[DIS]-EMBODIED TOPOI; *NOT* ANOTHER CLICK ON THE [DIGITAL] WALL

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Abstract
This paper examines historical-archaeological landscapes in the digital era, seeking a balancing measure -a métron- to integrate digital tools with the embodied, material experience of such landscapes without compromising coherence, authenticity, or understanding.

It explores the intertwined relationship between technology -both material and digital- and human experience, framing technology as part of our "extracorporeal self." This is examined through key concepts such as Heidegger's equipmentality in the context of Aristotle's techne as a mode of aletheuein. Technology is argued to reveal and disclose, shaping our understanding and potentially linking physical and digital realms to foster narratives merging personal and collective pasts.

A conceptual framework is proposed as a synthesis of theoretical approaches interwoven with detailed archaeological, ethnographic, and ethnoarchaeological examples. Specific case studies from Laurion, Crete, Leukas and Attica are processed employing fundamental concepts: entropy, entanglement, palimpsest, chaînes opératoires, taskscapes, and habitus. The analysis illustrates the dynamic, nested relationships between human activity, materiality, and landscapes over time.

On this basis, Koselleck's concept of historein is analyzed, revealing its embodied nature tied to aletheuein: walking, both as metaphor and practice, grounds historein in the physicality of pathways and landscapes, making historical interpretation a lived, bodily process rather than a purely intellectual one. In parallel, digital storytelling, when appropriately applied, can enhance aletheuein by layering narratives, multimedia, and other digital elements onto physical landscapes. The materiality of the pathway —comprising both physical and anthropogenic (including archaeological) features—serves as a foundational pillar of historein, ensuring interpretation remains rooted in tangible, embodied experience. The second pillar is the freedom and creativity offered by digital narratives, enabling multiple interpretations while preserving the landscape's revealing function.

It is proposed, then, that by art-grafted storytelling and minimalist digital technology, the sought métron can be achieved. In this condition, embodied historein transforms the disassociative fragmentarity introduced by digital narratives into creative multi-linearity. Therefore, landscape materiality, fundamentally and evolutionarily fused with human embodied experience through time, provides the field for multi-scalar cohesion. This enables politically significant freedom in interpreting landscapes, bridging personal and collective histories.

Keywords*: Landscape archaeology, digital humanities, entropy, entanglement, palimpsest, chaînes opératoires, taskscapes, habitus, landscape phenomenology, ethnoarchaeology, mining landscape, ancient Laurion, agropastoral landscape, Leukas*

Introduction

The age of fragmentarity

If Eric Hobsbawm had written a latest addition to his series of the "age of" books[1], referring to the current era, it could be titled "The age of fragmentarity". An exaggeration, perhaps, but not without a reason. Fragmentarity today is embedded in our mundane experience, while we are going through the day - and night- deeply attached to our smartphone world; we are, almost reflexively, trying to respond to myriads of rapidly alternating fragments of data; we stay digitally linked via info-morsels of a chaotic mosaic, frequently dubed 'social'; in the same time, we remain physically detached from the world of bodily and emotionally active friends and family, unable to actually negotiate their coherent sets of information and, thus, our relationships. It is also evident in today's globalised world of the Anthropocene,[2] as of the way we humans experience the violent extremes of our presence on the planet; devastating disasters, being it of war and hatred or of natural forces, are mediated by a series of speedily parading, fragmented digital audiovisual narratives, producing a dehumanised perception of life. As a consequence, there's either bemusement inducing an a-distanced, passive political behaviour, or a sense of [pseudo]freedom in a deeply commercialised digital world, easily manipulated[3]. Popular books on how difficult it is to stay focused in a digitally overcrowded world, highlight the consuming presence of the phenomenon[4]. On the other hand, it is perceivable that this phenomenon occurs within a kind of invented continuity, in an evolutionary perspective; the innate relationship between humans and technology, expanding the comprehension of and involvement with the world, extra-corporeally, seems now to transcend its materiality and acquire a digital character, giving rise to "homo digitalis sapiens"[5] or "homo digitalensis" (fig. 1). In this vein, evolution itself loses its material body and becomes digital.

In such a synchronic context, when participating in projects that involve digitization and the "genre" of alternative cyber-experiences —Virtual Reality (VR), Augmented Reality (AR), and Mixed Reality (MR)— in narrating deeply embodied material entities such as the landscape, a simple question arises:

> Is there a danger that, instead of eliciting a deeper and informative understanding of our collective and personal selves via history conveyed in landscapes, these technologies will

[1] "The Age of Revolution: Europe 1789–1848" (1962), "The Age of Capital: 1848–1875" (1975), "The Age of Empire: 1875–1914" (1987), "The Age of Extremes: The Short Twentieth Century, 1914–1991" (1994).

[2] The currently widely employed term *Anthropocene*, was introduced by Cruzen and Stoemer (Crutzen & Stoermer, 2000) to mark a distinction in the geological epochs scheme, equivalent to entering a new phase following the Holocene. It signposts the significant impact of human activities on Earth's geology and ecosystems, suggesting that the anthropogenic domain is decisively shaping the Planet's environment, landscapes, and climate (Crutzen, 2002, 2006).

[3] For an outline of the evolution of political communication in the cybersphere see Elishar-Malka et al., 2020; for an example of passive *vs* active political behaviour induced in a context of a digital information society, see Erokhina et al., 2019; for manipulation, indicatively Susser et al., 2019.

[4] See, for instance, Newport, 2019.

[5] For an overview of the philosophical tradition on the formative character of technology as to humans and the emergence of a new species (homo digitalis), as well as its legal corollaries see Ninet, 2019; for discussions of a new, digitally defined, homo species within various perspectives see indicatively Fritzsche et al., 2022; Torrent-Sellens, 2023.

become *another click on the wall* of fragmentarity? Another hypertext-click on a wall of swift disembodiment, dematerialization and commercialisation that isolates, dehumanising our relations with the world around us? Is there a *métron,* a balancing measure, for the digital grafting of the world experience, that we should seek for?

In this contribution, I deploy a pathway to answering this question in the example of our relationship with landscapes which -as it will be subsequently evident- cannot be but historical. The investigation route is inevitably unilinear as it is delivered in the form of a text with a beginning and an end. Yet, the examples employed –drawn from ethnoarchaeological and archaeological fieldwork- are narratives attached to this intellectual path, introducing 'digressions' or a kind of *virtual textual multilinearity;* something analogous to hypertext clicks, except that the trigger-process is mental rather than digital.

In this way, I eventually argue here that the *métron* we *do* need is one that balances material and digital *embodiments of landscape experience;* such a *métron* is achieved through the integration of visual, acoustic and performative art into both parts of this binary contradistinction (material-digital), and, abiding to the principle of *Occam's Razor*, by keeping the complexity of the digital technology involved to the effective minimum.

Terminological complexity: taking up the thread

Taking up the Ariadne's thread to follow the above prescribed pathway, I should set the conceptual framework of this course. Studying the spatial dimension of human (bio-social) existence involves concepts immersed into a long-lasting terminological debate, which -especially when translation between languages is involved- produces a complicated network of interchanging terms.[6] For this reason and for the purposes of the present occasion I will set off from the Florence Convention[7] definition:

> "*The landscape is part of the land, as perceived by local people or visitors, which evolves through time as a result of being acted upon by natural forces and human beings."*

Within this definition, landscape cannot be perceived but as historical; or, rather, as I am to explain further below, *historicity* is an integral quality of the landscape as is its materiality and spatiality. Archaeology has developed systematic methods that explore these landscape qualities, delivering narratives of *archaeological landscapes*.

Landscape is one of a triad of interchanging concepts weaved on the spatial weft: *space – tópos – landscape.* To summarise their distinctive content:

1. *Space* stands for the abstract entity within which beings can exist and which can be defined indirectly by the measurements of its dimensions (co-ordinates in one or more systems of reference).
2. *Tópos* connotes the totality of the socio-spatial entity with all its constituents (natural features – human beings and their collectivities – anthropogenic features) as well as all the relationships between them, as lived (i.e. experienced), in time. In other words, it signifies

[6] The semantic content of the concepts, as summarised here, is derived from a substratum of significant theoretical works on this field as for instance: Bailey, 2007, 198–223; Bourdieu, 1990; Einstein, 2013[=1954], xiv-xv; Heidegger, 2001[=1952]; Husserl, 1962[=1913]; Ingold, 1993, 152–174; Malpas, 1999, 29–30; Merleau-Ponty, 1945; Piaget, 1952.

[7] Council of Europe Landscape Convention (ETS No. 176), European Convention on the Protection of the Archaeological Heritage (Revised) (ETS No. 143).

all relationships between humans and natural or artifactual elements of the environment in history, with their history, while experienced.[8]

3. *Landscape* signifies perceptions (personal and collective) and narratives of *tópoi*. It thus corresponds to the experience of *tópos* as it flows from conception to narration.

Having set this semasiological canvas, our quest's thread binds to the next node: the ambivalence between 'digitalities' and 'materialities' when archaeological narratives are involved.

Background

The incorporation of digital pathways into reading archaeological landscapes is nowadays taking pace. Their implementation can be understood at the cross-section of four distinctions: According to their relationship to physical / material landscape experiences they can be distinguished in:

(a) digital transformation of the embodied landscape experiences via digital tools (Augmented Reality/Mixed Reality, audiovisualisation) that mediate narratives of primary archaeological landscape data, acquired within archaeological practice.

(b) digitally induced new, independent, embodied experiences of virtual landscapes – Virtual Reality. These, could be mimicking but also diverging from certain physical landscape experiences, materially induced.

The second pair of distinctions crosscut the previous one and refers to the contextualisation of embodied experience narratives:

(i) in the context of research, as regards the management and analyses of data collected in the field and

(ii) in educational or public awareness contexts.

In this paper I explore both the (a) and (b) modes of employing digital narratives in the context of (ii), that is, in the opening up of historical landscapes to be perceived and re-narrated by the wider public. Distinction as to (ii) is here thought of mediating both the disciplinarily acquired knowledge and 'native' understandings, while triggering a self-controlled participatory process of discovering.

The Irschen project input

The Irschen project -which triggered the present contribution[9] - aimed mainly to an (*a.ii.*) mode of digital narratives and frameworks. The objective of the programme was the digitisation of

[8] I use the term *tópos* to signify this vague, yet sharp, territory that extends between the ontology of this "human spacetime" unity and its perception/narration; the experiencing of land prior to becoming landscape. It is the emphasis on the praxis of *experiencing I* want to convey by employing the term *tópos*, distinguishing it from a closely related concept signified by the term *place*. The chronicity of *tópos* is understood here as experienced and not as a 'fact' (contra Seamon 2012, 17–18); 'fact', as apprehension/narration of the experienced, is associated to landscape. This distinction can be understood also within Ricoeur's threefold *mimesis* (Ricoeur, 1990, ix, 52–90) and especially within Koselleck's *historein* (Koselleck, 2002, p. 45) which is discussed further in the last part of this paper.

[9] I would like to thank my colleagues Prof. Dr. Gerald Grabherr, Dr. Barbara Kainrath (Insburg University), Assist. Prof. Dr Olga Eleni Astara and Assist. Prof. Dr Naoum Mylonas (Ionian University), for inviting me to participate in the Udine workshop, a Multiplier Event within the Irschen Project

cultural heritage and making it accessible through digital tools; setting off from primary archaeologically research on the Burgbihl hilltop settlement (3rd C AD), it addressed collectivities in the field of education or of tourism. Expanding accessibility for people with mobility disabilities, was particularly important for such a remote site, while, in the project workshops, issues of accessibility regarding people with hearing disabilities or visually impaired, were examined as well.

In the perspective of such a necessity, my involvement in *the Irschen project* stirred in me epistemological quandaries and political destitution; persevering questions arose on the way we engage digital worlds in perceiving our pasts via what we define as *historical landscapes* and on the way this engagement is politically active by shaping our *historical selves*. By '*historical self*' I refer to that part of us integrated into collective mentalities, self-identification narratives and value-sets, all constructed and delivered presently on the foundation of an historically formulated and perceived *past*. Our political stance emerges from within. A consequent ambivalence arises from an apparent opposition between the virtuality of the recent digital worlds and the primordial embodied experience of 'living the land' and thus *habitate* a certain *place.* The latter emerges as a transformation of experience which happens while bodily moving in the land's space, individually or collectively, constructing and delivering *land-narratives* (=landscapes). This situation puts us archaeologists in dire, insofar we are those who try to transform materialities into testimonies, into sources for historical narratives: artefacs have been perceivable as embodied material experiences and landscapes are entangled with such a materiality.

In order to resolve this unsettling context, we need to revisit the basics:
How do we get to know the land?

Historical Landscape Qualities

Embodied landscapes and landscaped bodies [-to be digital?].

Still, in this age of fragmentarity, our bodies and their spatial existence seem to signpost a matrix for materially induced coherence. Coherence resides in the unbreakable relationship between our bodies and our environment, transformed as embodied experiences of the world-as-perceived-and-narrated[10]. To give flesh to this theoretical argument, I cite the following stories:

One story

In the context of conducting ethnoarchaeological fieldwork, mapping built agropastoral units and relating them to other material culture remains, I was climbing up Stavrotas, the South Lefkas mountain range. I was in the company of a shepherd and his goatherd and a friend of his, from the same village. We paused at a depression just below the highest peak. We sat to rest under the shade of a tree, next to the ruins of a byzantine chapel, sharing cheese, bread, olives, and wine and talking about the ruins:

(Interdisciplinary Resilience through Science and Cultural Heritage Education Network), implemented within the Erasmus+, KA2 Action that promotes cooperation between Institutions and Organizations (https://erasmus-plus.ec.europa.eu/projects/search/details/2020-1-AT01-KA226-HE-092503).

[10] On the character of this relationship between the materiality of the body and the perception of the world, as emerging though its spatiality and motority see (Merleau-Ponty, 1945, 114–172).

> "… we and our grandparents, we all have known this chapel, ruined as, it is now. Down here, at a place called Lakka, there's a well. And there is a story about this well. Once, ther was a man who had a herd of goats. And he made a "*τάμα*" [oblation, vow] that, if his goats ever reached a thousand, he would repair this ruined chapel, right where we are now sitting by. And he got his herd to a thousand once and twice, but the chapel he repaired not. One day, there, at the well, his son was drawing water for the goats; the animals crowded in rapidly to drink water and they pushed him and he fell into the well and he was drowned and his body remained there. Then, the well disappeared. But someone who heard the story asked a 100-year-old grandmother from Manassi [village] and she guided him by landmarks, and he found the well and the skeleton".[11]

Such an experience is existential and consists of an internalised sense of past / history / belonging / community and intrinsically linked to the concept of *landscape.*

Another story

An old woman, sitting on a bench in the central square of the small town of Oinoe, in Boeotia, discusses the weather forecast for the days to come with a group of winter visitors, coming from the Athenian metropolis.

She points to the top of mount Parnes and says*: "Cold is coming."*

Then, suddenly, she starts making the sign of the cross in the air, reciting:

-*(Old woman-NL) T*he ewe fled up and behind the mountain,
the ewe fled up and behind the mountain,
the ewe fled up and behind the mountain.

-(*Researcher GL*) Is this to prevent the hail to fall the valley?

-(Old woman-NL) Yes.

- (*Visitor*) Probably the incantation is to make the raining cloud to move away!

-(*Old woman-NL*) Hail… the day before yesterday I went to Skourta on foot. I had come, here, to the doctor's to have my pills prescribed and then I hit the road to Skourta* on foot; and then—hail! It caught me on the road! So much was falling from the sky, I prayed: "Hold it, Lord, just till I reach the petrol station—then do as you will." And the moment I arrived? The heavens came crashing down! Destruction everywhere! The hailstones were as big as walnuts! But God protected me.[12]

*[her home-village, 13kms away]

How do we get to know the land, then?

In following up these examples, let's consider the case of a first-time visitor to a village, without GPS or any analog or digital map. This person could be either someone with a social link to the local community, or a stranger. In either case, their most probable first step to go about

[11] Interview of GA and GS at the location "Ai Lias" next to Stavrotas, 22-8-2014. The interview's digital archives are part of the datasets of an ongoing ethnoarchaeolgical fieldwork conducted by the author, in S Lefkas (Video 1).

[12] Interview of NL, by Gannis Liapis (researcher, conservator, Ministry of Culture), February 2021, Oenoe Boeotia. Vistors who happened to be at the spot, took part in the discussion which then became a "focus group" interview. Video by Giannis Liapis Video 2).

siting the village's historical landscape, would be to engage with members of the community; in discussing the task, they would guide the newcomer by narrating their landscape.

This could happen while sitting at the village's coffee-shop, constructing a *mental map* structured by a sequence of natural or anthropogenic *landmarks*, or by walking together in their *tópoi*, directly linking narratives and landmarks. Sometimes, a song or two would be sung on their way. And quite a lot of personal information exchange. Sad or happy or both. Never flat. Narrative time becomes multidimensional and multidirectional, all dimension/narrative-strings being, though, coiled and encapsulated within the main thread of the walkthrough path.

As narratives fuse, in this manner, so do *pasts*. Personal *microhistories* blend with collective memories and legends; first-hand experiences, with popularised scholarly tv-narratives. This dynamic amalgam never repeats exactly itself[13], even though the pathway keeps exactly the same coordinates on the land. In this context, landscape -understood as the multiply narrated embodied experience of topoi- constitutes the spatial backbone of all *mental maps* anchored on certain landmarks, signposting certain pasts.

Conceptual framework

The process described above appears to be a fundamental part of the *native* way in which personal and collective pasts are constructed. Given this understanding, the question we should now try to answer is: *how do narratives of the past, as constructed through archaeological and historical research, fit into this framework?* To address this, we need a set of conceptual tools. In the following archaeological and ethnoarchaeological-ethnographic examples, I will try to develop an understanding of such a toolset consisted of the concepts: *entanglement - palimpsest; entropy; chaînes opératoires; taskscapes; habitus.*

The example of the Bembo fountain in Herakleion

In the center of Heraklion, stands a fountain built, between 1552 and 1554 CE, as a gift of by the general of Chandax, Gian Matteo Bembo, to the Cretan subjects of the Serenissima. The fountain is made of marble and features a headless ancient Roman statue -said to have been brought from Ierapetra- placed between two columns and set tightly under the architrave.[14] On either side are the coat of arms of the Bembo family, Duke Alvise Gritti, and his counselors. The way in which the fountain was built suggests that the statue was originally placed there headless. Sometime between 1900 and 1902, the explorer and photographer Gerola photographed the statue painted black and dressed in a white cloth. It seems that both the painting and the dressing were part of a ritual practiced by African immigrants (Fig. 2):

> "The monumental and beautiful fountain is preserved to this day, as is the statue, which the Ethiopians of Heraklion painted black several decades ago. They created a religious tradition around it, venerating it annually in May by gathering around it in dances and songs."[15]

[13] For the seeds of change inherently implanted in continuities of practices, see below the discussion on Bourdeuian *habitus.*

[14] For the identification of the statue with a roman copy of an Asklepios late Classical prototype and for its history since its recovery in the 16th C, see Karanastasi, 2023, 176-199.

[15] Σπανάκης, 1981, 51.

> "Those called Arapides, residing in Crete, celebrate May Day, which they call Mayosouroo. All of them, accompanied by their women and children, come out of the forts, adorned mainly in white, carrying sticks, drums, and other instruments, singing, and dancing...".[16]

These Arapides, or Chalikoutides, for the rest of the year, were known for their humble and dirty job: emptying the houses' cesspools, filling barrels to carry them all the way to the sea, and emptying them there.[17]

This layered narrative illustrates how humans—as biosocial entities—engage with a fluidly energetic context, in distinct synchronies, in time. The Bembo Fountain serves as a small-scale example of a *palimpsest*[18] active in different ways, in discrete or intersecting synchronies. The palimpsest's active role is structured by a network of crosscutting *embodied entanglements*:

- -The 16th-century Chandax inhabitants' embodied need for clear, fresh water intersects with the Venetian general's politics. The relationship is implemented by (a) the symbolic embodiment of a glorious ancient past, as a legacy mediated by Venice, in intense material proximity with the symbols of the ruling noble families, and (b) by the very act of the generous contribution of the fountain itself to the subjects' lives.
- -On the other hand, the lowest section of the early 20th-century Herakleion society embodies its claim to a life of celebration, reference to origins and to its own pasts, by reinvesting them -both literally and metaphorically- on the statue, and by enacting the rituals of their first of May festivity.
- -In an analogous manner, the traveler – photographer, as well as researchers throughout the 20th century weave out their historical/anthropological narratives, embodying them via the fountain's materiality.

Thus, while the spatial coordinates of the fountain remain unchanged, its role as an energetic palimpsest, embodying entangled experiences, material symbols and their narratives, never ceases to evolve.

The example of the Laurion landscapes

The scale of the presence of antiquities in the Laurion historical landscape, today, is exceptional. They are visible on the ground over an area of 25 Km^2. This uniqueness may constitute the Laurion case non-generic, but it can function as a magnifying glass, in order to trace a conceptual diptych that shapes landscape's fundamental quality: in this section the *entanglement -palimpses*t pair emerges in archaeologically orientated narratives.

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[16] Pavlos Vlastos, Archival collection.

[17] For the history of these African groups who were settled in Crete, see Λιμαντζάκης, 2020, 103; Σπανάκης, 1981, 50–52; Ψιλάκης, 2005.

[18] The term palimpsest derives from the Greek παλίμψηστο (*pálimpsēsto*), composed of πάλιν (*pálin*, "again") and ψηστός (*psēstós*, "scraped"), from ψάω (*psáō*, "to scrape"). It originally referred to a manuscript—typically on parchment—where the original writing was scraped away for reuse. On this material, traces of previous writings remain, which can be read by employing various imaging methods. In Landscape archaeology, the concept of palimpsest is employed as a metaphor to denote the merging and simultaneous presence, of all traces of previous and current human activities as well as natural processes, on the land —whether on the surface, underground, or underwater; for an overview of the concept of palimpsest in archaeological theory see indicatively Bailey, 2007.

a. First impressions

"Cities upon cities and fields upon fields. One thinks that humanity lives with the earthen materials, which, today, it raises to structures, so that tomorrow they will bury it underneath" (Οικονόμου 1872, 10).

This passage conveys two diachronic concepts: the embodied *tópos* experience and the landscape *palimpsest*. It narrates a specific *tópos* as experienced by a specific person who shapes its landscape, i.e. his land-narrative. Aristides Oikonomou, a learned economist, judge, legal scholar, academic and politician, narrates his perception of late 19th C mining and metallurgical Laurion: 50 km^2 of hills, valleys, and coasts covered by accumulations of ancient and modern furnace slags, tailings and ore rejects, buzzing with mining machinery, miners, trucks, a Decauville train, chimneys and factories. Plundered tombs gape open next to neat, deep vertical mining shafts and innumerable fragments of marble reliefs, pottery vessels and rooftiles, scattered all over (Fig.3). This is a landscape that a today's visitor, wandering within Laurion hills and valleys, will not find irrelevant. On the contrary, an analogous sense of an 'unsettled tópos' may be perceived: a land densely packed with anthropogenic features and rearranged earth, stones, mud, leaving narrow passageways to almost squeeze your body through. Yet, the industrial clamour has faded. In its place, the hum of motorcycles on Sundays mingles with the sounds of birds, wind, and rustling trees and bushes (Fig.4).

b. Materialities: An Archaeological Landscape

(How does the archaeological/historical narrative bring about a Laurion landscape?)

Laurion;[19] this ancient toponym, still in use today, signifies an area characterised by narrow passageways, in this case, mining galleries (Fig. 5a,b). Laurion; the *fountain of silver, a treasure from within the earth*[20] that gave Athens the power to defeat the Persians, to dominate among the Greek cities, to build the Parthenon, the material basis of an intellectual legacy whose appropriation structured the pretensions of the 'western civilisation' as to legitimising its power over 'other' cultures.

The production of silver from silver-bearing lead ores in Laurion is archaeologically documented in mining galleries and by metallurgical residues in securely dated archaeological contexts of the late 4th millennium BCE. The sporadically evident prehistoric remains are overwhelmed by the omnipresent evidence for the activities of the classical era: in the 5th century BCE, a large-scale production (industrial scale by today's standards) began, during which, over 3500 tons of silver and 1400000 tons of lead were produced. Dense clusters of hundreds of workshops were built, encompassing large-scale hydraulic works and structures for managing rainwater (collection, storage, recycling), in a region with water scarcity. They operated by washing millions of tons of pulverised ore, to enrich its concentration and prepare it appropriately for smelting in numerous furnaces (Fig.6a-d, Fig.7). The entire process left millions of tons of poor ore discards and tailings, mud, and sand containing metal residues, slags and litharge (PbO), all accumulated on the Laurion hills, valleys and promontories. From the end of the 3rd century BCE to the 6th century CE the exploitation of by-products, mainly slags and litharge, was intensified. After a centuries-long hiatus, the large-scale industrial exploitation of the same residues, which had formed entire mountains in the Laurion landscape,

[19] The following short archaeological narrative on the ancient metallurgical Laurion is based on data available in: Ardaillon, 1896; Cordella, 1869; Farinetti & Kapetanios, 2020; Hopper, 1968; J. E. Jones, 1982; Kakavoyannis, 2001; Kapetanios, 2023; Morin et al., 2020; Papadimitriou, 2017; Vanhove, 1996; Watrous, 1982; Καπετάνιος, 2010, 2013; Κονοφάγος, 2004; Meimaroglou et al., 2023.

[20] Aeschylus Persians, 240; the first performance of this tragedy, took place during Athens' City Dionysia festival in 472 BC, with Pericles being the *choregos* (~sponsor).

resumed with modern technology in the second half of the 19th century, reaching its peak in the activities of the French Company of Laurion Mines, which also restarted mining.

In parallel, since classical times, farmsteads with their houses, storerooms, wine/olive presses, and threshing floors punctuate the mining/metallurgical landscape with signs of agropastoral practices.[21] Their towers, together with those of the workshops, still standing even if in ruins, make the power relations of control conspicuous in the landscape (Fig.8a-b).[21] Impressive burial enclosures along the roads anchor the classical Athenian ancestral threads of the families who owned land and workshops onto the land, legitimising —in the same vein— this very ownership and the power to control land, resources, and labour, mostly slave labour.

Slaves: silent people in a deafening landscape anchor their existence on bedrock by engraving *plantae pedis* (the outline of their feet -see below) or by their biological relics: toughly trained and treated bones, sowing intense pathologies, placed -or even tossed- in shallow pits (Fig.9a–e). [22] Xenophon (de Vect. IV, mid-4th C BCE) prescribes intense exploitation of the Laurion silver mines, as a response to the crisis following the defeat of the Athenians in the Peloponnesian War. He links this to an influx of great numbers of slaves, owned by the Polis. In the 2nd half of the 4th C BCE, a major boom in mining and ore processing packed the Laurion peninsula with built structures. The intention and the scale of these works were perceived in the subsequent centuries in the landscape and vividly echoed in ancient texts: *"… men* [in the Laurion silver mines] *dug with that much energy as if they could grub up Plutus himself*".[23] It is the materiality of this built landscape palimpsest that structures the labyrinth of ruins we squeeze our bodies through when navigating in the Laurion valleys, today.

Added to the above built space, sanctuaries, agoras and the Thorikos theatre assign tangibility to ancient networks of performing cultic and political collective practices and their annual-cycle flow, as inscribed, for example, on a marble stele in the form of a sacrificial calendar.[24]

All these features interrelate dynamically in a landscape landmarked by the massive material presence of the Laurion ancient hydraulic works (referred to above). Over time, this built environment significantly influences human spatial organisation: in Classical and

[21] For a consideration of the role of the towers materiality in landmarking and enacting poer relations on the Laurion peninsula landscape, see indicativelly Morris & Papadopoulos, 2011, p. 109,135; Καπετάνιος, 2013, 189.

[22] Slaves counted probably to tens of thousands in Laurion (Athen. Deipn. 6.104[kaibel].5-9). At the end of the 5th C (circa 413 BCE), during the Pelonessian War, many of the Laurion slaves fled to join the Spartans at Dekeleia, causing the desertion of the Laurion mines, contributing decisively to the collapse of the Athenian economy (Thucydides writes that more than 20 thousand slaves deserted Athenians to the Spartans- Thuc. Hist. Z_27_4.5-5.4); a slave revolt, at circa 100BC, marked the end of the large scale mining activity (Athen. Deipn. 6.104[kaibel].9-15). For bioarchaeological cases on potential slave burials see Λάγια κ.α. 2015.

[23] Strabo Geogr. III 2, 9: [Ποσειδώνιος] τὴν δ' ἐπιμέλειαν φράζων τὴν τῶν μεταλλευόντων παρατίθησι τὸ τοῦ Φαληρέως, ὅτι φησὶν ἐκεῖνος ἐπὶ τῶν Ἀττικῶν ἀργυρείων, οὕτω συντόνως ὀρύττειν τοὺς ἀνθρώπους ὡς ἂν προσδοκώντων αὐτὸν ἀνάξειν τὸν Πλούτωνα. (Discoursing on the diligence of the miners, he cites a remark by [Demetrius] Phalaris, who, speaking of the silver mines of Attica, said that the men there dug with as much energy as if they expected they could grub up Plutus himself).

[24] The so-called "Thorikos sacrificial calendar" inscription provides a text listing the religious festivities throughout a year, per month, with specific reference to offerings (animals to be sacrificed or food, fruits, sweets and flowers). The revered and celebrated entities are gods and heroes/ancestors, and their shrines are spatially represented n the text as scattered in various locales of the Laurion peninsula (Daux, 1980).

Hellenistic times, processing raw material (ore) directly prompted centripetal clustering in the valleys where rainwater was managed and utilised; in Roman - Late Roman times, as the built valleys and promontories became a source of materials for recycling, this environment rearranged habitation toward the coastline (Kapetanios, 2023, 137).

Tracing the entanglement-palimpsest conceptual diptych

The versions of *tópos* narratives (=landscapes) delivered above, focused on material culture, are all structured by *entanglement*.[25] This intertwining of humans, material culture, physical elements, notions of antiquity, diverse pasts and historical perspectives gives rise to a certain diachronic, ever-present, and continuously active *palimpsest.* Indeed, *entanglement* emerges as the pivotal concept that makes a landscape *palimpsest* what it is: historical and active; always here, never the same.

Scale stands out as a crucial element in constituting the materiality of a palimpsest; it is unique in conveying an effective understanding, through embodied entanglement, of the *mediated pasts.* In fact, it is *nested scales* that come to the forefront assuming this role: the fountain, Heracleion/Chandax, its inhabitants, Crete, Venice and its Mediterranean hegemony, as well as Laurion—from the small-scale material features of workshops and mines to the mining and metallurgical district of the SE Attic peninsula—all constitute *nested fields* of embodied observation, reference, and narration.

In these *nested tópoi* and *landscapes*, motion serves as the guiding thread: the interplay between *kinesis* and *stasis* orchestrates a multi-scalar cohesion, moving beyond fragmented perceptions. The role of this *spatial scale continuum* becomes prominently evident toward its extensive end: understanding the significance of Laurion, in relation to both the classical Polis of Athens and the ideological universe of Western civilization to date, necessitates bodily engagement within this endless sequence of metallurgical workshops, mines, mineralized stones, and by-product soils—each intricately linked to ancient and modern metallurgy. This immersive, embodied experience becomes the only means to grasp the vast scale of ancient technological expertise and of the ancient and modern exploitation of both resources and human labour.

The concept of Entropy

As evident in the aforementioned excerpt from Oikonomou's written narrative of the Laurion experience, one does not need to be immersed in the 'phenomenology of the body' (Merleau-Ponty, 1945) to grasp the significance of humans living together with stones and earth. Our bodies work, move, rest, and sleep with them (Fig.9f), whether in their natural state or after their *entropy*[26] is altered by human action, transforming them into drystone walls, cement walls,

[25] For the concept of *entanglement* in archaeological theory and interpretation of artefacts see Hodder, 2012.

[26] *Entropy* employed here in an analogy – actually, as a metaphor- of the concept in physics (thermodynamics). It pertains to the degree of [anthropogenic] organization of lands' space and its features, the state of [anthropogenic] order which needs energy (=labour) for the natural elements to be rearranged; rearrangement produces space, which is socially meaningful with *distinctions*, not homogenised, but differentiated by creative energy (described by Bourdieuas a 'thermodynamic' world view" (1977, 137–138).

pathways, roads, sacred sites, collective venues, fields, workshops, small-scale food processing features, and large-scale hydraulic works, mining galleries, wells for drinking water, and so on. Altering the land's *entropy* involves reorganising its matter through the employment of labour, technology/knowledge, customary behaviour and, of course, humans as biosocial entities. It is, therefore, linked to a spectrum of *practices*.

Building, for example, consumes labour (i.e. energy) to reduce the land's entropy: cutting or picking stones and placing one on top of the other, structuring stand-alone walls, or encapsulating natural features to form rooms, houses, corrals, enclosures, terraces, threshing floors, retaining walls roads, tombs, temples and sanctuaries, forts and theatres (Fig.10). All these, diachronically, from antiquity to the present. A comprehension of the intensity of this transformation is attainable when someone walks through a quarry (ancient or recent alike): these rectangularly cut, stepped like bedrock formations present themselves as the negative imprint of the nearby built space, while, they are engaged in different practices that may be social or ritual such as public assembly spaces or performative actions: the Thorikos ancient theatre was gradually structured on the surface of an earlier marble quarry, while many of the modern Athenian openair amphitheatres are reshaped abandoned quarries (Fig.11a-b).

Engraving graffiti on bedrock surfaces also alters land's entropy; next to ancient mines, on quarry surfaces or on an exposed solid rock surface, warm in the winter for people to lay on, miners, stone pickers, slaves or free scratched feet (plantae pedis) and palm outlines, games, names and counting tables Laurion (between the 4th and 2nd centuries BCE); Shepherds and youth inscribe memos of their friendship and/or symbols of their identity (6th-5th centuries BCE, 20th century CE); 19th-century travellers mark ancient ruins with their names; members of counter-fighting parties in the Greek Civil War (1946-1949) declare their identity yet their coexistence, on the rock and in daily life; sailors anchor permanently their ships on ancient marbles (Fig. 12a-c).

Entropy is altered even by *symbolically placing things* together: an orthodox icon on a hollowed rock transforms it into a shrine; a stolen sheep's skull on an enclosure wall manifests a feud; a red wool string or tuft above the entrance averts the evil to enter the *oikos;* food and drink placed on a table or just at the centre of a gathering of people become symbols and instigators of social bonding and *group cohesion.* (Fig.13a-b)

All these are material manifestations of actions and story-narratives. Of practices bearing their intrinsic meaning, their innate dynamics, and the bequeathable predispositions of the collectivity within which they are enacted. In this Bourdieuan *habitus* [27] both actions/*practices* and *stories* are stitched to the land, living on as the land's embodied elements, becoming experienced *topoi*. Practices are intrinsically fused with the flow of time, as is landscape *entropy*.

A conceptual network

In all examples described above, the practices are structured in lines of successive actions, all intersected and interlinked, producing networks of sequences of material and social practices, frequently articulated around the axes of technology and social cohesion or control: mining, metallurgy, tools, cooperation, slavery, climate, magic, ritual, symbolism, bodily needs to be met, power and legitimisation and, of course, narration and movement in space, on the land, in

[27] *Habitus,* a term coined in by Pierre Bourdieu (Bourdieu, 1977, 78–95, 143–158, 1986, 1990, 52–79, 1996; Lizardo, 2004) signifies a system of dispositions that a society passes on through practices; in such an embodied codification system (i.e. practices, Bourdieu, 1986, 40) both continuities and the seeds for change are forwarded from one generation to another.

landscapes. Such structured, dynamic, time-flow dependent webs of interrelations have been analysed, understood and described by what André Leroi-Gourhan introduced as the concept of "*Chaîne Opératoire*", or operational sequence.[28] Each category of practices (e.g. metallurgy, mining, tool making, cooperation, slave labour, administration etc.) can be sequenced internally but it can also be cross-linked to certain, or all of the others.

These structured *tópoi,* all spatially *entangled* in time, can be perceived and narrated as *taskscapes.* Tim Ingold introduced this term to signify the "pattern of dwelling activities" in which "temporality [of the landscape] inheres" (Ingold, 1993, 153). *Dwelling,* in Ingold's conceptual framework, signifies the systematic engagement of people with their environment. In this vein -to return to the question set at the beginning- the concept of *Taskscapes* helps to categorically organise practices, or 'practice-scapes', within *habitus*. In our case, the archaeological narratives sought for, can be put forward as, for example, mining-scapes, or hydraulic/water-scapes, or ritual-scapes etc., without being isolated (i.e. fragments) but fused in a cohesion offered by the web of practices within *habitus.* And this fusion is implemented in a reflexive manner, as the archaeological practice itself is articulated as a *taskscape* within *habitus.*

In the preceding section, starting with specific examples, I have tried to provide an exploration of the relationship between humans, landscapes, and historical narratives. By developing an understanding of the way we get to know the land and to share this experience via narration and narratives, it became clear that this process encapsulates quite more than it seems at the first instance: our social cohesion and power relations, our self-understanding, our pasts, our history. By employing the conceptual framework built up by *mental-maps, entanglement - palimpsest, entropy, chaînes opératoires, taskscapes, habitus,* it became clear that all these are intricate *embodied states.* The materiality of *tópos* permeates its perception and its narration, the landscape. All narratives, then, in order to convey meaningful histories should *not* be dis-embodied.

In the following section I focus on the effects of the understanding developed so far on the construction of historical and archaeological narratives. As these narratives -as shown- need to safeguard the embodied material bond offered by the *tópos - landscape* spatial entity, how are they to mingle or even to fuse, with the immateriality of digital narratives? Does this immateriality mediate also a dis-embodiment of pasts and histories? In order to answer to such questions, I turn to the conceptual context that both embodied practices and dis-embodying digital narratives share *technology* and *experience.*

[28] The concept was originally introduced to define a sequence (chain) of actions involved in the production of an artifact, or the execution of a task, encompassing the entire process from raw material acquisition to the final product or outcome; it focuses upon the systematic, chronologically successive and linear sequence of steps involved in a particular activity or craft; while practices within the narrow sense of material technology triggered this framework, subsequent study and analyses expanded it to encompass social practices as well, such as cooperation, cultural tradition for the transmission and exchange of knowledge etc. (Lemonnier, 1976; Leroi-Gourhan, 1964, 1965) Here, concept and framework are employed in their wider semasiological extent.

Homo digitalensis

Our extra corporeal self

Technology is very old. As old as human societies. It is founded upon collectively constructed knowledge, its dissemination, and on a range of practices organised in sequences that intercross, producing an ever-branching network of *chaînes opératoires*. Humans have evolved and developed integrally woven with this pattern. Their self-awareness and self-identification, then, are conceived, informed, and understood within the activity, the *praxis,*[29] dwelling in such complex networks. In this light, technology may be considered as a structural factor and constituent element of our "extracorporeal self". To me, the same holds with digital technology.

Of course, technology and tools in a non-digital world are intrinsically associated with the concept of material culture - the main field of archaeological observation and inquiry- involving physical, tangible objects and artefacts, while digital technology is defined by its intangible, electronic essence. However, the structural principle described above similarly strudutres our 'digitalised' extracorporeal self. Nevertheless, there is a meaningful difference as to the distinct ways people are involved with each 'domain' within existential *praxis*: it is the embodiment in the material world at the moment of experiencing that feeds a cohesive entanglement with this world, our world.

Heidegger's perspective on equipmentality is relevant.[30] His concept of *"readiness-to-hand" (Zuhandenheit)* refers to the way in which tools or equipment seamlessly integrate into our practical, everyday existence—this integration being a fundamental aspect of our 'being-in-the-world' (*Dasein*). But he also notes that, usually, to us "*the wood is a forest of timber, the mountain a quarry of rock, the river is waterpower*". This instrumental, utilitarian perception signifies that our related experience is restricted to an *entelechy* built-in tools, resources, and technology, in that they are perceived as potential useful products. This results in a fragmented world experience, with utility as the only connecting thread, lacking even the understanding of the social quality inherent in technology as such. Heidegger's ethical evaluation considers this utilitarian mode of existence as inauthentic, in contrast to an authentic existence which results from a conscious effort to transcend this limited view and consider human existence deeper and defragment it as a «*being-in-the world-with-others*» (*Dasein-Mitsein*).

Heidegger associates technology to the disclosure of obscured entities in this world. Setting off from Aristotle and *techne* as a mode of *aletheuein,* he understands "technology as a mode of revealing"[31] anything that exists over there, in the world; thus, it does not allow us to forget about it, to neglect it. Technology, therefore, unfolds as a process that makes understanding, knowing and narrating inescapable as it connects the entities 'out there' with these 'in here'. And again, this stands for both material and digital technology.

[29] The term *praxis* is here employed in its core philosophical signification, that is the implementation of the socially and historically constructed immaterial totality of knowledge, ethics and aspirations of the agents into the embodied materiality of practices, by the agents (cf. the concept of praxis in the context of technology by

[30] The discussion here is based on Heidegger's analytic discussion of technology (Heidegger, 1977) in relation to a corresponding analysis of Environmentality -and equipmentality/instrumentality- within his Being and Time (Heidegger, 1962, 95–102). Cf. Ihde, 1990.

[31] As in footnote 30, esp. Heidegger, 1977, 10–15.

Of course, technology and tools in a non-digital world are intrinsically associated with the concept of material culture - the primary field of archaeological observation and inquiry- involving physical, tangible objects and artefacts. In contrast, digital technology is defined by its intangible, electronic essence. The differences between material culture and digital technology lie in their materiality, the mode of their existential impact, and the distinct ways people engage with each 'domain' within existential *praxis*. *Fusion* is the keyword here, rooted in the signification of technology as "extracorporeal self". How can such a fusion be optimally integrated in existentially crucial narratives of pasts, given that these narratives inseparable from the materiality of their landscapes? Here, optimality signposts non-fragmentarity (to incoherence) or and non-disembodiment (to inactiveness).

Having discussed the conceptual background shared by both embodied practices and dis-embodying digital narratives, the next step is to build upon the examples provided previously and the conceptual "toolkit" described in order to develop a synthesis, concluding to suggestions on how to achieve the aforementioned fusion. For this, I will focus on the intricate bond between human experience of the world, comprehension-narration and histories, on the canvas of the experiential materiality of *tópos*.

From *tópoi*, to landscapes, to histories

Historein

In delving into the relationship between method and experience in the construction of historical narratives, Koselleck shifts the focus to the distinct, yet interconnected, embodied/intellectual dimensions of '*to experience*' and '*experience*,' respectively. He highlights that their interplay bears semantic parallel to the Greek term "*historein*." "*Historein*" encompasses an energetic, almost processual dimension of inquiry, exploration, and trial, while it also encapsulates narration.[32]

The differentiation between "*to experience"* and "*experience*" corresponds well to the distinction between *tópos,* and *landscape* as outlined above: the former signifies the intricate web of all human-land relations 'as they are lived' whereas the latter encompasses both the perception (~reading) and the narration of *tópos*. In this vein, Koselleck's conception of *historein* seems apt for signifying this everlasting yet ever-changing boundary condition, between and through embodied living, perceiving and narrating. Ever-present as well; the dynamics of *historein* necessitate that, as Benedetto Croce put it, "*every true history is contemporary history*".[33]

Consequently, in my view, *historein* best encapsulates what occurs when moving in the landscape, as presented in the examples provided so far:

> it encompasses personal and collective, 'native' and disciplinary *pasts,* as they are structured, as they are socially embedded in the palimpsest of the [historical] landscape, becoming historical narratives and '*predispositions*'- in the context of a *habitus*- to be restructured through *praxis*.

[32] Koselleck, 2002, 45.
[33] Croce, 1920, 4

This [re]structuring, as the outcome of an active palimpsest, could be directly material, as in the case of the Laurion spatial organisation of habitation-production practices and built structures. It could also be primarily symbolic, as with the codification and re-codification of meaning(s) in the case of the Bembo fountain, mediated by the materiality of the edifice and its ornaments. Regardless the material/symbolic blending, the entire process of *historein* is *always embodied* within the constant interplay between *tópos* and *landscape.*

Seeking for the métron

It is in-here that we may fulfill the quest set forth at the beginning of this paper: the identification of a *métron,* a balancing measure, for the digital grafting of the world experience. The preceding exploration of the complex interplay between materiality, technology and narratives offers a conceptual framework that may bridge material and digital realms, with respect to archaeological landscapes. Thus, a path is formulated toward integrating these elements in a way that preserves the coherence and embodied nature of human experiences.

In the examples presented, all connections to the historicity of space were narrated by the agents, in the *historein* manner. To these, I should add my own written narrative here, which mediates the *historein* process within the framework outlined by the concepts discussed and defined within the examples: *mental-maps; entanglement - palimpsest; entropy; chaînes opératoires; taskscapes; habitus.*

In all examples, the context, for narratives to set off, has been the materiality of the movement of the body within the land. In parallel, this 'walkabout' allows for the digressions of the narratives' multi-linearity to cohere, something crucial in keeping the dynamics of historical interpretation alive. *Story telling-and-walking* does present some kind of fragmentarity. This is creative fragmentarity, though, not a passive one; it is a coherent flow of fragments. The coherence is created by moving in the land on a certain pathway, that is, on the foundation of a comprehensive embodied experience.

As explained before, this 'curling' of multiple narrative threads within a certain linear material pathway, besides enabling the 'de-fragmentation' of narratives, it also constitutes the *only way* for the embodiment -and the consequent comprehension- of *scale.* When walking through the Laurion peninsula, or moving around the Bembo fountain, *scale* is indispensable, not only for understanding the history of each case, but also to proceed to multiple, independently developed syntheses between the cases: a crucial necessity in establishing a context for political stances to develop, which are not easily manipulated.

The balance between autonomous understandings and the fusion of narratives, as discussed above, blends also multiple perceived pasts, developing social cohesion among the agents participating in this *story telling-and-walking* process.

Concluding the quest

Considering the above as the prerequisite framework, the *métron* we seek should address the fusion of this framework with digital narration. I propose that this fusion can occur through the *revealing* or *aletheuein* function of [digital] technology within the context of the said *embodied historein*.

This could be achieved, for example, with digital narratives participating in storytelling, fused into the embodied experience of the land, being walking or any other practice. In this context, "telling a story is not weaving a tapestry to *cover up* the world - it is rather a way of guiding the attention of listeners or readers into it"[34]; 'listen' and 'read', in a digital version, would encompass a wide spectrum of multi-sensory narratives, potentially employing all kinds of technologies, including VR/AR.

Consider this in analogy with the village visitor example illustrated earlier: a 'digital companion' mimics [35] the role of a human co-walker-guide, introducing *storytelling digressions*, anchoring their multi-linearity to the pathway's material route. In such a perspective, the landscape shares attributes with hypertexts or hypermedia: by 'clicking' on a device-gate to a depository of narratives, one can choose and pull a narrative thread to link to one's physical wandering. Thus, alternative perceptions and narratives of the certain *tópos* are formed and personal understandings are informed.

Archaeological disciplinary narratives can indeed partake in various alternate forms: presenting hard data (e.g. excavation or survey data) in a textual format, or as simple photos of the architectural or portable findings, or as 3D images (after laser-scanning of the physical entities); using AR real-time visualisation of, for instance, invisible (backfilled) archaeological trenches as they were at the time of excavation - as developed within the Irschen Project; providing interpretations through video clips, including interviews with archaeologists, or detailed 3D reconstructions, interactive webpages, and so forth.

Two pillars and two principles

In this context, the materiality of the pathway stands as one of the two pillars supporting embodied *historein.* Among other things, it sustains the qualitative necessities to keep fragmentary noise out and, as a side effect of motion, to avoid the imposition of certain dominant interpretations of the active landscape palimpsest.

To establish the balance between autonomous understandings and the fusion of narratives, it is essential to safeguard the revealing or *aletheuein* function, which constitutes the second pillar of embodied *historein*. Following the previous discussions, not only are the aspects, the bits of information that are revealed of importance, but also the degree of freedom sown into digital storytelling, to subsequently sprout in narratives entangling personal and collective pasts.

This is a prerequisite for the potential development of an active political stance. I argue here that this can be achieved by adhering to two principles:

(a) digital narratives should be grafted with some kind of creative art (visual, sound, performative).
(b) the complexity of the digital technology involved should be kept at the effective minimum - applying the *Occam's Razor* principle.

[34] Ingold, 1993, p. 153)
[35] Mimesis as a transcultural form of necessity mediating between the temporal character of human experience and the action of narrative, is discussed by Ricoeur, (1990, 52) while it descents from the Aristotelean *mimesis.*

A. Artistic utterances

All narratives *can* be delivered in an art form, including archaeological narratives. We need a cloud (metaphorically, but also digitally implemented) depository for such storytelling. Actually, one simply needs to identify the seeds of artistic format in all narratives. For example, ethnographic interviews combine performance, orality, and textuality in enhanced narrativity. In this manner, material culture and all kinds of socioeconomic practices could be linked to theatrical performance, illustrative painting and drawing, songs sung, or music performed. Singular keyword/phrase-threaded networks of storytelling acts are to emerge as a coherent flow from within this repository.

Why art? Art allows creative plasticity in handling data material, producing multilinear narratives. Art stands in contrast to stiff, unilinear authoritative and irreversible '*realistic reconstruction'* narratives, sometimes delivered as 3D realistic renderings of edifices, environments, and daily lives. As such, artistic utterance stands as one of the essential ingredients of the *métron* sought.

In my view, the most inspirational parallel for the 'art-grafting' principle within a *storytelling-and-walking* process is the 'cloud' of the Australian Aborigines' *songlines*.[36] I cite only one example: a painting (Fig.14) by Muni Rita Simpson[37] depicts *Yimiri*, a freshwater waterhole (*yinta*) within one of the saltwater lakes, linked by ancestral pathways or *songlines* rendered as meandering dotted lines, symbolising footsteps. This is more than just a "fly-over" view of a desert landscape and scattered water sources; it is a material embodiment of the painter's spiritual connection to the land and her living past, her memory of her childhood nomadic life. This landscape is sung when people navigate the land, in order to move in space, in the context of their hunter-gatherer nomadic life, of shifting habitation, of visiting relatives or sacred landmarks, of practicing rituals; it constitutes a mental map with topographic spatial reference but vastly transcends this: it incorporates beliefs, value systems, practical and theoretical knowledge, identities, social networking, ancestral bonding, mythology, rituals; in short, a uniquely (as of each agent and each group) assimilated universe of living pasts and social networks, bringing to life the *tópos* dynamics.

In the present context, I consider that any [archaeological] landscape bears its own [potentially digital] *songlines*[38], only mediated in the context of an art-grafted *story telling-and-walking* process. Implementation of this principle can be sought in the *walkscapes* approaches. These involve the employment of digital technology to link the experience of walking and

[36] The term *Songlines* is very dense in meaning and any definition is constraining. The rough and standardized outline of the concept signposts intricate and ancient oral traditions which mediate the cultural, geographical, and spiritual repository of knowledge and belief system(s) of Indigenous Australian communities. These "songlines" are literally paths or routes across the landscape which are walked while singing a kind of traditionally bequeathed oral poetry: each songline corresponds to a specific journey taken by ancestral beings during the Dreamtime (or Dreaming), a fundamental concept in Aboriginal mythology that corresponds to a *Creation Narrative*. Of the most obvious functions of the songs associated with these paths, are navigation, passing down cultural knowledge, and connecting individuals to their ancestral heritage. Scholarly literature on songlines is quite extensive; indicatively, and in relevance to the present line of argument, see Clarke, 2009; Huggan, 1991; Judge, 1998a; McGrath, 2020; Norris & Harney, 2014; Smith, 2017.

[37] Born circa 1941 and died in 2008, she was the first of the *Martukaja* (Aboriginal Australian peoples in the Western Desert cultural bloc) to paint aerial views of sacred landmarks.

[38] Cf. Judge, 1998.

navigating spaces with a spectrum of alternative narratives, often incorporating digital information, storytelling, or, even, interactive elements.[39]

Having written these, I do not mean to downplay the importance of authoritative, disciplinary coherent archaeological narratives and their digital utterances being part of the aforementioned 'cloud-depository' framework. However, for them to become essential in the formation of historically active *pasts,* they need to be available for art-grafted conveyances, running in parallel with their literal unfolding.

B. Occam's *Razor*

There are cases in which digitalisation expands via virtuality, beyond the '*digital companion* in walking*',* to mimic the embodiment of the physicality of the 'pathway' *per se*. Digital archeological datasets, including high resolution photography and 3D spatial models, have been mediated via immersive AR technology and interactive display systems. A "facsimile" mode of representation of physical cultural sites within the shell of a museum, gradually moved forward by engaging the visitors-participants into a game-like" experience,[40] initiating a kind of exploration that triggers *kinaesthetic revealing* by moving around a smartphone, tablet or any other portable device.[41] Tools derivied from the gaming industry, combining VR systems and complex immersive technology, have been experimentally introduced to develop "*virtual heritage environment*" approaches, particularly, in learning and education.[42] Furthermore, cutting-edge technology[43] is being employed to imitate certain physical landscape experiences. Through electronic multi-sensory stimuli, it digitally induces independent, embodied experiences of virtual landscapes.[44]

A distantiation of the *tópos* materiality is rooted in this interplay between disembodiment and virtual embodiment.[45] Despite this -and perhaps because of this- complex technologies and the related, equally complicated hardware are most valuable when issues of accessibility to the physical sites are involved. This is the case, for example, with fragile sites -of poor preservation state-, or sites accessible only with specialised equipment (caves, mining galleries, shipwrecks). Additionally, people with mobility, hearing or visual impairment are vastly benefited (a/b.2 in the previously described categorical distinction). Researchers share the merits of hi-tech/hi-resolution rendering of archeological raw data (a/b.1 in the aforementioned distinction).

Apart from these cases, the disrupting effect of technological bemusement needs to be mitigated. Based on the overall discussion in here, it is conceivable that the degree of complexity of the technology involved is analogous to the degree of fragmentation it triggers in its consideration as *extracorporeal self.* It also affects *embodied historein,* constraining

[39] See for example Careri et al., 2017; Zhang, 2016.
[40] For example, in two exhibition installations presenting the Mogao Grottoes at Dunhuang paintings in context, under the common heading "Pure Land",. After a decade or so of research, the "ALiVE" (Applied Laboratory for Interactive Visualization and Embodiment) team, of the City University of Hong Kong (Kenderdine, 2013; Mu et al., 2023).
[41] As for example, in the Mogao cave exhibition, the use of tablets in exploring the installation, by visitors in groups, was introduced to enhance the kinaesthetic excitement and socialisation (Kenderdine, 2013,209–211).
[42] Barbara, 2022; Bonini, 2008; Enyedy & Yoon, 2021; Ibrahim & Ali, 2018;Šašinka et al., 2019; Tan et al., 2023.
[43] DeFanti et al., 2009; Hruby, 2019; Kerruish, 2019; Slater & Sanchez-Vives, 2016.
[44] DeFanti et al., 2009; Kerruish, 2019.
[45] Kenderdine, 2013, 211.

independent synthesis. These effects are most evident at the most extensive of the nested scales of participant observation, as clearly shown in the case of the Laurion landscape.

Mitigation is not quantitative but qualitative. The "effective minimum" is relatively and historically defined in correspondence with the agents' generated ability to build *independent syntheses*. In this manner, the 'clicks' are not building up a digital Wall of isolation but are anchoring historical, political pathways in shared landscapes.

Therein, that is in the historicity of independently constructed syntheses, lies the *métron* sought for, emerging from within the linear narrative of this paper: the integration of visual, acoustic and performative art to both parts of the binary contradistinction between *material* and *digital* embodiments of the landscape experience, by keeping the complexity of the digital technology involved to the effective minimum.

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