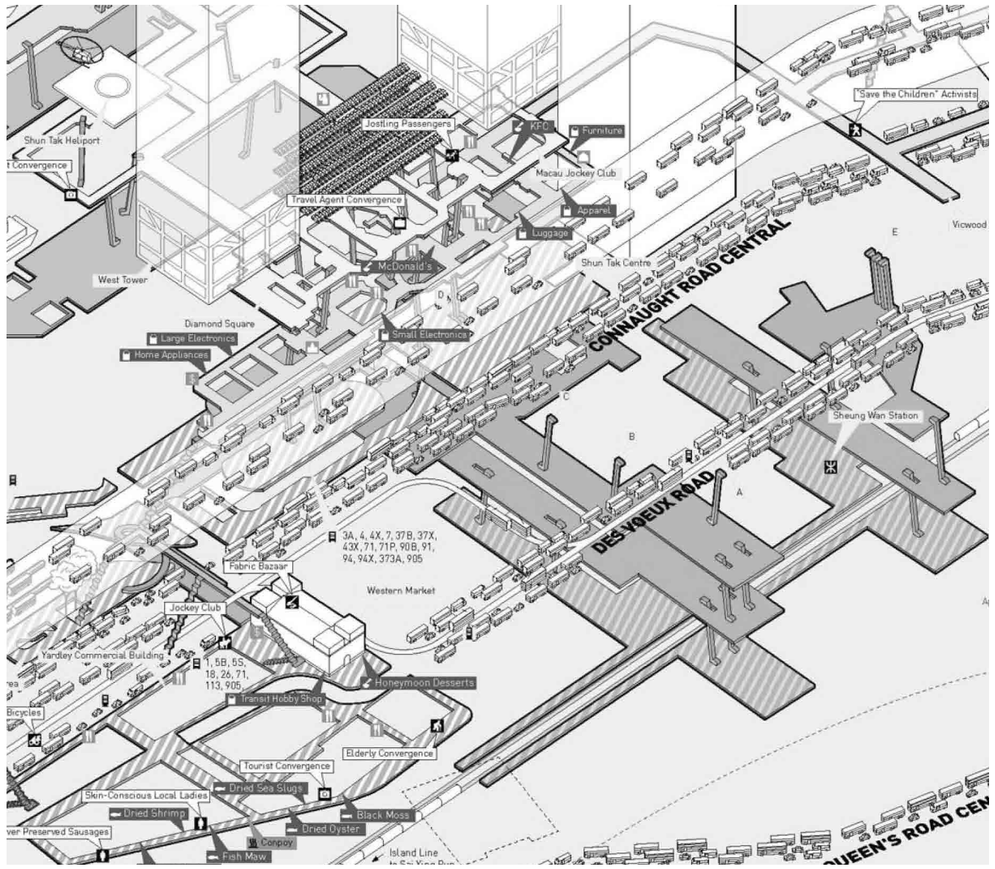

Figure 8. Relation between city's parts. Graphic reworking of *Central* (Framton *et al.*, 2012).
Adam Framton, Jonathan D Solomon, Clara Wong.

transformations produce a complex spatial condition. The very notion of surface becomes ambiguous: what was once a street may now lie several meters underground, while contemporary soil may rest on centuries of accumulated debris. The city thus appears as a three-dimensional palimpsest, in which each layer preserves traces of previous transformations and continues to influence the organisation of current space.

Relationship between parts

Another outcome concerns the disruption of traditional separations between public and private, visible and invisible, technical and inhabitable. Some representational practices, while operating predominantly on the surface, have introduced a spatial reading based on the continuity of accessible spaces, anticipating a conception of the city as a continuous field rather than a set of functional compartments. Underground representations, from the Parisian sewers to the axonometric drawings in *Cities Without Ground: A Hong Kong Guidebook* (2012) (Figure 8), extend this logic in depth, showing how many urban dichotomies are the product of representational conventions rather than fundamental morphological discontinuities.

This condition leads to a reading of the city as a three-dimensional assembly. Eugène Hénard's multi-level representations from 1910 constitute one of the first conscious attempts to organise the city along depth, distributing functions, flows, and infrastructures according to a vertical logic. In these sections, the city is no longer conceived as an accidental superimposition of levels, but as an integrated system in which each layer contributes to the overall form of the urban organism.

In line with this thinking is Webster's (1914) work, which, building on Hénard's insights, proposes a valid typology of urban underground stratigraphy, conceived as an operational tool for organising the modern city. Webster identifies a functional succession of underground levels, including, from the layers closest to the surface, vaults under sidewalks for local services, underground galleries for coordinated passage of conduits and technical infrastructures (aqueducts, sewers, gas pipes, electrical ducts, steam and hot water pipes, pneumatic and cooling systems), down to deeper levels dedicated to rail-based public transport, cross-city tunnels, and underground networks for goods transport, connected to railway terminals, production activities, and commercial establishments.

Placing Phase

Through the analysis of *connectivity*, *stratification*, and three-dimensional *relationships between parts*, it emerges that the underground simultaneously functions as a spatial device, a temporal archive, and a relational infrastructure, capable of redefining the way the city is perceived, represented, and understood.

Henry Beck's map demonstrates how representational abstraction can produce a new urban intelligibility. By organising the subway network as a topological rather than geographic system, *The Diagram* not only facilitates orientation underground but actively contributes to the construction of a new mental geography of the city. Underground stations selectively expand isochrones, bringing physically distant places functionally closer and fragmenting the perception of urban continuity. In this sense, underground connectivity does not eliminate distance but reconfigures it according to relational logics, demonstrating how depth can operate as an active dimension in the reorganisation of urban form. Stratigraphic composition introduces a second fundamental key of interpretation, shifting attention from immediate spatial relationships to the temporal dimension of urban form. The results show that stratification cannot be reduced to a simple superimposition of functional levels, but must be understood as a dynamic process of material and historical accumulation. The archaeology and history of a place, far from constituting a passive backdrop, act as morphogenetic forces that continue to influence the organisation of the contemporary city. Modern cities develop atop their historical foundations, and the accumulation of infrastructures, debris, and successive transformations constantly redefines the boundary between surface and underground. Stratification thus emerges as an unstable condition, in which time deposits itself in space and directly contributes to the construction of urban form. The relationship between parts, allows the integration of previous readings into a systemic vision. Hénard's multi-level representations and Webster's subsequent formalisation show how the underground can be organised as a relational infrastructure capable of integrating mobility, technical services, and logistics without fragmenting surface urban space. Webster's typological stratigraphy should not be interpreted as a technical classification, but as an attempt to shape a coherent three-dimensional city, in which relationships between parts are spatially organised along depth. In this framework, the underground does not appear as a separate domain, but as a field of connection that guarantees functional and morphological continuity for the entire urban organism.

Conclusion

A three-dimensional morphological reading of the city cannot be achieved simply by adding the vertical dimension to traditional planimetric analysis tools. On the contrary, it requires a more radical shift in the interpretive framework, which affects the very perspective from which the city is observed, represented, and understood. In this sense, representation is not a neutral act, but an epistemic device that guides what can be seen, related, and interpreted.

Modern cartography has historically relied on a directional frame of reference, in which orientation in space is guaranteed by stable cardinal axes and a terrestrial surface conceived as a continuous and homogeneous plane. This direction-oriented approach has privileged the surface as the primary support for spatial knowledge, reducing soil to an abstract linear section and the underground to a residual or purely technical dimension (Aït-Touati, 2022). However, this paradigm shows its limits when the city is interrogated in its material, temporal, and volumetric complexity.

The proposed reading suggests a shift towards a ground-oriented perspective, in which soil is no longer considered a stable threshold between above and below, but an unstable, stratified, and continuously evolving thickness. Topography can no longer be assumed as a fixed reference, since the Earth itself is mobile, porous, and subject to shifts, accumulations, and collapses (Figure 9).

In this framework, the underground city no longer appears as an exception or deviation from urban form, but as a privileged layer of knowledge for understanding the city organisation.

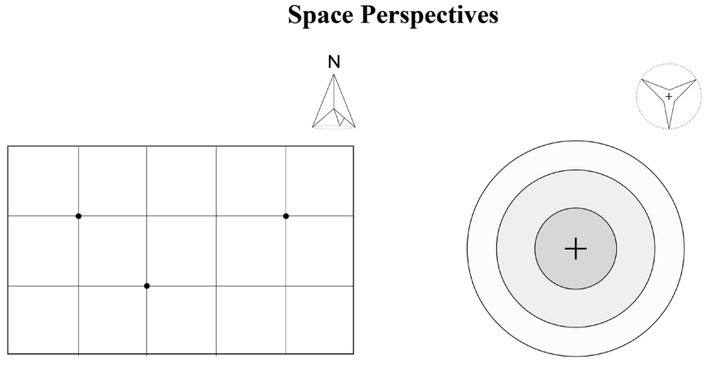

Figure 9. Direction-orientated VS Ground-oriented perspective. Graphic based on Aït-Touati F, Arènes A, Grègoire A (2022): 34.

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