Cambridge Archaeological Journal (2025), **34**, 279–292
doi:10.1017/S0959774324000386

CAMBRIDGE UNIVERSITY PRESS

Research Article

Entheotopos. On a Heuristic Viewpoint Concerning Sacred Landscapes Creation in Ancient Egypt

Antonio Muñoz Herrera
Universidad Complutense, Edif. B, Calle Prof. Aranguren s/n, 28040 Madrid, Spain

Abstract

The examination of funerary landscapes in ancient Egypt has traditionally encountered challenges in establishing comprehensive perspectives that could facilitate the formulation of theories explaining the paradigms governing the creation and evolution of these spaces. Indeed, in recent decades, with the advent of new methodological and epistemological approaches, certain foundational principles explaining the placement of necropolises, the organization of tombs and the symbolism inherent to these environments have been called into question. This article seeks to introduce a fresh perspective on the Egyptian funerary landscape and its role in shaping cosmogonic narratives, establishing sacred spaces and contributing to the cultural transmission of these elements. Employing a methodological framework rooted in emerging fields of study like cognitive archaeology, fractal geometry and a reexamination of Egyptian protoculture, we aim to provide a novel understanding of this landscape. Given the evidence we have presented, it has become necessary to articulate a new concept that crystallizes these innovative viewpoints and offers a fresh interpretive framework for the study of landscape archaeology, not only within Egyptology but also in the broader realm of archaeology as a whole.

(Received 3 October 2023; revised 27 August 2024; accepted 6 November 2024; first published online 13 February 2025)

Introduction

In the past decade, it has become increasingly evident that certain fundamental assumptions and reasoning about Egyptian funerary landscapes, often reiterated as mere tautologies in more traditional studies, are now being called into question by recent research that challenges what had previously been considered dogma. For instance, the long-held belief that cemeteries were invariably situated on the west bank of the Nile due to their solar and religious connotations is being reevaluated in light of prominent and extensive necropolises such as Beni Hassan, Dayr el-Bersha, Amarna, or Qaw el-Kebir, all of which are located on the east bank of the Nile (Jeffreys 2010, 109; Willems 2020). This phenomenon has been frequently rationalized as minor anomalies within the overarching pattern postulated by the prevailing paradigm. Nevertheless, anomalies within a paradigm are not mere exceptions, but rather represent fissures in the underlying theoretical framework itself, which fails to account for the entirety of cases.

In this context, one of the most evident examples of these anomalies can be observed in the study of necropolises: The study pertains to the establishment, evolution and utilization of primary necropolises. These facets have recurrently been subjected to attempts at elucidation and support through various conceptual frameworks, including tradition, familial lineage and socio-economic relationships (Baines 1989; Hartung 2016; Lehner 1985; Muñoz Herrera 2019; 2023; Shirley 2008), as well as visibility and their correlation with festivals (Jiménez-Higueras 2016), or their direct associations with temples (Rummel 2020). Nevertheless, comprehensive investigations into necropolises as holistic entities (González-García *et al.* 2009; Slinger 2022) have underscored the infeasibility of arriving at a universal explanation based on these assumptions. None of the numerous disciplinary perspectives pursued in isolation can individually account for the entirety, or at the very least the majority, of cases in both spatial and chronological dimensions. Currently, a comprehensive theory elucidating the genesis, evolution and spatial distribution of tombs in the principal Egyptian necropolises remains elusive. These approaches are, in a way, secondary layer studies—necessary but inconclusive regarding the origin and organization of Egyptian necropolises. The paradigm is established through contrasting conclusions about the importance of various elements (temples, family relations, festivals, etc.) as essential in the development of funerary spaces, without arriving at a unifying conclusion.

Corresponding author: Antonio Muñoz Herrera; Email: antomu01@ucm.es
Cite this article: Muñoz Herrera, A. (2025). Entheotopos. On a Heuristic Viewpoint Concerning Sacred Landscapes Creation in Ancient Egypt. *Cambridge Archaeological Journal* **34**, 279–292. https://doi.org/10.1017/S0959774324000386

Furthermore, certain conceptual aspects concerning the interplay between the Egyptian society and its landscape have faced recent challenges. For instance, the commonly asserted notion of the need to control the inherently unstable nature, particularly the symbolic chaos embodied by the desert, as an almost intrinsic *raison d'être* for ancient Egyptians (Baines 2013) has been significantly refuted in recent studies (Darnell 2010; 2002a, b; 2011; 2020; Darnell *et al.* 2013; Gates-Foster 2012; Gatto 2012; Hackley 2020). They demonstrate that the extensive archaeological record in desert regions, including petroglyphs, inscriptions and cairns, suggests that, with adequate knowledge, deserts were, in fact, navigable environments and were conceived as areas of substantial interaction with the Nile valley. Similarly, the idea that underworld concepts were projected onto the landscape (Budka 2019; Effland & Effland 2010; 2013), rather than the reverse, as elucidated in prior researches (Desroches-Noblecourt 2003; Jeffreys 2010; Muñoz Herrera 2025; Rummel 2020; Ullmann 2007; Wegner 2007), challenges conventional beliefs. All of these elements present anomalies that the existing paradigm struggles to explain, necessitating a reevaluation and the formulation of a novel theoretical framework capable of accommodating these exceptions. This effort is essential for attaining a more precise understanding of the significance of the Egyptian landscape in the evolution of funerary practices.

Given the mounting evidence that the methodological and epistemological foundations of the Egyptological paradigm are insufficient for elucidating fundamental facets of the genesis, progression and symbolism inherent to the grand Egyptian necropolis, a compelling imperative emerges. We find ourselves compelled to forge a novel conceptual framework that not only harmonizes with the more conventional viewpoints and perspectives, but also accommodates the enigmatic elements that defy explanation within the current paradigm, despite our accumulated knowledge in the field of Egyptian landscape archaeology. In this context, necropolises will serve as a case study due to their immense archaeological and textual richness, but the primary objective of this study is to reassess the role of the landscape in the origin and cultural development of Egyptian civilization, because in our view, landscape factors may have a decisive role in necropolis development. This endeavour necessitates a comprehensive reassessment of Egyptian culture and cognition, one that can engender fresh analytical approaches and positions landscape as a pivotal force in the genesis and cultural evolution of this civilization.

Primitive conception of the symbolic landscape

In order to develop this new theory, it becomes imperative to delve into the roots of what we might characterize as Egyptian protoculture. It is precisely in these ancient societies that we encounter some of the most pristine cultural traits, untainted by technical or ideological sophistication, with regard to their relationship with the landscape. During the early Holocene phases spanning from 8500 to 5300 BCE, a constellation of human populations thrived in the Western Sahara region along the Nile, benefiting from the relatively humid climate that facilitated the establishment of semi-nomadic communities reliant on herding, hunting and gathering for sustenance (Wengrow *et al.* 2014). These communities engaged in annual migrations driven by cyclical rhythms dictated by climatic and spatial factors. They moved between distinct areas of the Sahara in pursuit of pastures located in still-humid wadis, hunting grounds within mountainous terrain and locales in proximity to seasonal desert lakes, where abundant vegetation could be harvested. Over time, this cyclical occupation gave rise to a sense of ceremonial practice (Bunbury 2019, 14–25).

The sacralization of these early spaces can be attributed to two primary factors. Firstly, the systematic and seasonal inhabitation of these landscapes, including wadis, mountains, and seasonal lakes, likely engendered a phenomenological experience that imbued these environments with a sense of sacredness. This process assigned abstract and symbolic significance to specific natural phenomena encountered by these communities.[1] This may have been determined, explained from a materialist perspective, by the mode of production of these early societies, where the identification and understanding of these phenomena represented a qualitative leap in the group's ability to survive in a hostile and changing environment.

In this manner, the cognitive exploration of these recurring natural phenomena—such as the emergence of groundwater within the lakes, the flourishing of vegetation in the wadis, the formation of fractures or crevices in the mountains through which water and minerals surfaced or accumulated, the wadi serving as a conduit to places teeming with life, traversing the mountain viewed as the horizon where the sun's rising and setting occurred, or the islands that surfaced after floods—potentially culminated in the development of a conceptualization of space and time. Within this framework, these processes were regarded as manifestations of specific deities that played a crucial role in the survival of the community, aligning with the archaeological findings presented in previous researches (Hackley 2024; Lohwasser 2019; Lundius 2020; Magli 2014; Muñoz Herrera 2025; Ragab 2021; Willems & Dahms 2017) regarding these phenomena.

In addition, specific sites such as Nabta Playa or Gilf Kebir became meeting places for these groups, where annual ceremonies and festivities may have been held for ritual and religious purposes, as evidenced by ritual burials of bovids, burial mounds or rock paintings (Applegate *et al.* 2001; Förster & Kuper 2013).

On the other hand, this process of sacralization can be explained in terms of dialectical materialism. If we adhere to the notion that modes of production shape consciousness, then we are confronted with societies of shepherds, hunters and gatherers whose very existence hinges on their capacity to adapt to a landscape undergoing seasonal transformations. The ability to identify initially inhospitable or semi-desert areas where water, vegetation, and the entire spectrum of associated wildlife cyclically emerged, constituted

https://doi.org/10.1017/S0959774324000386

an integral facet of their way of life. Consequently, from the earliest times, these communities likely began discerning recurring landscape patterns that held the key to their survival. The phenomenological encounters within seasonal lakes, wadis, or mountain crevices became sacred not solely due to the cognitive recognition that nearly magical phenomena unfolded within these locations where, at certain intervals, life and vegetation sprouted in places previously marked by aridity and death. It was also because this cognitive process was precisely what enabled the group's survival.

It seems reasonable to think that, given the abrupt climatic transition that occurred with the drying up of the Sahara around 5000 BC (Bunbury 2019, 39), these societies had to adapt quickly to the new environments. Seasonal settlements in high mountain areas or on the desert plains gradually shifted to the mouths of the wadis, places that had already been used in previous stages in a very ephemeral way and which gradually became places of more permanent settlement (Hackley 2020, 92; Manning & Timpson 2014). At these times, the modes of production remained essentially the same and therefore the symbolic ideas associated with that landscape must have been maintained. The settlements at the mouth of the wadis exemplify this transitional period of primitive cultures of the Nile Valley, still dependent on the desert plateau and the wadis for their essential activities, and whose memory and cultural base is rooted in the cognitive and conceptual phenomenology of the desert.

Indeed, it appears plausible to surmise that this period marked a significant reinforcement of many symbolic notions intertwined with the landscape. The phenomenological memory of preceding generations held a prominent position within the oral traditions of these emerging groups. Consequently, the associations forged with the west as the realm of the ancestors, the desert as the genesis of their ideological and familial essence and the wadis as the pivotal zones of transition between distinct facets of the world, all served to intricate the agency of the landscape, augment its sacredness and amplify its points of reference.

Furthermore, it seems reasonable that the connection between the emerging settlements and life was fortified during this phase, as they began to encounter not only the substantial torrents of water surging through the wadis, forming islands in their vicinity where their dwellings would be established, but also they began to confront the formidable inundations of the Nile (still relatively untamed and unpredictable at this time). Consequently, during specific periods of the year, society sought refuge from the rising waters on small islands positioned at the mouths of the wadis, enabling their survival.[2] These experiences, initially traumatic and later sanctified as people witnessed the fertility of the silt left behind once the waters receded, played a pivotal role in comprehending and sanctifying their environment. They contributed significantly to the development of cosmogonies and narratives linked to these phenomena. In these environments, chaos metamorphosed into life in a cyclical manner, and the identification of specific landscape landmarks that served as spatial indicators where life could flourish became ingrained in the collective cultural memory of the group.

Thus, the islands (mounds emerging from the water), the crevices, the wadis and the water perhaps took on symbolic and sacred connotations, not only because of their association with the survival of the group, but also because of the idea that the phenomenon that allowed this survival was caused by divine intervention, and that these places could be associated with points of manifestation of the divinity. In this way, the mountain crossed by the wadi recreated the mythological horizon where the solar god is born and grows every day and therefore where life begins and ends: 'When [Aton] emerges through the *akhet* from the east and continues in repose to the west' (CT II, 41 d/e);[3] the mountain or the islands caused by the flooding of the Nile are conceived as the primordial mounds where life is born and maintained,[4] because that is how it was in a physical and real way for these societies, and where the gods emerge in the first instant of creation, according to their cosmogony (Allen 1988).

This idea of what emerges or comes out of nothing, experienced by these societies in the waters of seasonal lakes, the vegetation of semi-humid zones or in mining activities in the mountains, will be the fundamental basis on which their religious and cosmogonic conception will be based, according to the archaeological and textual record that we have been able to find in relation to these phenomena: the origin of Medinet Habu in the rise of the flood, considered the primordial source of the Nile (Gabolde 1995); speos and cult graffiti in areas of mining extraction (Graves-Brown 2006; Hackley 2020, 276; Thiem 2000) or certain minerals as direct manifestations of the divinity: 'The mountain is broken, the stone has split, the caverns of Hathor have opened and she ascends like turquoise' (CT II, 130–131). And, therefore, all this has led them to think that the interior of the mountain is where the gods reside.[5] Water, experienced in the floods of the Nile, in the seasonal rains or in the high water tables, will have for these societies a renewing and regenerating power (Tatomir 2005, 186) and will be associated with the sky because of its similarity in colour and because of the capacity of the celestial vault to regenerate the sun every day: 'The waters...which are in the sky' (Pyr. 2063a);[6] 'Go around the sky like the sun' (Pyr. 130d).

Cosmogony arises from this environmental experimentation, offering a narrative of the world's origin and tangible reference points in their surroundings. This cyclic experience helps them embrace the myth and feel part of a larger process. Recreating the primordial moment (*sp-tpi*) through landscape elements, architecture, ritual, or performance becomes a primary goal, aiming to reconnect with the primeval gods.[7] The idea of emergence from primordial waters, symbolized by the first mound, likely relates to islands where societies sought refuge during floods, vital for their survival and mode of production. It signifies the birthplace for these groups. When the landscape provides natural reference points, architectural development remains minimal. Conversely, in landscapes lacking such references, artificial elements are constructed to recreate this primordial scene.

In conclusion, although the importance of natural phenomena in the conceptualization of religious thought has

https://doi.org/10.1017/S0959774324000386

been well recognized and studied in traditional Egyptology (Allen 1988; Assmann 2005a, b; 2011; Aufrère 1991; 2001; Brass 2003; Cabrol 1998; Englund 1989; Tatomir 2005), we contend that the conceptual underpinnings of the ancient Egyptians' comprehension of space and time can be traced back to the early Holocene societies. It was within the cognitive and phenomenological experiences, intimately intertwined with their modes of production, that these societies had with their landscape that the bedrock of the cultural memory, eventually crystallized within the Nile Valley, was formed. We now posit that these concepts are closely tied to the natural environment, to the notion of emergence from nothingness to the survival and sustenance of the community, and to the cyclical recurrence of specific climatic and landscape phenomena.

Since the ancient Egyptians' understanding of the universe was based on spatially bounded human experience, as we now propose, cosmogony must have been created as a normative model of thinking about the conception and transformation of the world and decisively influenced all other religious conceptions, landscape or social conceptions, in what Assmann (2005a) calls a metamodel,[7] where the dialectic between masculine/feminine, active/dynamic and passive/static created the world and maintained it in a constant state, as is pointed out in the cosmogonic stories (Allen 1988, 17). Thus, the conceptual foundations of the Egyptian mentality lie essentially in the processes, phenomena and results of that metamodel that represented the first creation of the world: a model that would attempt to replicate both physically and cognitively for re-experimentation by a society that could thus be closer to divinity.

The origin of this cosmogonic narrative could be associated with the cognitive processes of the first societies in the landscape, the productive models necessary for their survival and the constant repetition of a series of natural phenomena that altered the lives and conditions of these groups. The traumatic and festive events associated with all these conditions had a decisive influence on the conception of the environment and therefore on the mentality itself. The emergence of the first necropolises associated with these locations may indicate the prior sanctification of these spaces and their subsequent conversion into funerary sites due to their proximity to the deities and the primordial moment for the deceased.

Cultural fractality as a replicative process

On the other hand, this relationship between society and its environment may influence the necropolis organization through a fractal structure in social and cultural terms, meaning that the same phenomenon appears at different scales. This makes sense if we understand that, since Mandelbrot's discovery (1982), nature organizes itself according to a fractal structure, and culture would therefore be just another manifestation of this nature.[8]

In this context, some previous studies in the field of Egyptology seem to highlight this structure. Society, according to Lehner (1999), is organized according to the Patrimonial Household Model, whose iteration at different scales would explain the Egyptian fractal form. However, the household model is problematic as it ranges from small family units, living under one roof, to large socio-economic units consisting of landlords, workforces, storage places, animals, fields, orchards, pastures, etc. (Lehner 1999, 279). In this model, the key social unit was not the individual, but large family groups where one head of household emerged above the rest to manage the community's resources, fostering the solidarity among members through marriages and ensuring sufficient provisions for each individual member. The Egyptian state, for Lehner, ended up as a gigantic household of households: that is, a self-replicating fractal form, as the very origin of the word pharaoh, 'Great House', seems to suggest (Lehner 1999, 280).[9]

The emergence of this model of social organization may have been determined by the environmental conditions in which early Holocene societies developed and their transition to the Nile Valley, where they shifted from a clan-based model to a house-based model. To understand this shift, it is necessary to comprehend how kinship systems operate. In the study of classificatory kinship systems, Lévi-Strauss's work is fundamental, not only for the systematization and key discoveries he made (Lévi-Strauss [1955] 1981) but also because he identified kinship structures that did not fit well within traditional classifications. He termed these forms *sociétés à la maison* [house societies], where the house as an environment was a crucial element in the social organization of these groups, though he always considered these models as just one among the various kinship classifications. The concept has been widely applied in both anthropology and archaeology,[10] eventually dissolving into the theoretical magma that corrodes everything. As some studies have pointed out (González-Ruibal 2006), it is necessary to return to the concrete term defined by Lévi-Strauss and apply it rigorously to the study of past societies. The French anthropologist defined a house society as

> a moral person holding an estate made up of material and immaterial wealth which perpetuates itself through the transmission of its name down a real or imaginary line, considered legitimate as long as this continuity can express itself in the language of kinship or affinity and, most often, both. (Lévi-Strauss [1975] 1982, 167)

The archetypal example of this type of society would be the feudal families of Europe, where social organization is centred around a castle—material wealth; there is a clear effort to acquire and maintain names and noble titles—immaterial wealth; marriage strategies are employed to increase the house's power; and there are clear hereditary prerogatives.

In the context of antiquity, very interesting studies have been conducted regarding the Mediterranean during the Late Bronze Age and the Early Iron Age (González-Ruibal 2006; González-Ruibal & Ruiz-Gálvez 2016), reaching a fascinating conclusion that aligns with the findings of this work: house societies in the Mediterranean arose due to the scarcity of arable land and the subsequent investment

https://doi.org/10.1017/S0959774324000386

in complex agricultural technology. The scarcity of land led to its inheritability, preventing the de-patrimonialization of the family. Since more intensive and specialized labour was required, men gained importance over women, acquiring exclusive rights to inherit these spaces, while women were relegated to roles as exchange pieces in marriage alliances aimed at expanding the family's territorial holdings. The importance of cattle worship, through bucrania and bull imagery, spread throughout the eastern Mediterranean and Anatolia, would be connected to the high value of cattle in a semi-arid region; their display as house emblems would suggest social differentiation based on the ability to access land and livestock.

A similar process might have occurred in the Egyptian context, where Holocene societies, initially organized under clan-based forms as evidenced by their necropolises, transitioned to a household model with the onset of sedentarization in the Nile Valley. The distribution of major Neolithic and Predynastic cemeteries in the Badari region—such as Cemetery U at Umm el-Qaab in Abydos; Naqada, Elkab; Arman; Naga ed-Dêr; and Hierakonpolis with Cemetery HK 43—demonstrates a distinct pattern of clan-based organization without hierarchical grave goods (Campagno 2003, 15). In Gebel Ramlah, up to six groups appear to be identifiable in the burial distribution around a seasonal lake, where the tumuli seem to 'emerge' from the waters. Furthermore, each of these groups is densely populated, with some graves reused multiple times (Kobusiewicz *et al.* 2009; Wengrow *et al.* 2014, 104–7). The evident conclusion from these records is that kinship serves as a structural model in the organization of these communities' necropolises.

The environmental shift likely led to a change in social organization due to the distribution of land in the face of resource scarcity, as appears to be evidenced in Hierakonpolis and Abydos urban area during the fourth millennium (Campagno *et al.* 2021, 105). In the funerary realm this structure seems to be reflected as well. Large tombs, surrounded by smaller tombs associated with dependent members, appear in the archaeological record from the necropolis of Umm el-Qaab (Hartung 2018), reaching their maximum expression in the Old Kingdom large mastaba fields associated with the pharaoh's pyramid complexes. In this configuration, the funerary practices served as a continuation of the patrimonial household model even after death, albeit on a reduced scale (Eyre 1987, 31). This recursive element also extends to the more conceptual aspects of the funerary realm. For instance, considering that an individual was perceived as an amalgamation of various components (Ka, Ba, etc.) that evolved through their transformation, one particular element consistently maintained recursive associations with broader conceptual structures. The Ka, representing the undifferentiated vital force of the individual, was linked to their kin and ancestors. In the case of common people, their Ka was intricately tied to their forebears and, ultimately, to the creator god of the primordial moment. Therefore, the core concept of the Ka revolved around its connection to the metaphysical continuity of the social hierarchy, underpinned by the patrilineal household model (Lehner 1999, 319).

Although this is particularly suggestive and interesting, Lehner's proposal does not get to the end of the matter in relation to the funerary world because, for him, the fractal algorithm (although he does not call it that at any point) is the model of the patrimonial household and it is a simple framework used in abstract way. However, the aim is to try to explain why, in the social structure well defined by Lehner, there appears a cultural structure anchored to the landscape in relation to places considered of divine manifestation, which may determine the location and organization of the Egyptian necropolis.

To achieve this, a study of fractality was conducted, going beyond theoretical approaches, delving into the mathematical realm where the essence of fractal geometry resides (Muñoz Herrera 2025, 137–52). In this context, we have seen how the first settlements at the mouths of the wadis are where the first cemeteries must have been begun and where a sacralization of space seems to have been more evident. For this reason, it seemed worthwhile to propose an experiment at Cemetery U in Umm el-Qaab. Cemetery U represents some of the earliest evidence of funerary activity related to the first permanent settlements in the Nile Valley, dating to the Naqada I period (*c.* 4000 BC). It also precedes the establishment of the first Royal necropolis in the vicinity, thus providing insights into the primitive cultural perspectives already present in this civilization. The methodology of this experiment focuses on determining the fractal dimension of the distribution of tombs. Various methods have been developed for calculating the fractal dimension, tailored to the specific needs of the object under measurement (Xu *et al.* 1993, 249–52). Among these, the 'Box-counting method' is particularly prevalent, especially in geographic or urban contexts with self-similar features: appearance or characteristics that do not change regardless of size. This method is effective for assessing the fractal dimension of linear phenomena such as site occupation. It involves drawing a grid divided into cells of a specific size (S) and counting the number of cells that intersect (or are occupied by) the structure under study. Here, N represents the number of cells of size S that intersect with the structure. By plotting the logarithm of these factors and applying the formula, the fractal dimension is derived, which characterizes the heterogeneity and density of occupation of the fractal figure. The result is illustrated in a graph that shows the slope (D) of the relationship between logN (s) and log1/S (Sandoval García & Vilanova de Allende 2007, 59).

The methodological steps for this study were as follows. First, the distribution plan of the study area was selected for digitization and vectorization. The plan of Cemetery U created by Hartung (2016) was chosen. Next, this plan was imported into QGIS 3.28 Firenze, where various vector layers were generated to represent the location points of the tombs, creating a binary vector layer of the tomb distribution within the necropolis. Once the vector files of the necropolis were prepared, fractal analysis was performed using Fractalyse 3 software.[11] The vector layers of the necropolis were loaded and the analyses were carried out using the 'box-counting method' (Xu *et al.* 1993, 249–52),

https://doi.org/10.1017/S0959774324000386

for different maximum grid dimensions (r = 2048, 1024, 512 and 256 pixels, with a scalability factor S = 2).

The results show the fractal dimension of the distribution of tombs in the primitive necropolis of Umm el-Qaab (D = 0.78), which marks an iterative/replicative model for the rest of the Egyptian necropolis.[12] One of the reasons for such a fractal organization can be explained on the basis of the patrimonial household model proposed by Lehner. In fact, from the end of Naqada IA, we begin clearly to distinguish five groups of burials that have been associated with family groups that began to form these cores of tombs (Hartmann 2011, 931), probably following Lehner's proposal and whose model may have been the placement and organization of the seasonal huts placed in these areas of the wadis from very early times.[13] What is interesting is that the early tombs of Umm el-Qaab (N. IA1), before this clearer structuring at the end of N. IA, do not have a distribution that can be explained according to the patrimonial household model, but they do have a fractal dimension. Therefore, the triggering algorithm must be different.

The emergence of an island at Umm el-Qaab held profound significance as a symbol of the group's survival, where a leader with profound knowledge of the environment played a pivotal role. The selection of the initial necropolis location may have been influenced by a sense of territorial ownership felt by these communities. Faced with a shift in the production model due to climate changes at the end of the Saharan Neolithic, they identified this place as a repository of their cultural memory, closely associated with their survival in previous generations. This space was subsequently sanctified, serving as a locus for divine manifestation or intercession. With the establishment of a permanent settlement and the placement of a necropolis, the modes of production likely underwent transformation, leading to a shift in the group's collective consciousness. This period marked the recognition of the leader capable of identifying these significant spaces as the leader of the community, initiating the model of the patrimonial household. This model had already gained prominence in the social sphere during these chronological phases and can be identified at Umm el-Qaab during the second phase of occupation, specifically in the late Naqada IA period (Hartmann 2011).

Moreover, if, as Lehner rightly points out, the idea of the Ka is intimately linked to the memory of the ancestors and, by ultimate extension, the creator god of the first instant, these first tombs of Umm el-Qaab must have been configured according to this idea, in which the model of the patrimonial household was not yet reflected. The fractality associated with these ancestors, in my opinion, must have been linked to the phenomenological experience of the landscape and to certain elements of it that referred to the cultural memory of the group (the desert, the wadi, the places of cyclical occupation of past generations) and to the *sp-tpi* (primordial moment).

The chosen space reflects a landscape with characteristics akin to the primordial cosmogony: 'I am the one who began there, (in) the Waters. See, the Flood is subtracted from me: behold, I am that which remains'. What is being recounted in this fragment of the sarcophagus texts is the growth of the mound above the waters ('the Flood is subtracted from me': CT 714). Umm el-Qaab hill, forming a sizable island during torrents and river floods, became a symbol of life and survival, and a replication of the cosmogonic narrative. Initially occupied seasonally and later permanently, it linked directly to family ancestors' memory and territorial appropriation through cyclical site use (Bradley 2001), natural element references and mythical ancestors created from an emerging mound. As settlement became more permanent, the development of a necropolis initiated social complexity. This process led to the patrimonial household model, where leaders controlled, organized and distributed resources hierarchically. This social complexification explains the organizational shift in the necropolis from the end of N. IA onwards.

This cultural fractality (iterative, self-similar and scalable) was determined by an algorithm based on the idea of emergence as a process of recursion. This idea of emergence is directly anchored to the narrative of Egyptian cosmogony, where the original impulse of the creation of the world is to be considered intransitive: out of nothing comes everything (Assmann 2005b, 14).[14] In other words, the process of the emergence of the world is a phenomenologically passive process, as is the case precisely in the natural phenomena that gave rise to this narrative. From a phenomenological point of view, the perception of seeing the emergence of water in a seasonal lake that was dry must have been a very striking phenomenon for these communities and they could probably associate it with the emergence of life. What we see, in reality, is an adaptation of narratives and concepts to the different natural phenomena that were occurring in the landscape. I would like to delve here into that algorithm and into the cultural implications for explaining the replicative process of the Egyptian funerary landscape.

The concept of emergence is deeply intertwined with the essence of life itself, and with what sustains life. If, in their narrative of the world's creation, the Egyptians recounted how their entire reality originated from the emergence of everything out of nothingness, the actual experience of these emergent phenomena in their landscapes must have felt like brief moments of creation: of life's genesis. Hence, the emergence of a rushing torrent of water from a crevice or a wadi, the formation of seasonal lakes, or the sudden appearance (emergence) of islands on the plain during the flood were not only experiential encounters with cosmogonic phenomena, but also held direct associations with the concept of life itself. What emerged after the disaster (the chaos) of the flood symbolized vital renewal. In practical terms, the fractal algorithm became associated with that which generated the fundamental elements required for the group's survival. The island, for instance, served as a refuge from floods and inundations; floodwaters deposited rich silt for cultivation; crevices offered access to minerals; and seasonal lakes provided a bounty of flora and fauna for hunting and gathering.

This being so, two elements result from this process, since they are the ones that remain and manifest themselves

https://doi.org/10.1017/S0959774324000386

after this emergence, after life (symbolically and in a real way) has taken place: society (the group) and the landscape. And what triggers the iteration, therefore, is the reciprocity between the two. And it is precisely here that we can find a new theory about the origin and development of the Egyptian funerary landscape.

In summary, Egyptian cultural fractality stems from an iteration algorithm that may be rooted in the concept of emerging lands, crucial for the group's survival in primitive times. This algorithm embodies two essential elements: society, structured hierarchically based on the patrimonial household model, ensuring group survival and well-being; and the landscape, recognized for specific elements that aid survival during catastrophic natural events. The phenomenological experience of seemingly unchanging processes, like water emergence in crevices, wadis, or seasonal lakes, led to the sacralization of these elements, connecting them with the group's ancestral memory, their life-sustaining attributes, and the replication of the world's creation. In essence, what is replicated in the necropolis at various scales (forming a fractal pattern) encompasses life: society and landscape. Replicating these elements secures the deceased's afterlife, mirroring the structures that sustained them in their first life, exemplified in tomb configurations and grave goods.

Landscape as 'extended mind'

Since landscape is a fundamental agent for the recreation of that first moment of creation, it seems important to look for the elements that refer to that moment and how they interact on a cognitive and phenomenological level with the society that perceives them.

In related works (Muñoz Herrera 2025; Rondot & Gabolde 2018; Rummel 2020), it is shown how there are a series of landscape elements with very particular characteristics which were associated by Egyptian society as places of divine manifestation. These places, known as tA-dhn.t,[15] are the origin of the sacredness of many of the Egyptian landscapes and are mainly linked to phenomena that occurred on the rocky walls of the mountains.[16] From study of the cases in which this term appears and in view of the archaeological and textual evidences presented (Muñoz Herrera 2025; Rummel 2016), we are now able to identify a series of characteristics common to all of them of which, although they do not all have to be present at the same time, it is essential for some of them to be present in order to consider a place as tA-dhn.t, even when the term does not appear in sources referring to that place. This is what previous studies did not achieve (Adrom 2004; Rondot & Gabolde 2018; Rummel 2016; Yoyotte 2003), since they were focused on specific aspects of the term. Seen as a whole, the expression, in short, is a general toponym to designate places in the Egyptian mountains where the divinity manifested itself and whose phenomenon marked the beginning of the sacralization of that place. The specific characteristics identified with these places were as follows:

1. A mountain that has cracks or crevices associated with areas of mineral extraction or stones of special significance[17] or where water rises in waterfalls caused by torrential rains.
2. Natural forms on the mountain attributable through a process of 'pareidolia' to divine entities.
3. Places associated with the cult of Hathor or female divinities linked to her power of renewal and protection of the deceased.
4. Places associated with solar divinities due their relationship with the royal apotheosis and its mythological connection with Onuris-Shu: related in turn to Hathor (his wife).
5. The relationship with the goddess Meretseger in her cobra form, because of her syncretism with Hathor, who also takes the form of a serpent as the daughter/eye of Ra and sister/wife of Onuris.
6. Places with evidence of ritual activity associated with the above divinities.
7. Places directly associated with the expression.

Thus, points 1 and 2 are the first to occur in the landscape: both are perceived and the phenomenological experience begins the cognitive process that will end in the sacralization of these spaces.

In this regard, an eye-tracking experiment (Muñoz Herrera 2025, 152–66) was carried out to objectify this cognitive activity based on the processes of viewing certain landscapes that contained characteristics of these places called tA-dhn.t.[18] The results reflected the importance of mountain walls, cracks and wadis and pareidolias in the phenomenological processes of these places and highlighted the cognitive parallels that can be established between natural forms and artificial forms that recreate the former, where the patterns of fixation and attention are identical for both cases. The results pointed to a direct relationship between places that attracted the visual attention in a primary way for a large percentage of the subjects analysed and the spaces considered sacred by the Egyptians. Given such results, it seems reasonable to think that, for the Egyptians, there may have been a series of symbolic meanings associated with these specific elements of the landscape, which were sought and replicated throughout the territory, since the cognitive experience was the same.

Understanding perception as an active process—'Perception is something we do, not something that happens to us' (Hutchins 2010, 710)—the cognitive system is thus conceived as a distributed system that transcends the boundaries of brain and body and includes objects, patterns, events and other aspects of life in which human cognition intervenes in one way or another (Hutchins 2008, 2011). Perception of the landscape should be understood, then, as a way of organizing interactions with it through furnishing that space with cultural artefacts that constellate the structure of that space (Hutchins 2008, 2018). Since the mind is not limited by the skin, but its boundary goes far beyond bodily barriers (Malafouris 2019, 2), material culture is actually constituted of meaning (Malafouris & Renfrew 2010).

In this regard, the emergence of '4E Cognition'[19] (Newen *et al.* 2018, 4) marked a departure from the conventional

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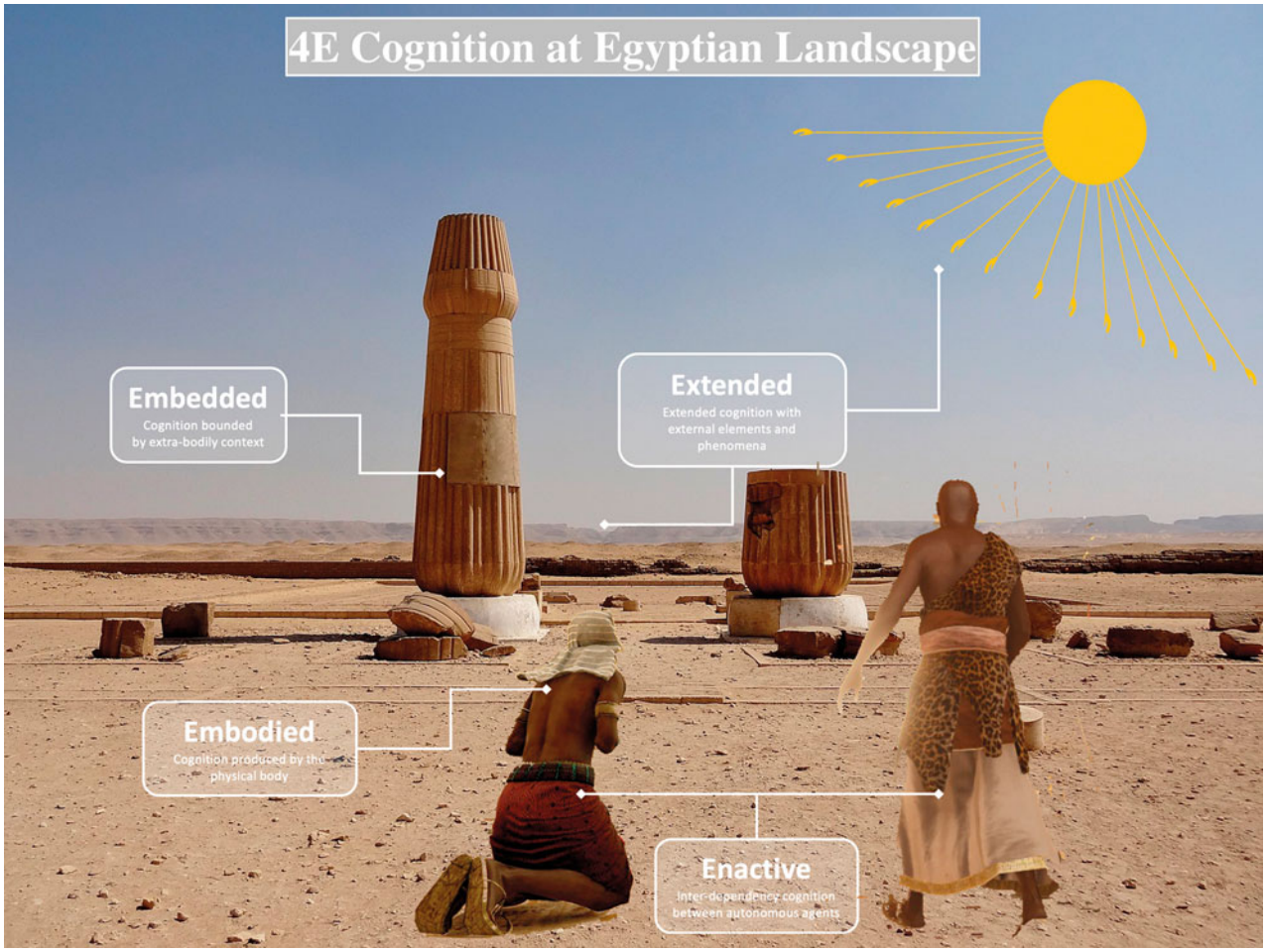

Figure 1. Example of the 4E cognition approach to ancient Egyptian landscape of Amarna. (Author's diagram.)

perspective within cognitive science that predominantly advocated an internalist view of cognitive processes.[20] This new paradigm conceptualized cognition as a phenomenon intricately dependent on a multitude of factors: the morphological, biological and physiological aspects of an individual's body, the structure of their natural, technological and social environment, and the interaction and embodiment of the individual within that environment (Newen *et al.* 2018, 5). Among the four key concepts comprising this novel understanding of human cognition and its relationship to culture, the most relevant to the present study is that of the 'extended mind'.[21]

My proposal, therefore, is that in the light of archaeological (the places associated with the tA-dhn.t concept) and experimental (eye-tracking) analyses, we can identify certain places in the Egyptian landscape as repositories of meaning external to the mind, acting as elements of the extended mind of Egyptian society (Fig. 1). In a social group where the vast majority of individuals were illiterate (Zinn 2018), the transmission of mythical and religious knowledge, narratives and ideologies is made from elements perceived and understood by the majority of that group. In the Egyptian case, the use of landscape elements (mountains, crevices, wadis, water) as essential elements of their cosmogonic history helped the oral transmission of these theories, where the narrative and the perceptual were united under the same story.

These places and processes are what Darvill calls 'regionalization': areas of space attributed with certain meanings and related to certain social practices that only occur at certain times in these places (Darvill 1999, 110), such as a church. In the interplay between phenomenological perception and anthropic ritual activity, Assmann refers to 'memory figures' (*Erinnerungsfiguren*), which establish a concrete relationship between space and time. Memory is linked to time through its connection to primordial events and the periodic rhythms in which these memories are expressed, such as festivals (Assmann 2011, 24).

Egyptian landscapes, in my view, thus serve as mediums of the group's cultural memory, transmitting meanings across all social strata through natural phenomena. Myths encapsulate the past in functional narratives, while landscapes act as custodians and conveyors of these narratives.[22] Witnessing islands during floods was akin to witnessing the world's creation, a physical and cognitive experience where the landscape became a narrator and a theatrical stage, reenacting the orally transmitted stories. Even when such natural phenomena were absent, these spaces retained the

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same conceptual essence, evoking the extended mind of Egyptian society. An eye-tracking experiment confirmed that both natural and artificial (archaeological) elements producing similar visual stimuli. Fundamentally, intellectual concepts originating from environmental experiences become attributed to entities inherently linked to these concepts. The cultural framework shaping an individual's daily life becomes embedded in their subconscious, emerging into consciousness from the elements of their mind extending into the landscape.

Egyptian thought is monistic, rooted in the belief that everything emerged from primeval water (Englund 1989, 25). They saw unity and coherence in creation, with life forming an eternal and interconnected web where these patterns described the world's initial emergence, the *sp-tpi*. Replicating this moment, whether physically or cognitively, ensured the continuity of existence. In essence, the landscape played a vital role as a regenerative force for this foundational experience, storing these narratives as products of the extended mind. The quest for landscape elements imbued with these meanings, or their deliberate replication when absent, was fundamental in Egyptian thought and its connection to the funerary landscape.

But in order to study and understand these structural landscape elements we must redefine them to give them a conceptual unity, in the light of the results presented here, to group them under the same conceptual framework that allows us to understand their role and importance.

Landscape and divinity: entheotopos

In view of the facts that have become evident, in which we have tried to offer this new perspective of the Egyptian mind and culture and its relationship with the funerary landscape, I believe it is necessary to propose the development of a new concept aimed at defining and studying these elements of the landscape. I therefore propose the concept *entheotopos*. This neologism is formed by the conjunction of the form entheo, from the Greek *éntheos* (ἐνθεος) meaning 'in god' or 'possessed by a god' and the form topos, from the Greek *topos* (τόπος), 'place'. An entheotopos is, therefore, a place where a culture considers that there is a manifestation of divinity; a space charged with symbolism because of its association with one or more divinities who use the characteristics or phenomena that occur in that landscape to manifest themselves to a society.

In this sense, entheotopos is the product of a social action, it is an intellectual process in a particular place, associating characteristics of that place with one or more divinities. Because nature has to be expressed by means of symbols based on experience, the product of the mind and its interaction with the environment, i.e. conventions, whose meaning is recognized and understood by a whole social group. This symbol that is entheotopos acquires meaning in relation to other symbols, whether anthropic, natural or phenomenological, within a scheme of common ideas and conceptions. In this way, it is itself a means of expressing values, narratives or complex ideas about reality and mythical experience and becomes, as an element of the 'extended mind', a primary instrument of thought and a regulating valve of experience. This cultural process by which the divinity inhabits a concrete space is ritualism in its purest form, according to the perspective studied by Mary Douglas ([1970] 1978, 66), because it establishes symbolic limits and boundaries within a structured group that is capable, culturally, of abbreviating the communication system, condensing units of language into previously established keys, which allows the internalization by the individual of the structures and norms (ethical, religious or mythological) of the group. And like any cultural process, its symbolism and meaning are capable of being transmitted from one generation to the next.

The creation of this concept helps the symbolic understanding of the landscape since it categorizes specific spaces and allows its study in isolation by associating it with a divinity, but also in a joint manner because it takes into account all the features that make that place an entheotopos: the archaeological, textual, cultic record, the cognitive activity in that space, the natural phenomena that occur there, and the historical and cultural processes that have intervened. This is not a concept applicable only to the Egyptian case, but could be applied to any other culture. It is a generic concept aimed at the study of landscape archaeology from a natural, cultural and biological point of view, in relation to spaces of religious or mythical transcendence.[23] From the results obtained so far, and presented here, these places seem to be especially related to mountains, caves or crevices, and water, and the interaction that takes place between these three elements. Although studies on the sacredness of landscapes have been conducted since the early days of the phenomenology of religion (Eliade 2018; Van der Leeuw 1975), the creation of this neologism seems necessary. Based on the results presented, it appears that we can identify an underlying universal landscape structure that determines the sacredness of a space: the mountain, water, and what emerges from it. Future research may highlight this structure in other cultures, but the concept primarily serves as a foundational framework for developing a specific type of landscape archaeology. Many of the elements identified so far had been recognized in isolation, but their reciprocal interaction and the underlying structure they form within the cultural evolution of Egypt had not been emphasized. This structure can be traced back at least to early Holocene societies.

In any case, the application of the term seems applicable to define and identify the sacredness of landscapes, through similar phenomena, in other ancient cultures. For example, it seems reasonable to attribute this concept to the sanctuary of Delphi, whose landscape significance is associated with the omphalos (a *betilus*, a small-scale mountain) inside the temple of Apollo as the centre of the world; to the work of the oracle, whose origin, according to Diodorus Siculus and Strabo, was determined by the vapours rising from one of the crevices of Parnassus;[24] or to the symbolism of the Castalia spring as a purifying spring for pilgrims, which gushed from the mountain through the rocks called Phaedriades, 'shining ones'. As can be seen, all the archetypal elements of the entheotopos are present: the

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mountain considered sacred because of the emanation of vapours or waters related to the divine manifestation in cracks.[25]

Already in the Egyptian domain, these characteristics seem to have been widely identified from an archaeological, textual and cognitive point of view, mainly related to the places called tA-dhn.t, which would be nothing more than a local form of entheotopos.

During the early Holocene, when the population is dispersed and social relations are infrequent and irregular (especially between different groups), the individual is not aware of inhabiting a landscape dominated by his peers, but the basic concerns of survival are anchored to natural processes given in the environment (rainfall, floods, pastures, etc.) or to the animal world that inhabits those landscapes (hunting, herds, scavenging, etc.). In a way, their life would be controlled by external agents, by objects or phenomena rather than by people. For this reason, entheotopoi are created, the places of divine manifestation that would end up leading to cosmogonic conceptions, because they suppose a set of categories in constant use; as if they were a set of lenses that allow us to focus and thus better tolerate the challenge of the experience in a hostile environment (Douglas [1970] 1978, 87). It is a method of understanding nature in order to survive it. The mastery of that environment was determined by the recognition and control of those spaces and where a leader may be elected since they are the one capable of carrying out those processes.[26] What is expressed archaeologically, textually and cognitively at Umm el- Qaab is nothing more than this process of controlling nature, extending to it a series of symbolisms that guarantee the propagation of a vital message for the survival of the group in the first instance, and ultimately lead to great mythological stories about how the world is created. In religious terms, many of these phenomena and places became associated with the cosmogonic idea of the initial moment of creation, which contributed to the perception that the rituals or burials carried out there allowed the individual to be closer to the divinity.

In the continuous search for places where these phenomena took place, what we could call entheotopic replication took place, which is nothing more than the replication of landscape features and schemes charged with meaning, which act as elements of the extended mind for a society and whose purpose is the physical and cognitive reproduction of the experience of the first moment of creation (*sp-tpi*). For this purpose, both the natural elements and phenomena of the landscape were used, as well as the anthropic reproduction of them through architecture,[27] ritual and/or performance. It is this process of entheotopic replication, based on the already proven evidence of Egyptian cultural fractality, that could explain the replication of funerary origins, patterns and developments in Egypt (on a larger or smaller scale insofar as it is a fractal phenomenon) and that could allow us to understand fully the role of landscape in all these processes, both at a cognitive and physical level. Case studies exemplify this concept, such as the one we have already seen in which Thebes is a conceptual, and in many cases physical, replication of the early necropolis of Abydos (Muñoz Herrera 2025, 163–8).

Conclusion

In the new theoretical proposal that this paper intended to present, the Egyptian landscape is not a passive agent where religious ideas and conceptions are projected, but rather it is their fundamental creator. Its physical characteristics, its natural phenomena and significant features are what decisively shaped the mind of Egyptian society since the early Holocene and what led to the development of complex religious, funerary and social ideas in pharaonic times, anchored to the concept of Entheotopos as spaces of special significance. The landscape is where the origin of many of the conceptions must be traced, and the entheotopic replication, produced by the fundamental aim of re-experiencing the primaeval moment of creation, is the foundation upon which the Egyptian necropolis originates, articulates and develops throughout its more than three millennia of history.

The location of necropolises could generally be determined through the identification of an entheotopos as a landscape marker, and their internal organization appears to follow a fractal distribution model, the fundamental origins of which will need to be explored in future research. The need to re-experience the *sp-tpi* endowed these sites with special significance, making their selection a matter of seeking rather than choosing: a place whose phenomenological characteristics referenced that primordial moment. This would explain the placement of necropolises on the eastern bank of the Nile, as these secondary-layer contingencies were relevant, but less so than the need to recreate the primordial landscape (even if fundamental elements are found on the riverbank with less solar significance, the primary requirement is their presence).

We recognize that the chronological variety of the case studies and examples presented here might provoke some scepticism. However, despite the historical contingencies and cultural variations, we believe that the fundamental conceptual basis underlying Egyptian civilization for at least three millennia is a sufficiently robust structure to allow for meaningful chronological comparisons. This structure is grounded in a consistent cultural framework.

This paper establishes a new perspective for comprehending the Egyptian landscape and its cultural significance. Egyptian culture fundamentally centres around group survival, making the landscape a crucial aspect of cultural analysis, as it plays a pivotal role in controlling both space and time. In the context of landscape archaeology, not only space but also time should be considered as a fundamental element. Studying and understanding any landscape culturally necessitates examining its seasonal or continuous use, its link to ancestry or mythical occurrences, and its symbolism or sacralization resulting from society's reciprocity with it. The application of a methodology based not only on archaeological and textual records but also on cognitive archaeology (through eye-tracking) to understand the phenomenological influence of environments and fractal geometry represents an expansion of epistemological horizons and a new approach to landscape study. The landscape structure identified as entheotopos reveals an underlying framework related to the sanctification of spaces, a

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framework whose applicability extends to many other historical and cultural contexts.

Notes

1. In this sense, some studies (Graeber & Wengrow 2022, 136) suggest that societies with seasonal occupation patterns have a special inclination towards the construction of monumental works, as may also have occurred in the Egyptian case. In this particular case, seasonal occupation would also have led to a sacred idealization of these spaces due to the vital function they fulfilled for the group.
2. Archaeological evidence at Wadi Abu Suffian at Hierakompolis supports this idea.
3. CT: Coffin Texts (Faulkner 1973)
4. An example of this can be seen in the association of the desert landscape of Abydos with the watery nature of Nut, caused by the floods: e.g. Neferhat Stele (CG 34022) 'Nut, she who gives life to the gods on Abydos' (Pouls Wegner 2020, 80).
5. An example of this vision can be seen in the *inselbergs* of the Nubian deserts.
6. Pyr: Pyramid Texts (Faulkner 1969).
7. Expressed thus in its textual corpus: 'May the beautiful West land in peace. May the desert open its arms to him, may the West extend its arms to him' (Tjeti Stele, XIth Dynasty: Rummel 2016, 47); 'Lady of the rocky wall of the mountains of the western horizon [...] I wish you to embrace me with my promise, to hide me within you forever' (pDublin 4: Assmann 1999, n. 224).
8. In this sense, Assmann notes that the Egyptian cosmogonies are at the same time cratogonies: they combine the birth of the world with a description of the birth of government (Assmann 2005a, 434).
9. Fractality is a type of geometry discovered in the 1980s (Mandelbrot 1982) in which nature was no longer composed (or rather could not be measured) by lines, points, spheres or cones, but possessed a fractal shape, with a dimension established fractionally and clear properties: self-similarity, each of its parts is a reduced vision of the whole; scalability, when the shape of the object is the same regardless of the scale with which it is observed; and recursivity, where the initial form iterates over itself to produce an infinite number of scales. In addition to being able to be perceived according to Cartesian reality in which perceptible realities have one, two or three dimensions, the fractal object has an 'intermediate' dimensional relationship: a dimension of 0.6 or 2.3, for example (Sandoval García & Vilanova de Allende 2007, 52). See more about fractals and archaeology in Muñoz Herrera (2025, 19–21).
10. Evidence of this type of social structure can be found in different textual (Baer 1963, 7; Malek & Forman 1986, 93) or archaeological sources (Kemp 2018; Petrie 1920). We would therefore be faced with an established society in which the modularity of the social/familial structure was reflected in the villages' structure, in the administration hierarchy and in the state organization (Lehner 1999, 332–3).
11. A thorough overview of the issue can be found in González-Ruibal (2006).
12. *Fractalyse 3* is a free software application for 2D fractal patterns analysis. The program is based on the Java language and has been designed to be combined with GIS data software. It was created and developed by Guilles Vuidel in the ThéMA laboratory (CNRS, Comté University, France). https://sourcesup.renater.fr/www/fractalyse/
13. The results were compared with those obtained from a study conducted at another Egyptian necropolis with a completely different chronology (Thebes), which yielded a fractal dimension of D = 0.66 (Muñoz Herrera 2025, 141–5). The similarity of these results is so significant that it can only be considered as an unconscious structural model of necropolis organization, the origins of which will need to be explored in detail in future research.
14. The tomb as a reflection of the deceased's house is supported by its internal decoration with wood and mats and structures with clear parallels in those of the palace and the house (Dreyer 1998; Dreyer *et al.* 2013, 20; Gardiner 1935, 10; Kaiser 1981, 249–54; Kamrin 1998, 13; Stevenson 2007).
15. For a detailed description of this process, see CT 75–80 (Allen 1988, 15–23).
16. For a review of the term and its semantic re-signification, see Adrom (2004); Rondot and Gabolde (2018). For its archaeological re-evaluation and its application to specific case studies, see Muñoz Herrera (2025).
17. This expression, mainly associated with documents from the Theban area, had traditionally been linked to the peak of el-Qurn, the main summit of the western mountain of Thebes. For this reason, it had commonly been translated as 'summit' or 'mountain peak'. However, after a detailed study of this term conducted by several researches (Adrom 2004; Rondot & Gabolde 2018; Yoyotte 2003) in non-Theban documents, they concluded that this translation is not tenable, and an alternative must be sought that would be more aligned with the symbolic reference made by the term. The consideration of all sources points more toward a translation related to 'cliff' or 'culturally active rocky outcrop' (*kultisch aktive Felswand/Felsvorsprung*) (Adrom 2004, 2). The problem is that there is no standardized orthography for the term: sometimes it appears with the determinative for 'head' (D1), in the Saqqara texts it takes the determinative for 'city' (O49), and in the Theban documents, there is no specific determinative that directly refers to Qurn. Therefore, its semantic identification is ambiguous and complex. A specific archaeological approach to this term was first applied by Rummel (2016); however, she does not go into the origin of the concept and the phenolomenological role of it.
18. It is worth recalling the consideration of the mineral as a physical manifestation of the god (Aufrère 1997; 2001).
19. The *eye-tracking* technique makes it possible to study and measure the fixations and saccades of ocular movement, studying the patterns of vision of the individual and understanding what the cognitive process carried out by the eye has been in the recognition of those spaces or objects (De Lucio *et al.* 1996, 136). In the archaeological field, this type of study has begun to be applied in the last five years in relation to the production technique of lithic industry (Silva-Gago *et al.* 2022a, b), the use of space in Roman *domus* (Campanaro & Landeschi 2022), in prehistoric caves (Tabatabaeian 2018), or in ceramic archaeological contexts (Criado Boado *et al.* 2019; Millán- Pascual *et al.* 2021). In 2023, I conducted an experiment on 32 individuals. For the visual stimulation, 15 photographs of Egyptian archaeological landscapes were selected. Some of the photographs combine archaeological elements with natural landscapes, while others present only the landscape contexts of the sites. The 15 previously mentioned photographs were displayed individually on the screen, each of them remaining on the monitor for five seconds. The experiment and data collection were carried out using the *GazeRecorder* software, allowing the creation of heatmaps of ocular activity and the selection of the 'Areas of Interest' (AOIs). The experiment with all the data will be published soon.
20. 4E: *embodied*, *embedded*, *extended* and *enactive*.
21. For a discussion about the paradigm shift in the 1970s with the appearance of new perspectives as 'ecological psychology' or 'cultural-historical activity theory', see Cole 1974; Gibson 1979.
22. The concept originated from 'The extended mind' (Clark & Chalmers 1998), which highlighted the reciprocal interaction between the human organism and external entities, mirroring cognitive processes. The individual's mind is not necessarily tied to the brain, but can incorporate external sources such as tools, languages, or external systems (Clark 2008; Hutchins 2014). Therefore, beliefs can be partially constituted by elements of the environment, if those elements play the concrete role that leads to the cognitive process (Krueger 2012).
23. The fact that they are static and timeless elements makes them ideal for this purpose.
24. In this sense, an entheotopos could be a generic concept referring to a hermitage, a rock sanctuary, or a Minoan mountain temple.
25. 'They say that the seat of the oracle is a cave which is hollowed out deep in the earth, with a rather narrow mouth, from which comes the breath that inspires a divine frenzy; and that over the mouth is placed a

https://doi.org/10.1017/S0959774324000386

high tripod, the mount of which the priestess Pythia receives the breath and then pronounces oracles both in verse and prose, although the latter are also put in verse by poets who are in the service of the temple' (Strabo IX, 3,5).

26. A more ancient example can also be seen in a mural depicting the eruption of the Hasan Dagi volcano at Catalhoyuk (characterized by its double peak) found in an urban area related to ritual activities, which has led to the interpretation that this phenomenon was perceived as divine manifestation (Schmitt *et al.* 2014).

27. In this respect, the archetypal image of the king subduing the enemy, whose origin can be traced back to the first representations of Gilf Kebir (Bárta 2018), would be the last stage of evolution of this idea, in which once nature had been controlled and the state of submission to objects and natural phenomena had been abandoned, society would go from depending on nature to depending on a leader.

28. As demonstrated in the eye-tracking experiment, the cognitive response is virtually identical in relation to the natural elements of the landscape and the artificial ones that reproduce them.

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Antonio Muñoz Herrera, C2 Project Luxor (c2luxor.es) is an archaeologist and Egyptologist specialized in landscape and cognitive archaeology and cultural memory of ancient Egypt. He obtained his PhD at Universidad Complutense in 2023. His research has focused on investigating the intricate connections among human cognitive and cultural behaviour, landscape perception, natural phenomena, the development of cosmogonic narratives and the evolution of sacred spaces.

https://doi.org/10.1017/S0959774324000386