



National Garden for Subterranean Heritage: A Repository for Human/Earthly Matter

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*National Garden for Subterranean Heritage:
A Repository for Human/Earthly Matter*

A Thesis Submitted to the Department of Landscape Architecture,
Harvard University Graduate School of Design
by

Maria Vollas

In Partial Fulfillment of the Requirements for the Degree of


MASTER IN LANDSCAPE ARCHITECTURE

May 2022

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Maria Vollas



Rosalea Monacella

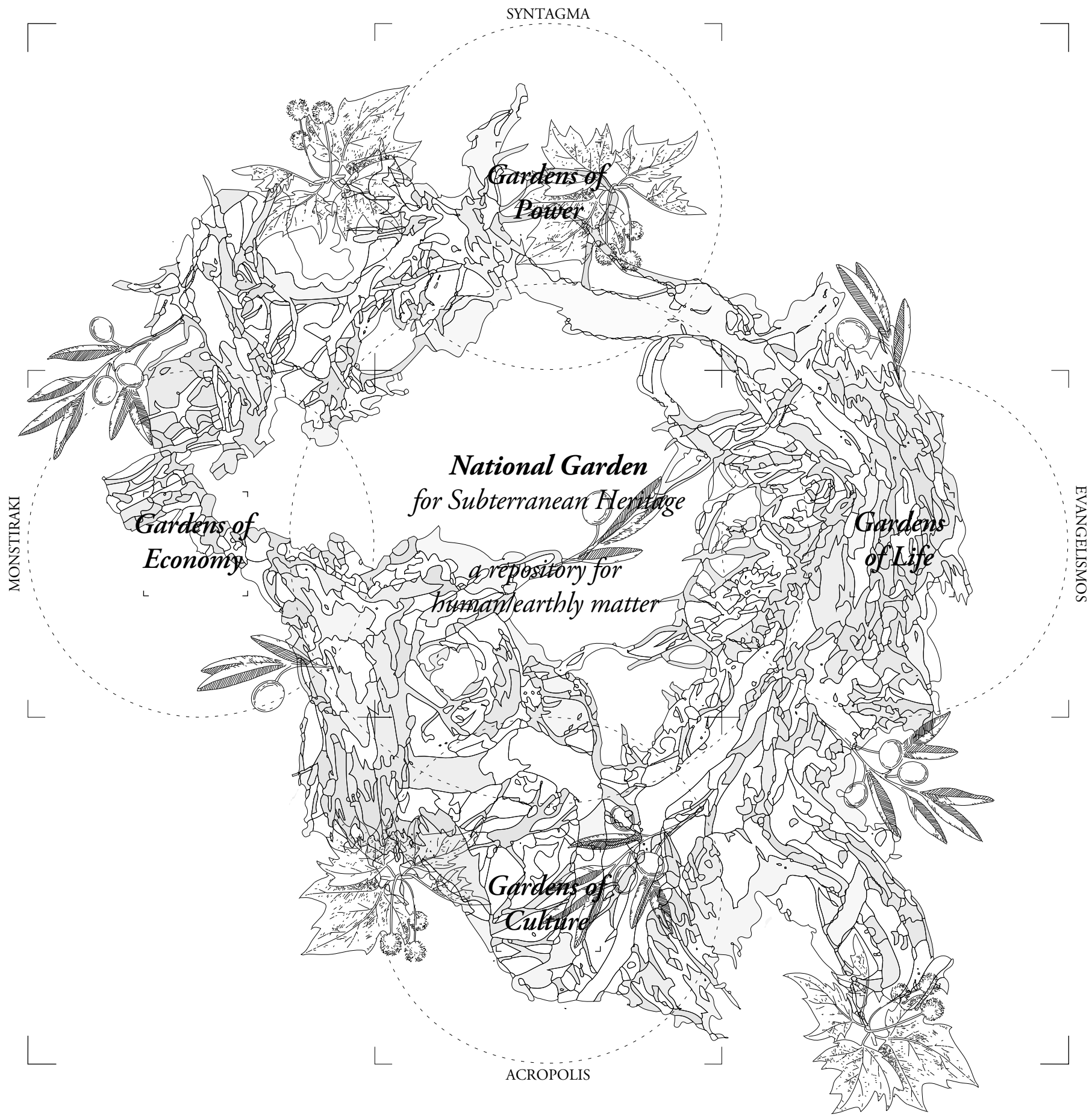


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Master in Design Studies (ULE)

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National Garden for Subterranean Heritage
A Repository for Human/Earthly Matter

The National Garden for Subterranean Heritage reconceptualizes the botanical National Garden of Athens, Greece as a networked repository for human/earthly stories. Critiquing colonial practices of transplantations and classifications of imposed fragmentations embedded in the National Garden, the repository investigates situated knowledges of ground matter exposed within the subterranean metro network. National is redefined as the temporal entanglements of human inhabitations and geologic transformations, unearthed in proposed Gardens of Human/Earthly Matter within the Syntagma, Acropolis, Monastiraki, and Evangelismos stations and curated at the Repository of Subterranean Heritage within the existing botanical garden. Reacting to the absence of earthly agencies in Athens' historical narratives, the repository restores Theophrastus' didactic empirical gardens exhibiting conglomerated strata as co-authored systems of air, water, earth, fire, and live matter. Ancient fragments, infrastructures, and material flows are resurfaced in the decentralized gardens, exposing the agencies of Power, Culture, Economy, and Life in the formation of the city.

acknowledgements

After a year of work on this thesis project, I would like to recognize the valuable help and contribution of many individuals throughout the process.

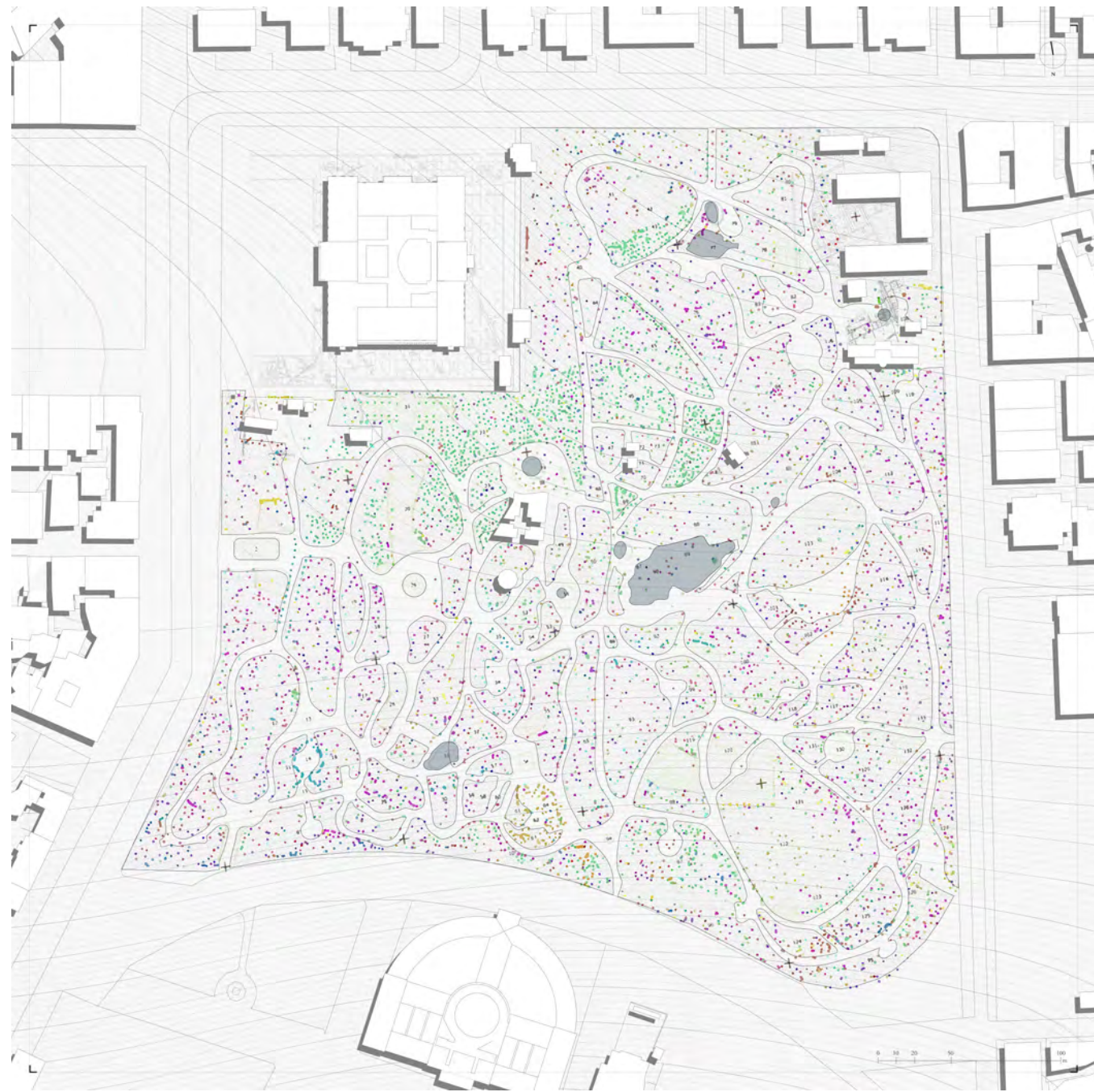
I would like to initially recognize the immense help, and encouragement I have received from my thesis advisor Rosalea Monacella. Her valuable feedback and assistance throughout the year, but also throughout my time at the GSD, has been instrumental in the formation of this project. I appreciate the care she has kindly shown for the project throughout its development and all of our inspiring conversations in the development of the theoretical framework of the project.

I would also like to thank other faculty at the GSD that have been instrumental in the conceptual framing of the project. I am grateful to Charles Waldheim for his valuable feedback in the beginning of this process and during the thesis preparation. I would like to also thank Pablo Pérez-Ramos, who through his course “Time’s Arrow, Time’s Cycle” allowed me to expand my thinking on concepts of time and temporality of landscape. I am also grateful to Edward Eigen, who through his course on the histories of landscape allowed me to develop my critical thinking and position with regards to (botanical) gardens. I also thank Antoine Picon, who through his course on the histories of infrastructure, encouraged me to expand my thinking on notions of infrastructural systems and networks in urban environments. I am also thankful to Rania Ghosn and her MIT course “World Heritage, Climate Inheritance” for the valuable readings and discussions on definitions and notions of heritage, as well as the politics of preservation.

I thank the state company Attiko Metro S.A. for assisting me in the development of this work, by providing me with detailed information and drawings on the metro stations in Athens, and specifically thankful to the staff Rallou Kentridi and Fotini Kantzavelou.

I am grateful for receiving so much support and encouragement from my fellow classmates and friends at the GSD, and specifically I thank Morgan Vought, Berit Schurke, Alison Maurer, Areti Kotsoni, Matt Gorab, Barbara Graeff (and so many more) for their kind and valuable support and help throughout the process. I am also grateful to my family for always being present to support and encourage me throughout this year-long thesis work.

Much of this work wouldn’t have been possible without the contribution and help of each one of these individuals and I appreciate all your kind interest you have shown throughout this year!

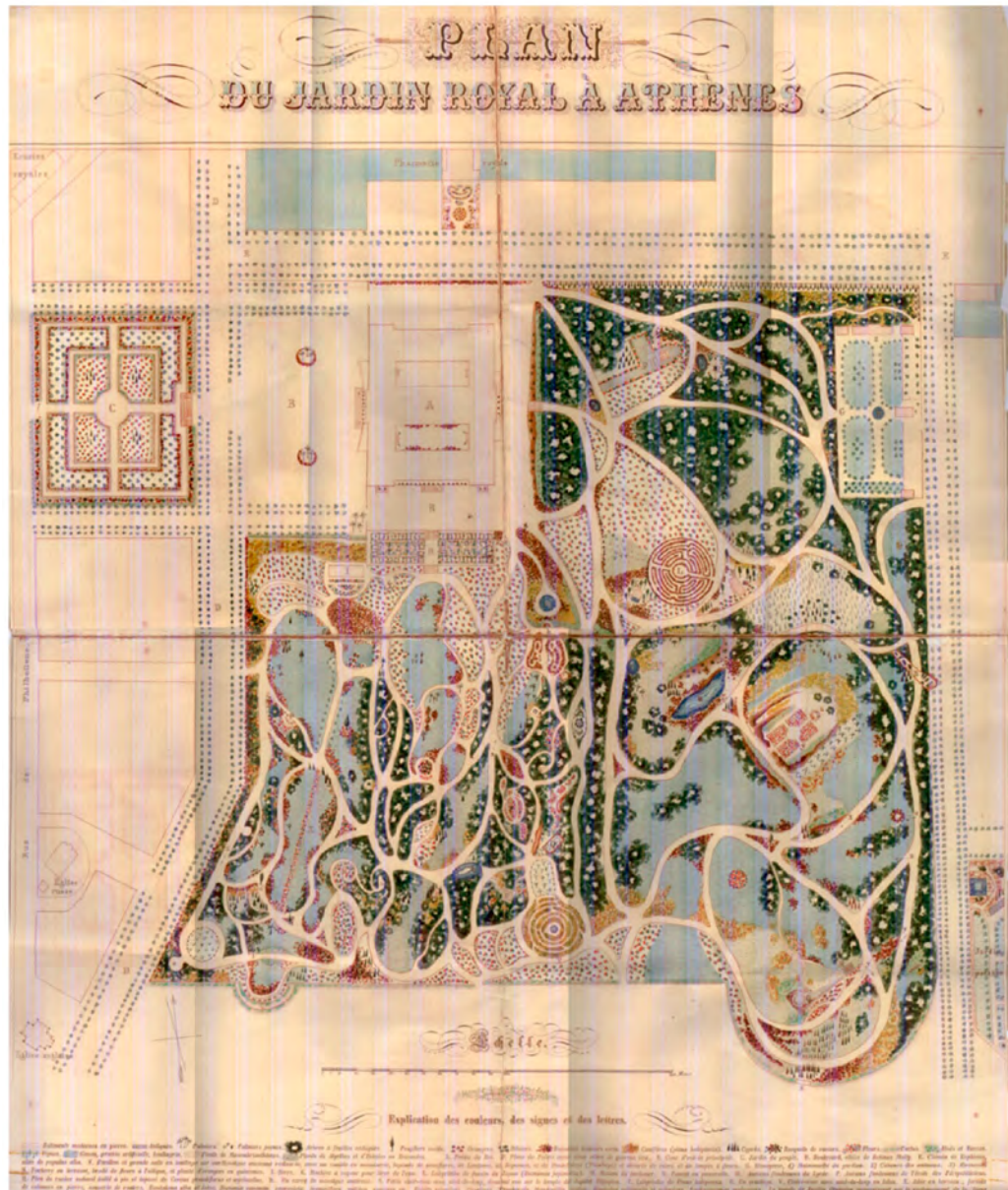


Map of the existing botanical National Garden in Athens. The series of colored dots illustrates the oftentimes “exotic” species of trees that are imported to this territory after their extraction in an international context. Drawing by author.

The National Garden

Focused on the landscape typology of the botanical garden, this thesis rejects existing colonial knowledge systems and practices of botanical transplantations, collections, and classifications which have their origins in logics and cultures of extractivism and practices of exploitation, re-defining this knowledge-oriented type of garden to the local/situated collapsed histories of human (Anthropos) and place (topos) and through interventions in the conglomerated matter of the messy and uncurated subterranean ground conditions of Athens.

This project lands on the existing National Botanical Garden (Εθνικός Κήπος) of Athens, which is representative of histories of externally-imposed monarchy in Greece, expressing these knowledge systems that are under critique in this thesis proposal. Here, the term *National* is viewed critically and it is defined in this thesis to be the local, the situated collapsed histories between human (Anthropos) and place (topos). The current site of the National Garden is transformed from an existing botanical garden of “exotic” oriental species to a situated local repository for human/earthly matter.



Plan depicting the Royal (now National) Garden in Athens in 1854, by Francois Louis Barauld. Image retrieved from Otto König von Griechenland Museum Ottobrunn.



Top: View of the Garden in 1910. Image retrieved from www.elculture.gr
 Bottom: One of the entrances to the Garden, photographed in 1891. Image retrieved from www.archaiologia.gr

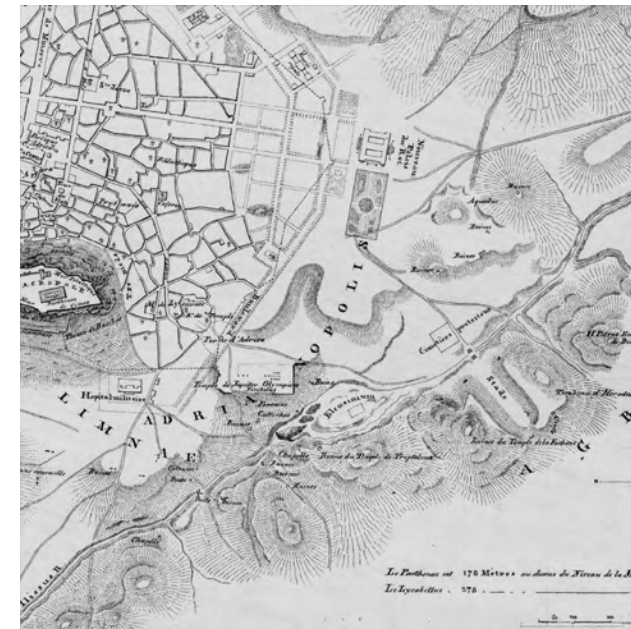
the National Garden as a botanical collection of fragmented "exotic" flora and fauna, classified according to species



the National Garden as a Repository for Human/Earthly Matter



Exploded isometric drawing, speculating on the deep ground conditions of the National Garden from the bottom layer of the bedrock to the existing ground level with the use of layered historical maps of the region. Original maps are retrieved from the Harvard Map Collection.



1837



1870



1878



1923

Series of historical maps depicting the originally-titled "Royal", then renamed as "National", Garden. Original maps are retrieved from the Harvard Map Collection.



Map of the curatorial interventions at the proposed *Repository of Subterranean Heritage* at the National Garden in Athens. The map illustrates a series of suggested paths across the garden, named after the four elements of air, water, earth, and fire which are entangled and connected by the artefacts collected and exhibited across the site. Drawing by author.

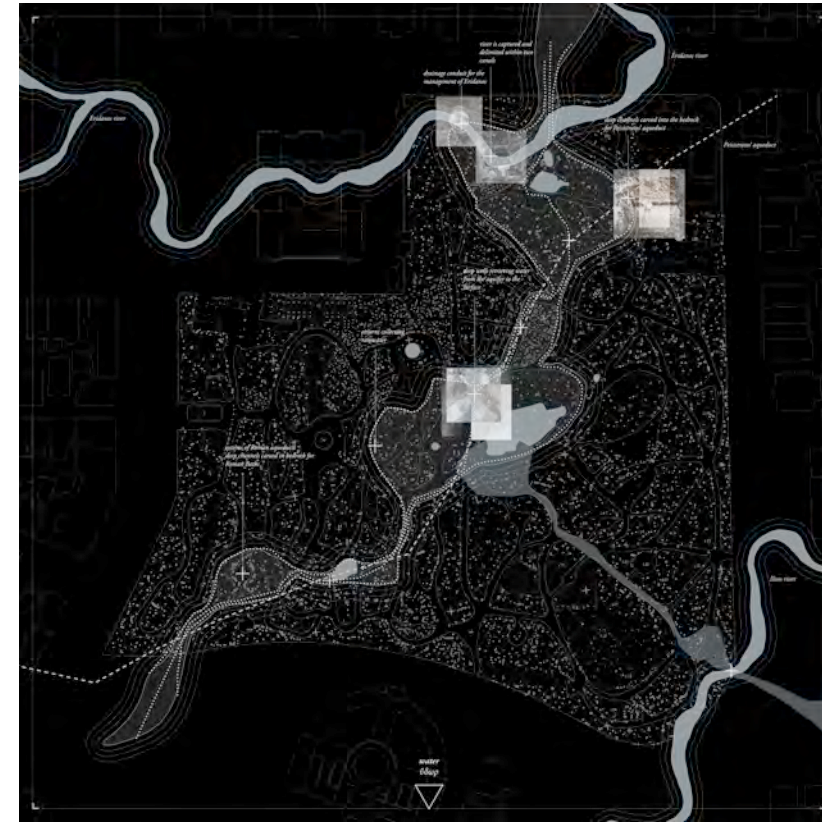
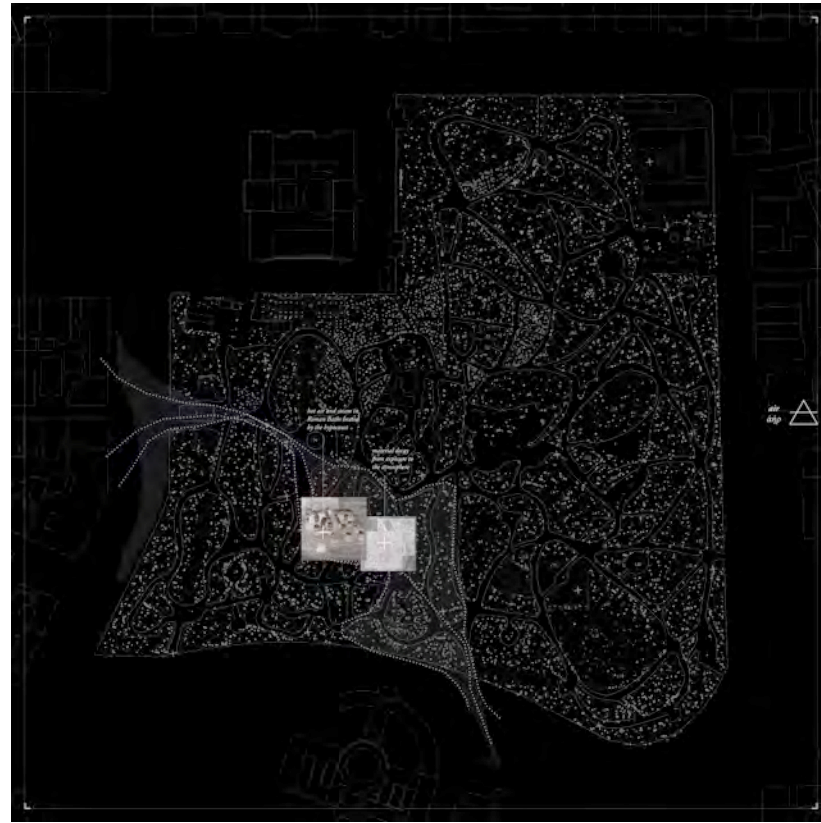
Proposed Repository for Subterranean Heritage

A series of curatorial interventions are proposed for the existing plot of the National Garden, focused on its transformation into a Repository for Subterranean Heritage. In particular, four distinct paths along the garden are defined from an elemental perspective as trajectories of *Air*, *Water*, *Earth*, and *Fire*. The trajectories are intersected with each other by a series of curated fragments of human/earthly matter, which is expressive of entanglements of elements and human/earthly agencies and forces across time.

In considering the documentation of human and planetary histories, the project here refers to Dipesh Chakrabarty and his argument that climate change demands that we now merge the siloed disciplines of human history and natural history into one collapsed story¹, but here I am arguing that this collapse is not only a recent phenomenon but rather something that begins in antiquity.

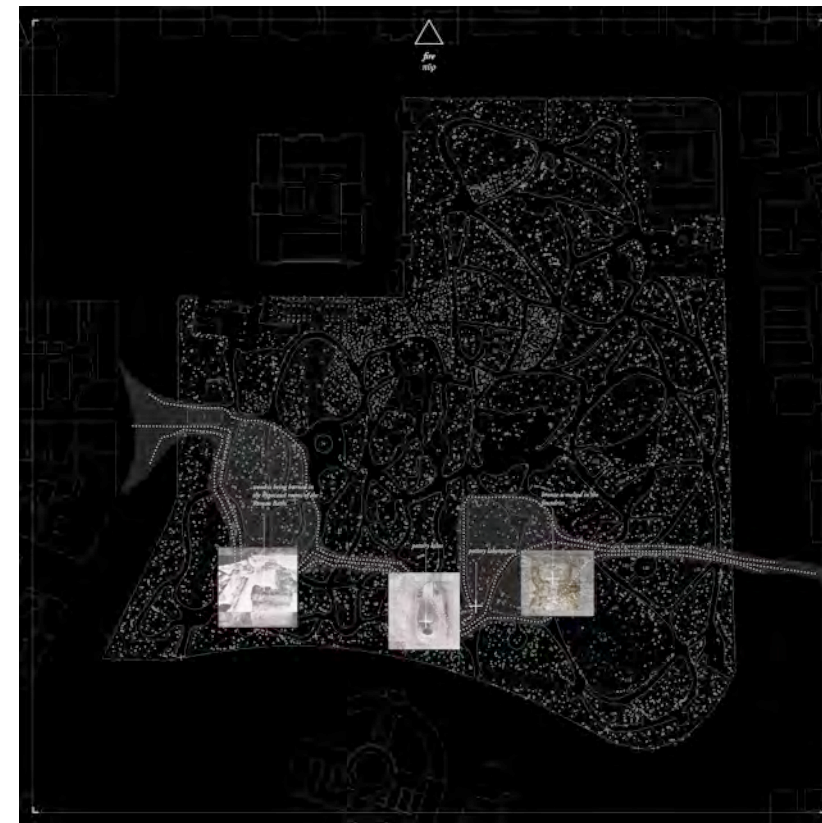
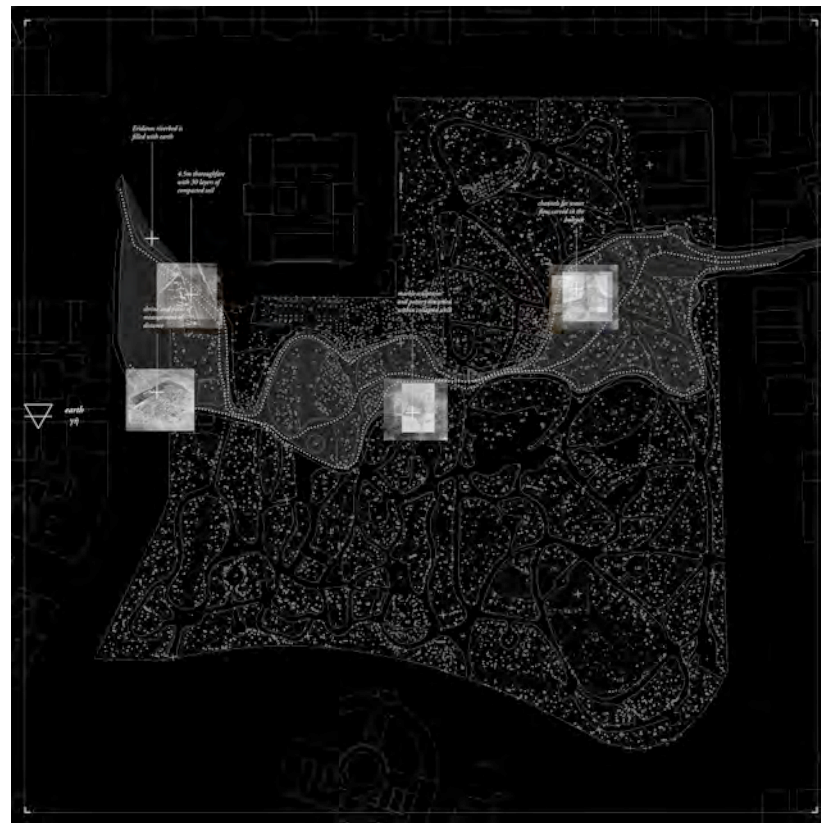
¹ Chakrabarty, "The Climate of History.", 201

The proposed path of *Repository of Subterranean Heritage* at the National Garden in Athens according to the element of air.
Drawing by author.

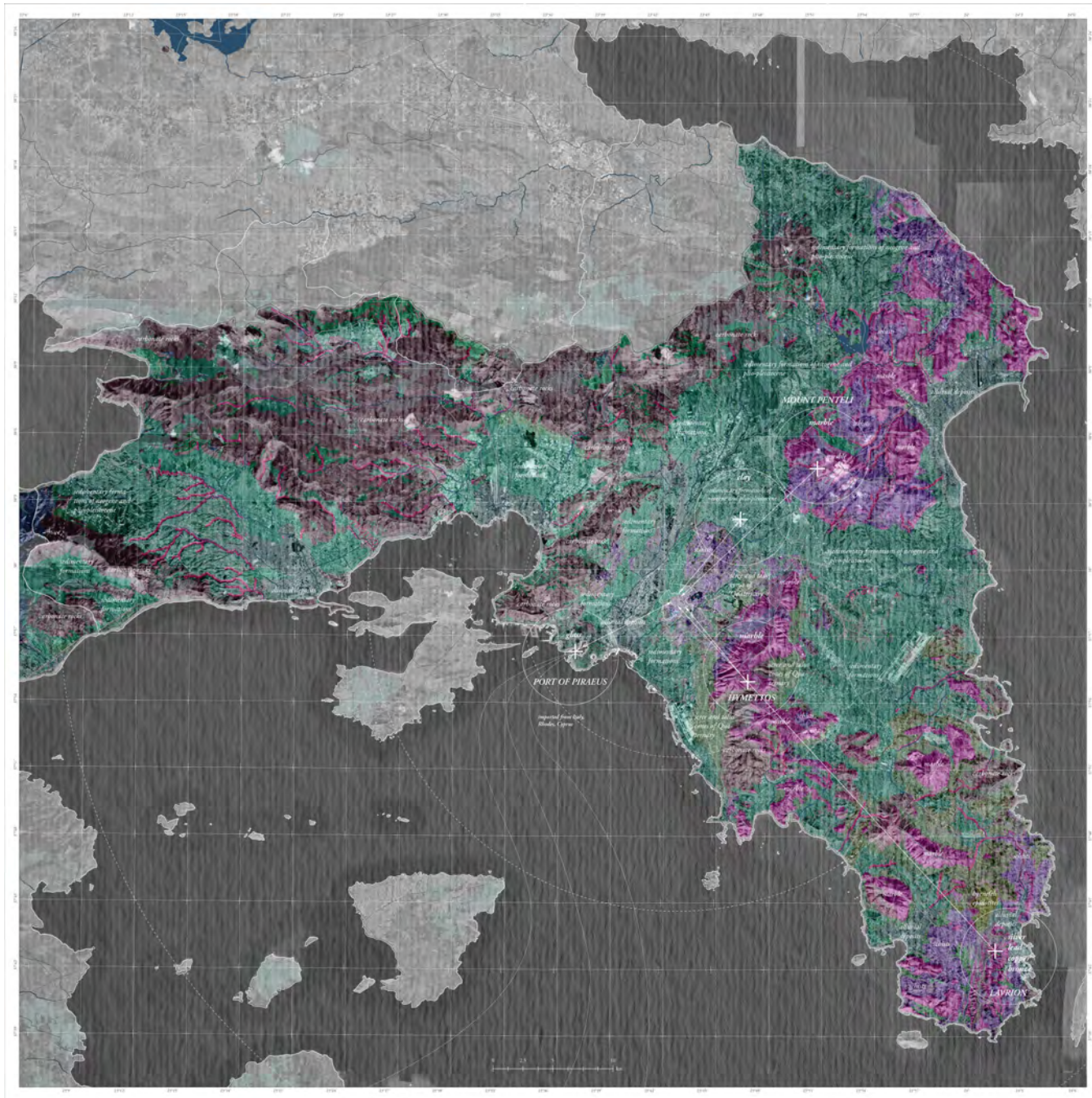


The proposed path of *Repository of Subterranean Heritage* at the National Garden in Athens according to the element of water.
Drawing by author.

The proposed path of *Repository of Subterranean Heritage* at the National Garden in Athens according to the element of earth.
Drawing by author.



The proposed path of *Repository of Subterranean Heritage* at the National Garden in Athens according to the element of fire.
Drawing by author.

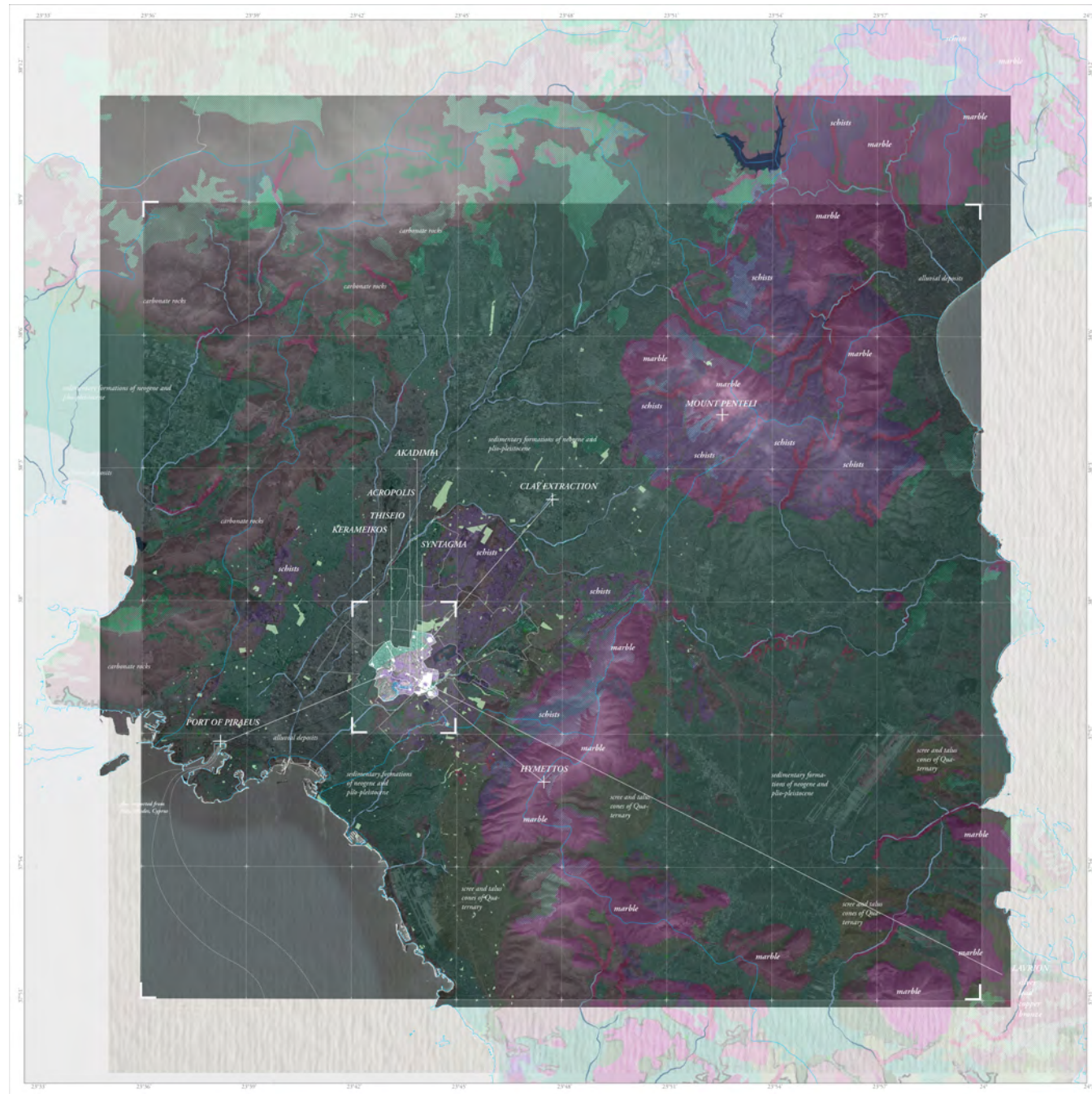


Geologic map of the Attica region, illustrating the ancient geologic transformations expressed by the territorial material flows between the periphery and the city of Athens. Drawing by author.

Since the early human settlements and inhabitations in the territory of Attica, the local geologic crust is continuously altered. It is speculated that the first inhabitation of this territory by humans begins between the 11th and 7th millennia B.C., a presence which becomes apparent in the traces that these past inhabitants have marked on the geology of the Cave of Schist, located within the metropolitan area of Athens². As a city and a significant urban center, Athens has been continuously inhabited for at least 5,000 years (since at least 3,000 BC)³, a history which is now represented and apparent to us primarily through a multi-layered condition of the various historic periods and stages preserved in the subterranean ground. Traces of “ancient” materials stored as a compacted anthropogenic archaeological layer under the historic center of the city are a result of infrastructural works of extraction, modification, displacement, and placement of geologic matter.

²Κώττη, “Οι πρώτοι... Αθηναίοι (The first... Athenians).”

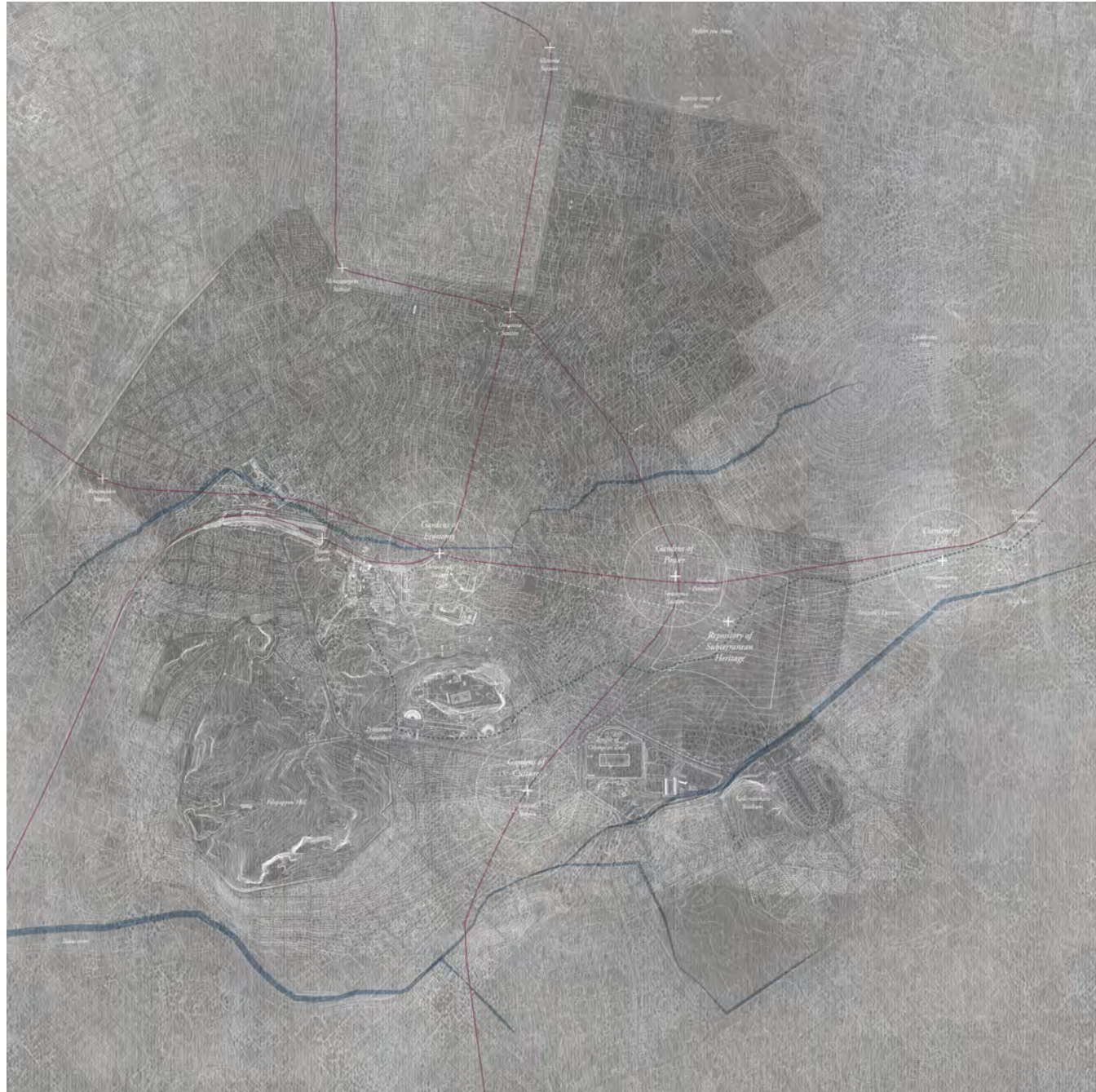
³ Tung, “The City the Gods Besieged”, 266.



Detailed geologic map of the Attica region, illustrating the ancient geologic transformations expressed by the territorial material flows between the periphery and the city of Athens.
Drawing by author.

White marble used for the construction of the Acropolis hill was sourced by the Penteli mount, through expansive infrastructural networks that used the natural slope of the terrain to transport heavy matter along a 17 km route (as illustrated by Korres' material flow drawing⁴ also included in this appendix). In the meantime, lead extracted from the mines in Lavrion connects the terracotta components of Peisistratos' aqueduct together, facilitating the transport of fresh water to the city, while the large deposits of silver, copper, and bronze would gain value in their use as coins, reflecting perhaps an early form of a "Capitalocene".

⁴ Korres, "From Pentelicon to the Parthenon: The Ancient Quarries and the Story of a Half-Worked Column Capital of the First Marble Parthenon"

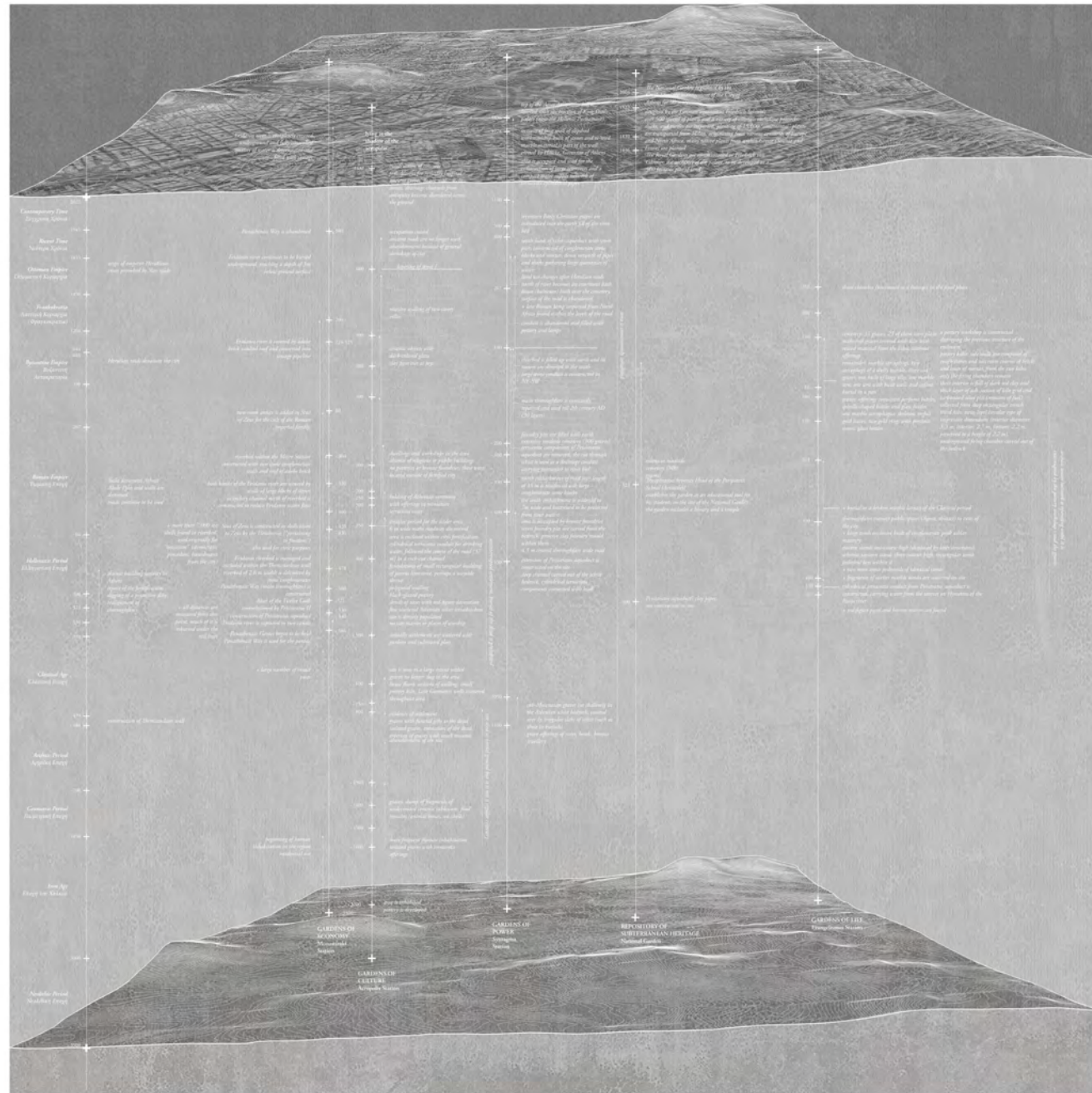


A Decentralized National Garden

The institution of the National Garden is reimagined in this thesis as an expansive and decentralized condition within the city of Athens, where the existing site of the botanical National Garden would be only one of the components of a larger series of proposed decentralized subterranean gardens. Therefore, the institution of the National Garden is not anymore a singular plot of land in the city, but rather an idea that expands throughout the city and is focused on documenting the human and planetary histories inscribed on the grounds of Athens.

The proposed Gardens and the Repository are entangled within a network of water flows (buried rivers, manipulated water ways, filled rivers, etc.), ancient water infrastructures (Peisistratos' aqueduct, Roman baths, wells, etc.), and the contemporary metro network.

Map of the distribution of proposed decentralized gardens, illustrated within the entangled network of water flows (buried rivers), ancient water infrastructures, and the contemporary metro system. Drawing by author.



Historic timelines for the five sites of intervention, documenting the histories of each location from the perspective of power, economy, culture, life, and knowledge and in relationship to the generalized human history time periods of the city. The timelines are drawn between the bedrock of the city and its contemporary layer, suggesting that these historic timelines are inscribed as layers within the recent human/earthly ground. Drawing by author.

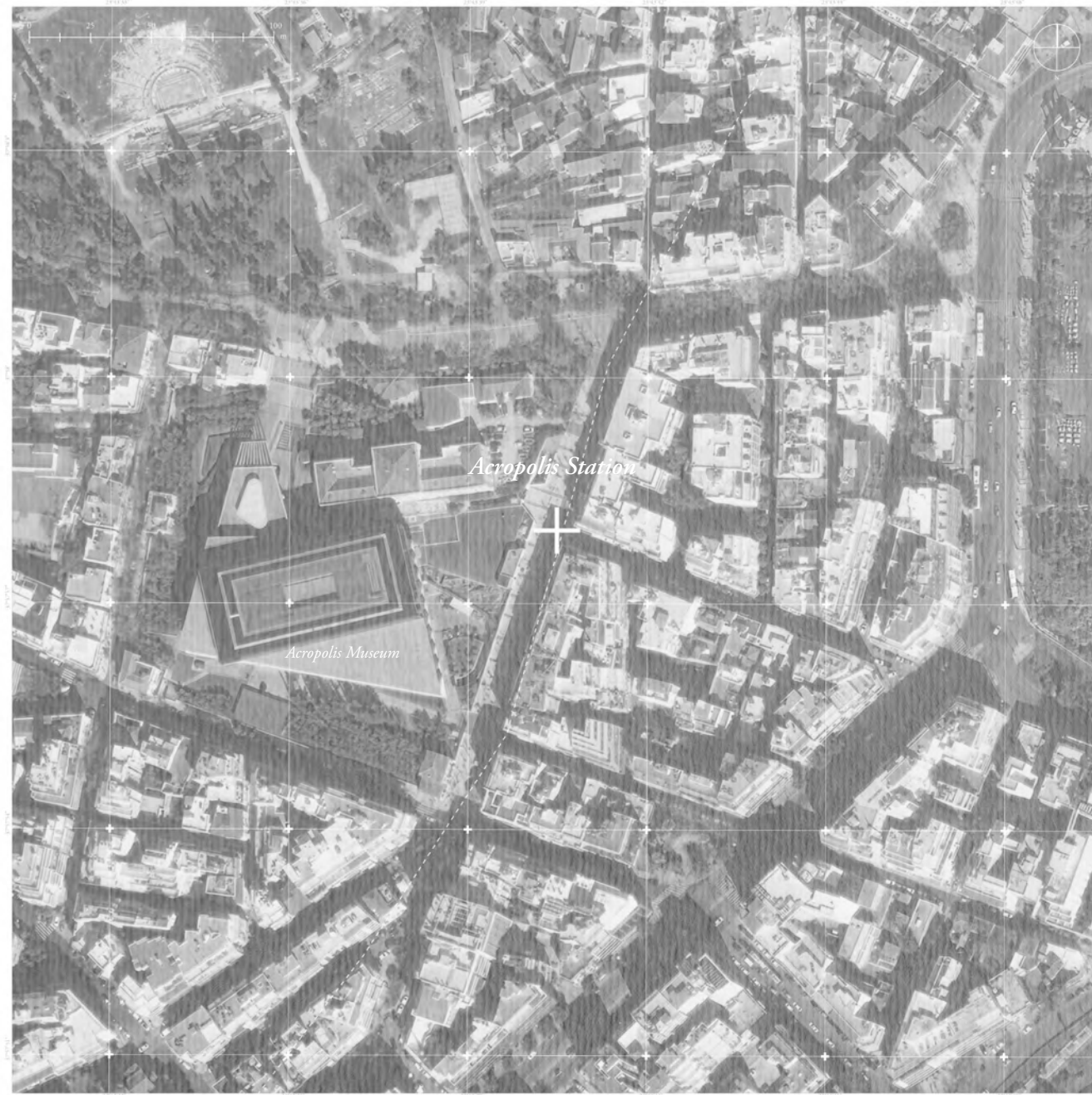
The **Gardens of Power** at Syntagma (Σύνταγμα) Station examines notions of power, as it is geographically located right in between the Hellenic Parliament and the Syntagma (meaning “Constitution”) Square.

The **Gardens of Economy** at Monastiraki (Μοναστηράκι) Station examines economic structures and trade, as it is located between the ancient Greek and Roman Agora and the current contemporary commercial center of the city.

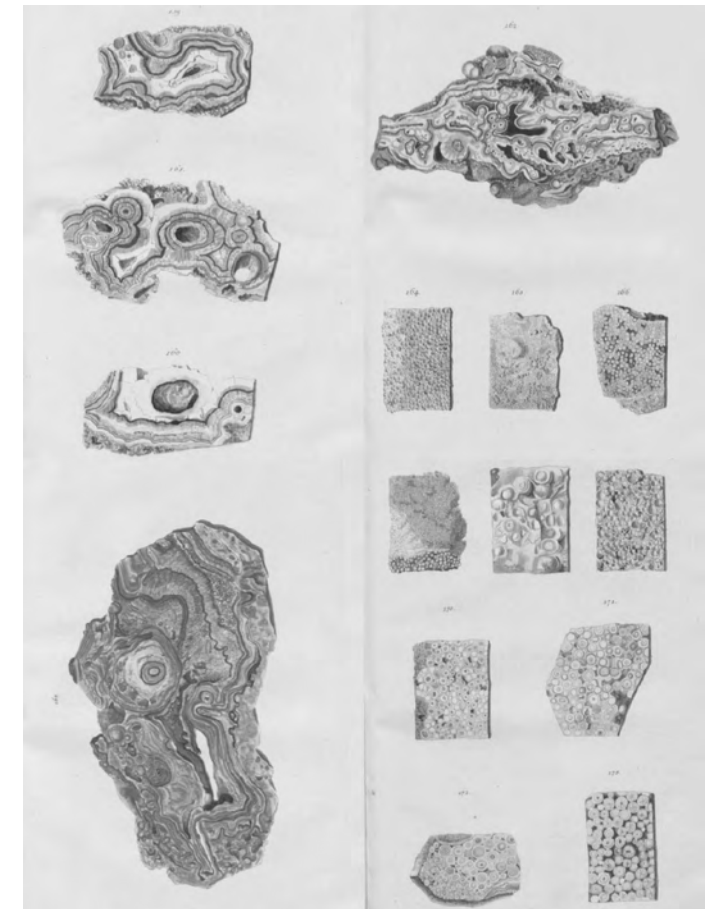
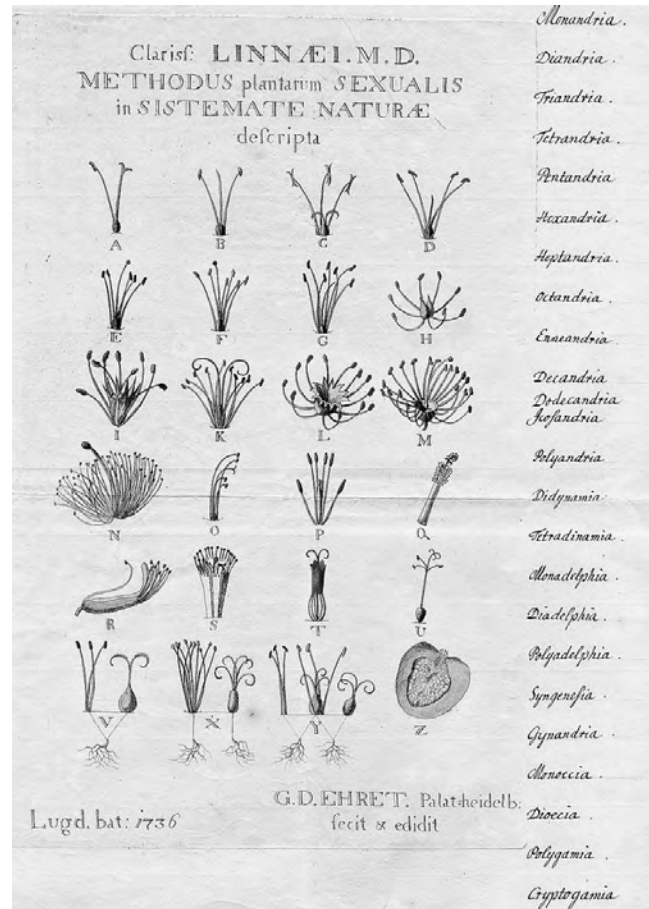
The **Gardens of Culture** at Acropolis (Ακρόπολη) Station examines representations of history and cultural identity, as it is positioned right next to the Acropolis Museum and in the shadow of the prominent Acropolis hill.

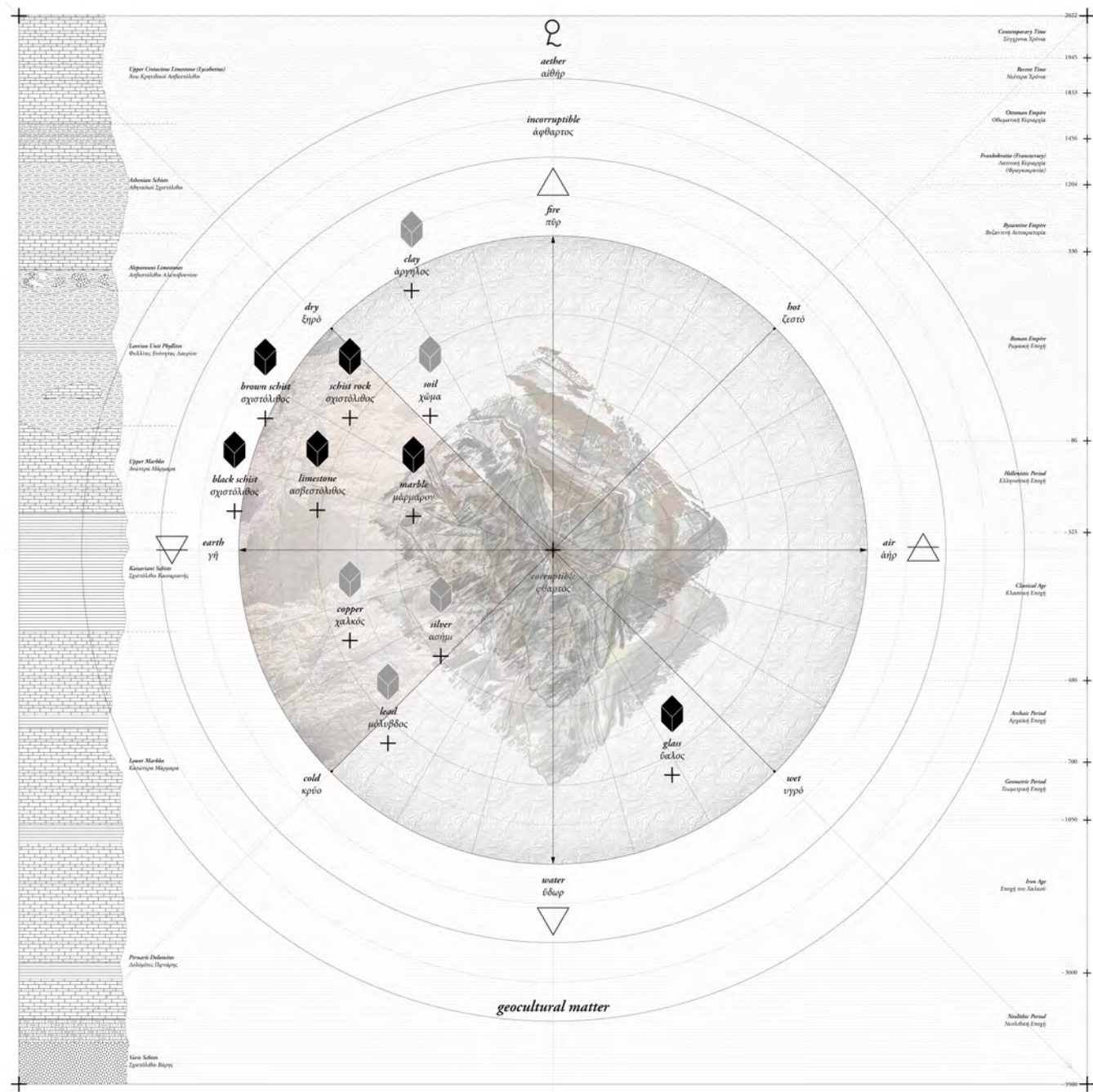
The **Gardens of Life** at Evangelismos (Ευαγγελισμός) Station examines manipulations of flows, as it is positioned in between the ancient Peisistratos’ aqueduct, the buried river of Ilisos and along the white marble material flow (as observed in Korres’ illustration included in the appendix).











Classification of ground matter according to Aristotle's theory of the four elements of air, water, earth, and fire, in relationship to the geologic section of the city and the human history defined periods of the city. Drawing by author.

As an experiment towards alternative methods of reading and interpreting infrastructural ground histories, this thesis tests readings of matter from an elemental standpoint, suggesting that subterranean infrastructural fragments of the antiquity could be interpreted by using methods of reading that are quite ancient but contemporary to the infrastructural elements of investigation. Here, I am specifically interpreting matter as suggested by traditions of ancient Greek philosophy, and more specifically that of the ancient-Greek philosopher Theophrastus, a student and successor of Aristotle in the Peripatetic School of Philosophy in ancient Athens who, apart from his more popular contribution to the botanical classifications, was also extensively writing on the classification of matter, and interestingly enough used the site which is currently the National Garden as another kind of didactic garden for his students, based on methods of empiricism. The specific framework that is used here is focused on the nature of substance and matter, where according to Theophrastus and Aristotle everything comes from only four elements: earth (γῆ, related to the word “gaia” and the prefix “geo”), water (ὑδωρ, related to the prefix “hydro”), air (ἀήρ, related to the prefix “aero” or “air”), and fire (πῦρ, related to the prefix “pyr”)^{5 6 7}.

⁵ Θεόφραστος (Theophrastus), *Περί Λίθων* (On Stones), 31

⁶ Ball, *The Elements: A Very Short Introduction*, 33.

⁷ Aristotle, *On Generation and Corruption*.



Classification of the ground matter and entangled infrastructures of each proposed decentralized garden, according to the five defined elements. Drawing by author.

Recognizing the lack of the recognition of life and of ecological systems in such reading of infrastructure, I am proposing the addition of “live matter” as a fifth element embedded in the subterranean human/earthly entanglements, respecting here Haraway’s notions of kinship, entanglements and the other terms/perspective for the Anthropocene as the “Chthulucene”.

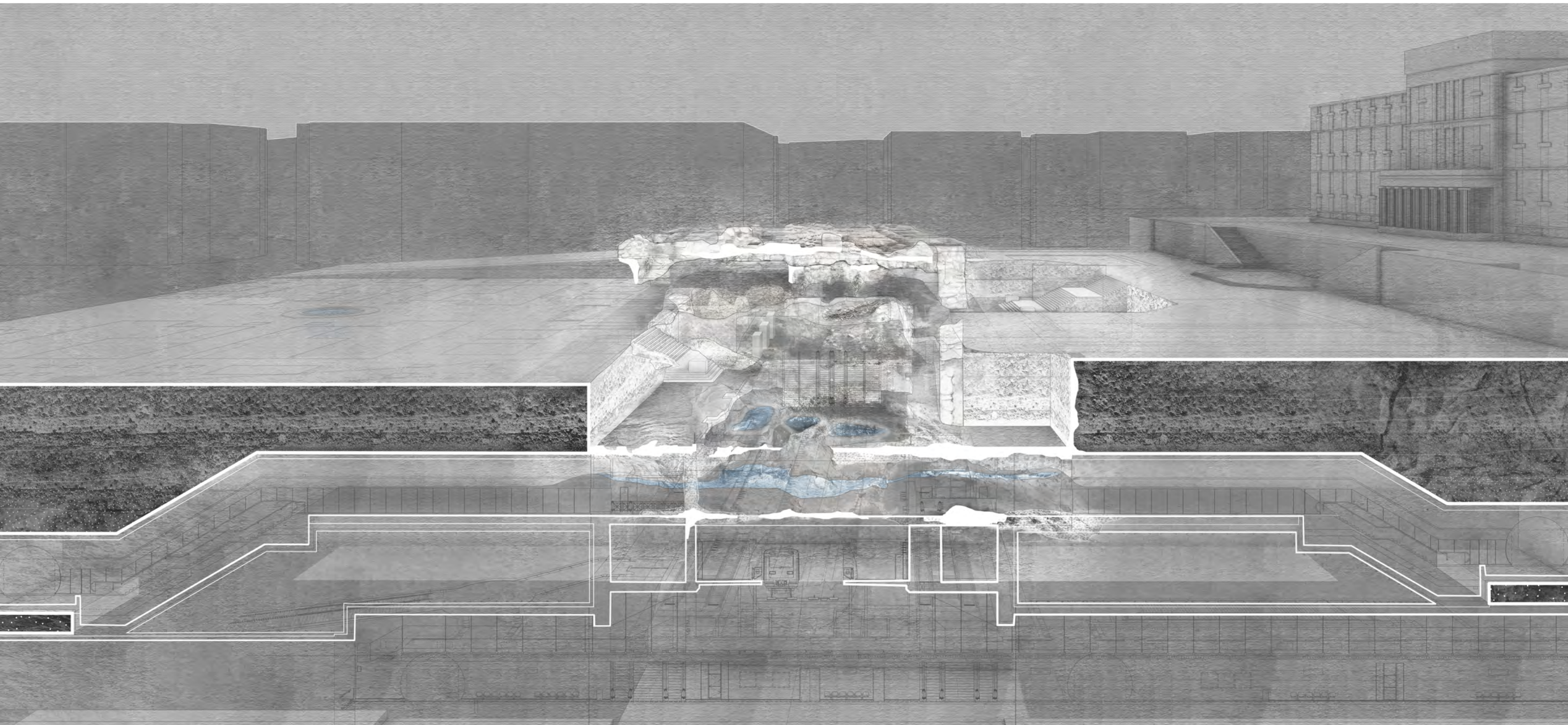
The series of proposed decentralized gardens in the four subterranean metro stations deploy processes of cutting and unearthing to expose the multi-layered live matter made by human and planetary forces. Narratives of human (Anthropos) and place (topos) become prominent in their respective sociopolitical contexts within the mass transportation network of the metro system.



Gardens of Power

Departing from Syntagma (Σύνταγμα) Station, the artefacts of human/earthly infrastructures are examined here in their relationship to power dynamics and from the elemental methodology of matter indexes. Archaeologic excavations as part of the construction of the metro station at the Amalias Ave. have exposed a series of now-buried and subterranean infrastructural networks that combine elements of fire, air, water, and earth in relationship to regimes of Peisistratos' Tyranny, Classical Age Democracy, and Roman Empire's Monarchy. The terracotta and lead-constructed water pipeline of Peisistratos' aqueduct carved deep into the Athenian bedrock and transporting freshwater from the outskirts to the center of the ancient city was exposed during the subway construction works. Bronze extracted from the Lavrion mines was also transported here and processed through the use of fire in the bronze foundries of the Classical Age Athens. Eridanos river, which used to cross the site was early on manipulated by human settlers, with expansive and complex systems of reservoirs, aqueducts, and pipelines capturing the water flow to feed the wood-burning heated Roman baths. The messy conglomerations of all of these infrastructural elements is exposed in this garden as a monument, with the roman baths becoming pools of water and the river Eridanos continuing to flow underneath the human/earthy monument.

Plan drawing of the proposed decentralized Gardens of Power at the Syntagma Metro Station. Drawing by author.



Section drawing of the proposed decentralized Gardens of Power at the Syntagma Metro Station. Drawing by author.

Gardens of Power

five matter



air



water



earth



fire



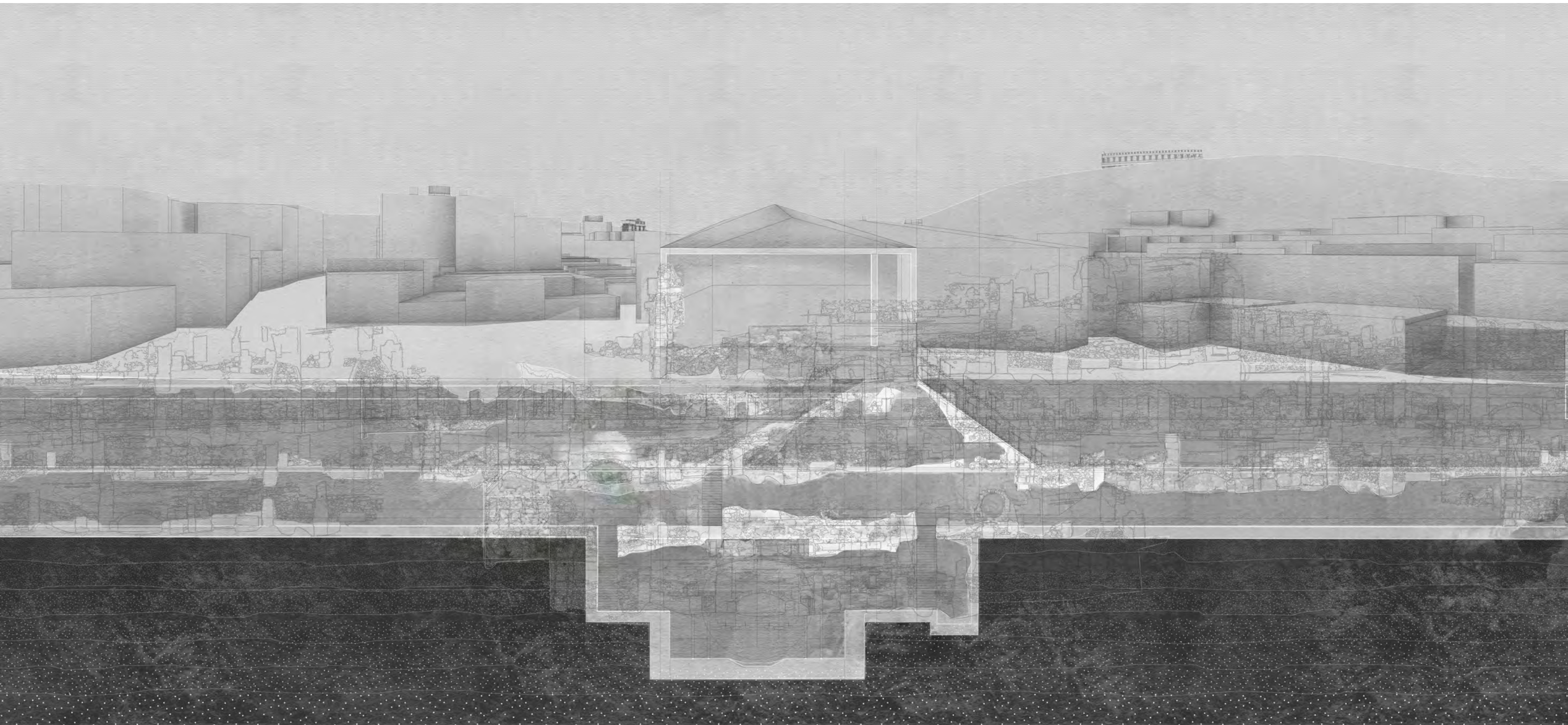
Classification of ground artefacts of the Gardens of Power at Syntagma. The images are curated from documentations of archaeological excavations (ArchDelt, "Mapping Ancient Athens" website, and "Athens: The City Beneath the City") and photographs/fieldwork by author. Drawing by author.



Gardens of Economy

A little bit further down, Eridanos river remains captured in the Monastiraki (Μοναστηράκι) Station, captured and delimited in two canals constructed back in 487 BC. In my last visit to the site during the winter, water continued to flow within this stone conglomerate ancient infrastructure, demonstrating the vibrant presence and performance of these human/earthly subterranean infrastructures operating quietly under the contemporary city of Athens. Recentring here to the topic of the Monastiraki station as a commercial center, the intervention here is focused on exposing the convergence of flows, which are either material/commercial/capitalistic flows, the water flow of the buried river and the flows of people. The existence of the many pottery, copper and marble labs developed around the area reflect the ancient commodification of geologic layers into valuable objects that are transported through material flows and sold with the use of coins (which are initially extracted from the subterranean layers of the Lavrion mines).

Here, the design intervention of the Gardens of Economy emphasize the convergence of flows of matter across the landscape. Here, products and pottery is presented as conglomerated matter within the garden to illustrate the gathering and abundance of products in the area. The buried river of Eridanos that continues to flow within an ancient aqueduct is exposed as another vibrant condition and another kind of convergence.



Section drawing of the proposed decentralized Gardens of Economy at the Monastiraki Metro Station. Drawing by author.

five matter



air



water



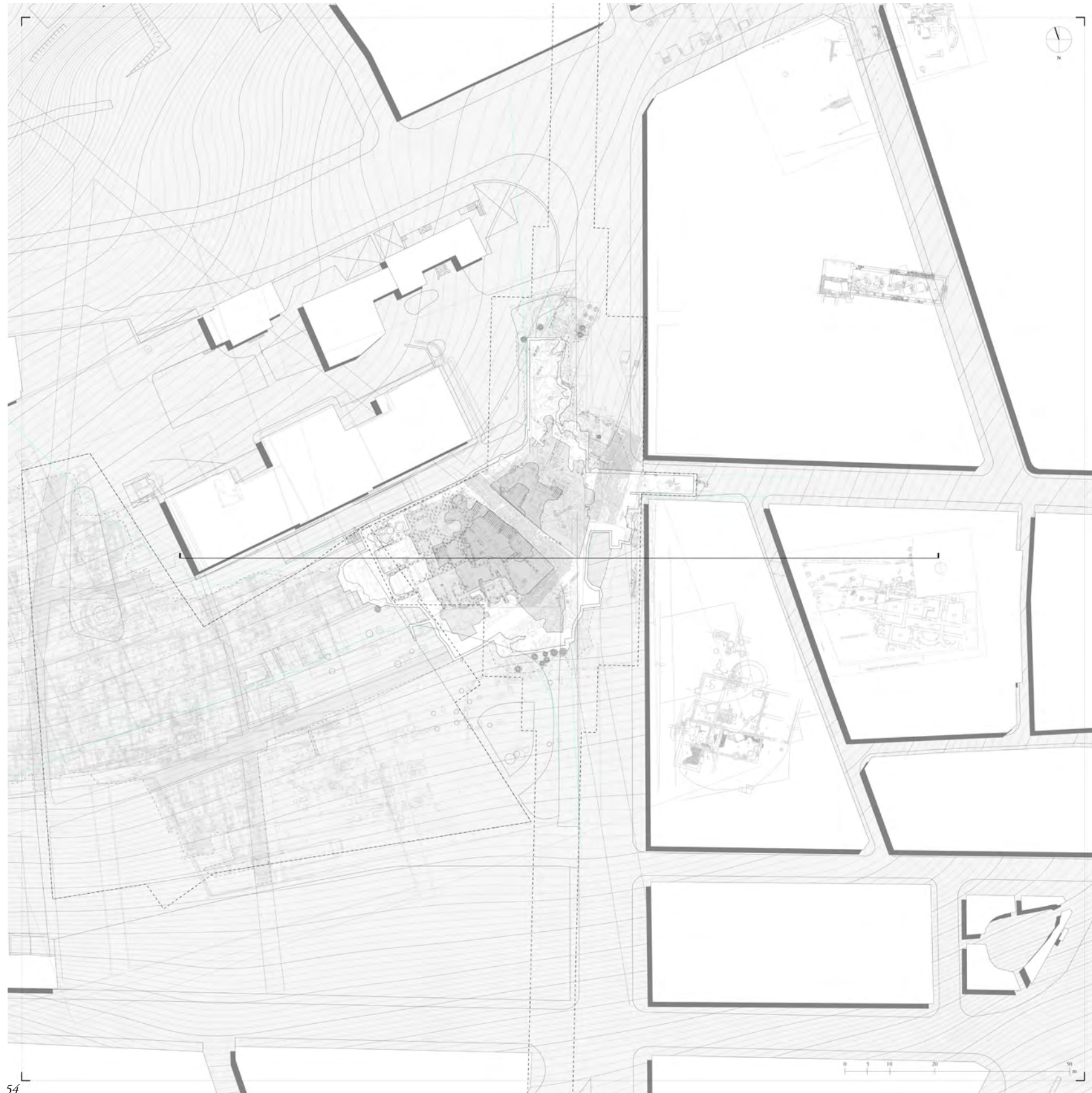
earth



fire



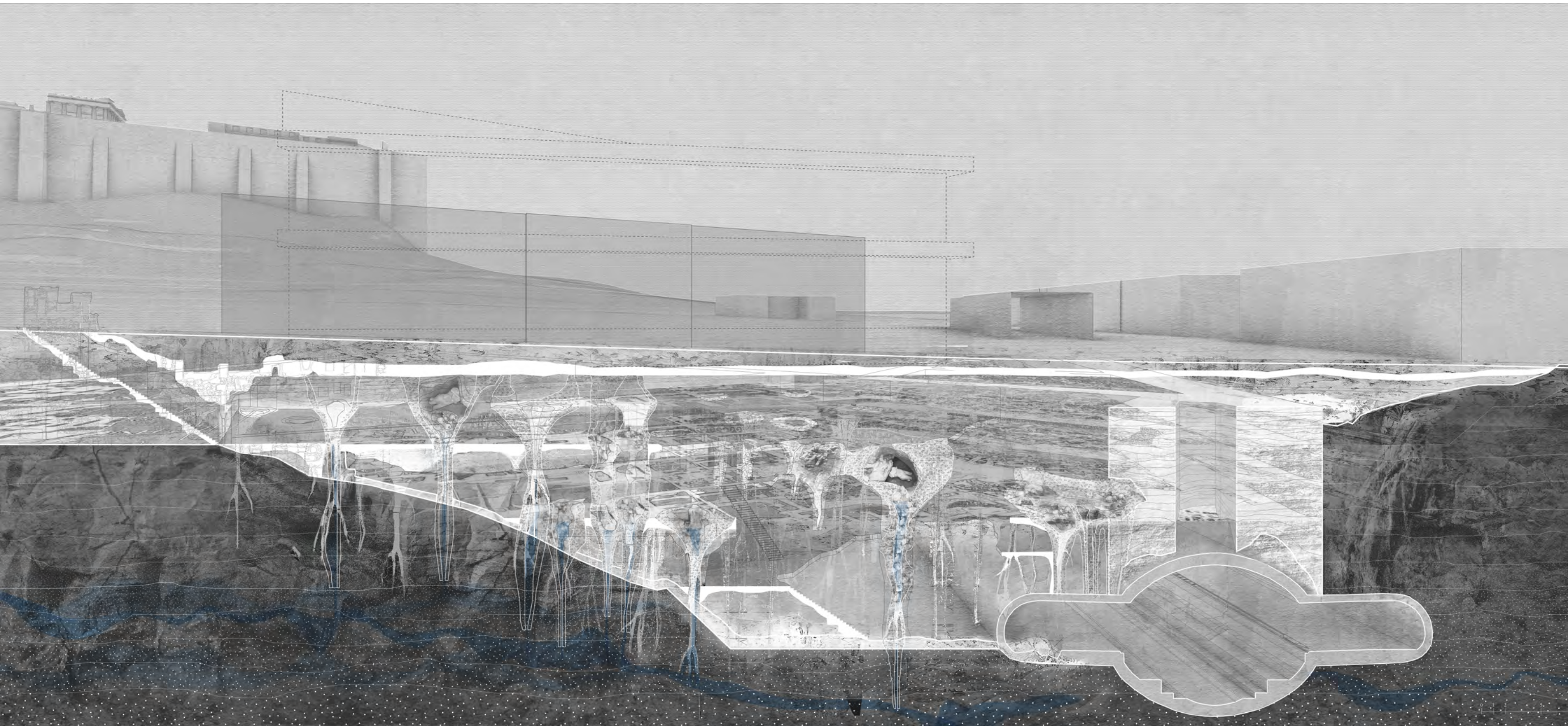
Classification of ground artefacts of the Gardens of Economy at Monastiraki. The images are curated from documentations of archaeological excavations (ArchDelt, "Mapping Ancient Athens" website, and "Athens: The City Beneath the City") and photographs/fieldwork by author. Drawing by author.



Gardens of Culture

Commercial operations and the exchanges of products in the Agora of Monastiraki is connected to another infrastructural node, which is that of waste management. Surprisingly enough, a type of an ancient landfill is to be found within the Gardens of Culture and at the excavated site for the Acropolis (Ακρόπολη) Station. Here, the series of water wells carved deep into the bedrock pinching the subterranean aquifer are filled with black-glaze pottery which was discarded since the Mycenaean Period. Vertical water infrastructures of wells and cisterns are entangled here with earth-bedrock layers, stone walls from Roman-period residences and discarded pottery and metal products. Additionally, pilings and layers of ground matter demonstrate the presence and continuous use of main streets, which connect the one side of the city at the Acropolis hill with the outskirts of the city, from which matter becomes extracted from the earth's crust and transported along the terrain of the territory.

The Gardens here are designed as a deep ground valley condition to reflect the prominence of the Acropolis hill in the city. Where one is reaching the sky and is positioned above the city, the proposed other is digging deep into the ground and investigating the substance of the city. The series of uncovered wells of water and discarded pottery products and marble sculptures stand as the columns of the garden in a pattern similar to those of the Parthenon. Ancient main streets that are layered with multiple layers of sediments over time are also uncovered as vertical volumes of cuts, emphasizing the relationship between this site of "landfill" and the connections to the places of extraction and to the Acropolis hill.



five matter



air



water



earth



fire



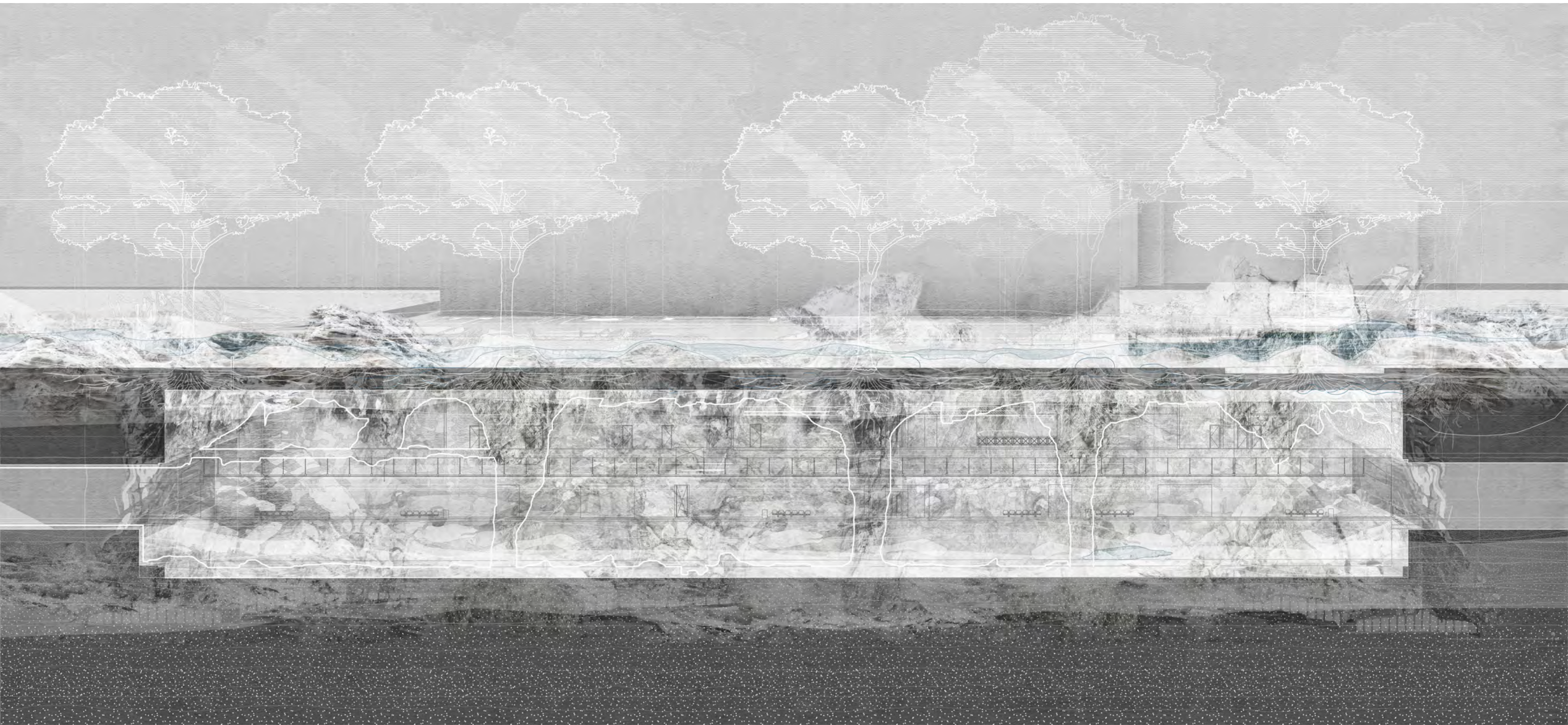
Classification of ground artefacts of the Gardens of Culture at Acropolis. The images are curated from documentations of archaeological excavations (ArchDelt, "Mapping Ancient Athens" website, and "Athens: The City Beneath the City") and photographs/fieldwork by author. Drawing by author.



Gardens of Life

An instance of that continuous flow of matter and transformation of geology of the territory is found at Evangelismos (Ευαγγελισμός) Station. Here, and as demonstrated by Korres' maps of the ancient material flows, large pieces of marble are sliding from the Penteli mount and towards the Acropolis hill, following the sloped direction of the terrain. Additional flows of water are marking the site, another more ancient instance of Peisistratos' aqueduct from 510 BC appearing on site, along with the captured Ilisos river continuing to flow within subterranean tunnels under the city. Once a place where live matter dominated the landscape in the form of plane trees and luscious gardens for philosophical contemplation is now hidden under the city with the infrastructural interventions for the management of water on site.

The proposed Gardens of Life are expressive of flows. The buried river of Ilisos emerges on the surface of the landscape as a series of fluctuating flows of water across the landscape, entangled with a series of marble pieces which are positioned on site to signify the ancient material flows from Penteli to the Acropolis. Plane trees are replanted across the site, reminiscent of the ancient luscious landscape of water creeks and large tree canopies that was used by Socrates as a place for contemplation.



live matter



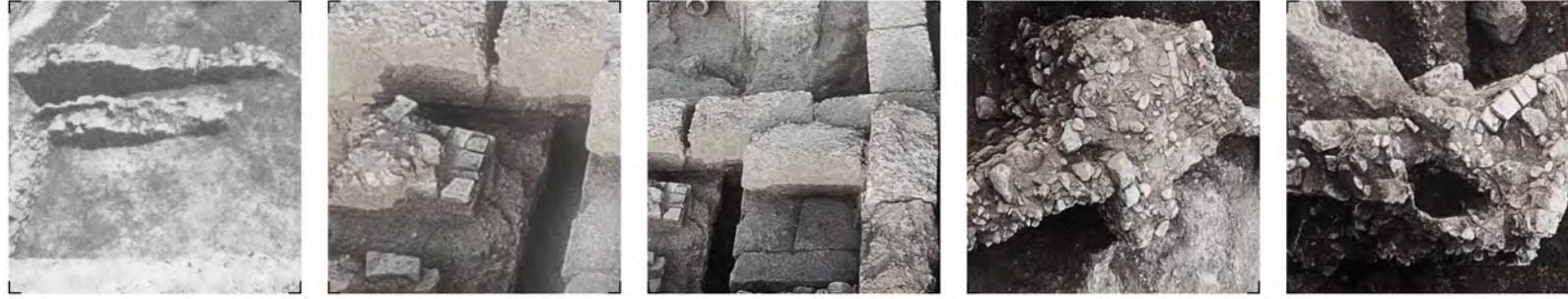
air



water



earth



fire



Classification of ground artefacts of the Gardens of Life at Evangelismos. The images are curated from documentations of archaeological excavations (ArchDelt, "Mapping Ancient Athens" website, and "Athens: The City Beneath the City") and photographs/fieldwork by author. Drawing by author.

Considerations

Across all sites, it is evident that infrastructures of antiquity that have remained earthed rather than unearthed, extracted, preserved, have the capacity to illustrate entanglements of human and earthly interactions and agencies that defy human-centered archaeological and/or geologic classifications and representations of subterranean ground conditions. Existing representations of the histories of urban infrastructure and of the city of Athens presented in exposed “preserved” delimited archaeological sites, and fragmented artefacts posited in museum collections are now disconnected from the layered infrastructural networks of the city, expressing historical narratives that are distanced from the material flows and interactions of human and earth as they continue to occur within the grounds of the urban environment. With a critique on the inability of existing institutions of museums and archaeological sites in representing the vibrancy, complexity, temporality, and inter-scalability of (perhaps not so ancient) urban infrastructure, I would like to propose that we perhaps consider the typology of gardens as an alternative place for the representation of ancient subterranean infrastructural networks. Focused on illustrating the multi-layered assemblages of matter (air, water, earth, fire, live matter) affected by the human and earthly actants, the typology of the garden as a place of knowledge (reflecting Theophrastus’ and Aristotle’s notions for the didactic empirical gardens) could perhaps allow for another kind of a historical narration for urban infrastructures of cities of the antiquity.

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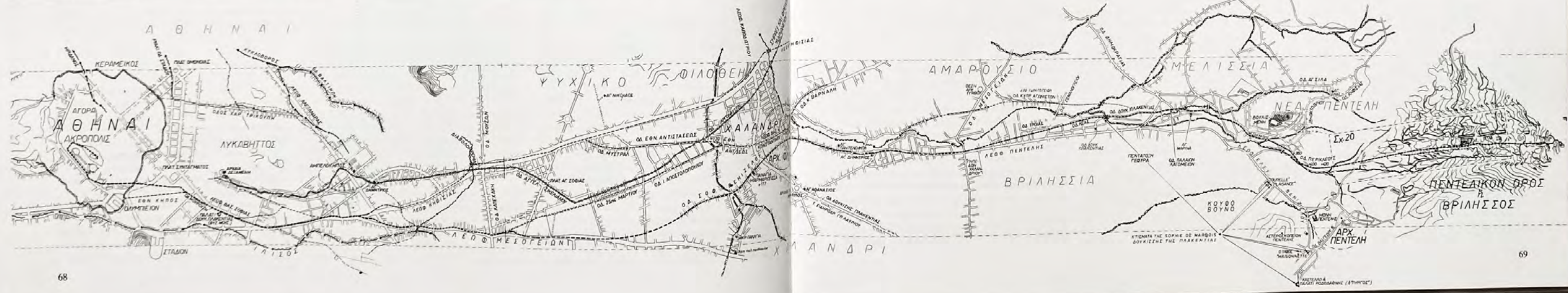
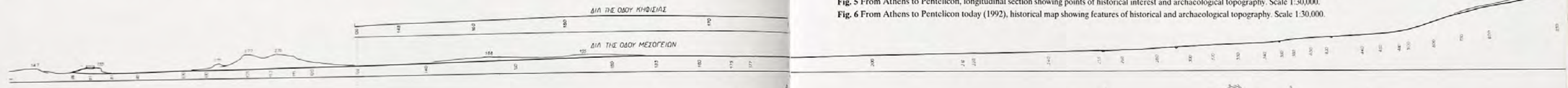
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Fig. 4 From Athens to Pentelicon a century ago. Section of sheets VI, V and XII of J. A. Kaupert's maps of Attica (1881, scale 1:25,000). Scale 1:30,000.

Fig. 5 From Athens to Pentelicon, longitudinal section showing points of historical interest and archaeological topography. Scale 1:30,000.

Fig. 6 From Athens to Pentelicon today (1992), historical map showing features of historical and archaeological topography. Scale 1:30,000.



The ancient material flow of marble, from the extraction in the quarry of Penteli Mount to the construction of the Parthenon in the Acropolis Hill. Individual illustrations retrieved from Manolis Korres' *From Pentelicon to the Parthenon: The Ancient Quarries and the Story of a Half-Worked Column Capital of the First Marble Parthenon*.





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