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**Pantheon's door, Alberti's excavation and Chillida's void.
Forms of the hypogeum and architecture of hollow spaces**

Abstract

No form or type seems to be uniquely linked to sacred architecture, yet many of these sites possess a common character: the idea of hypogeal space. If in some of these places – especially the oldest – the space is the product of a real material movement, in others – more recent – the effect is reproduced by massive forms, by the logic of subtraction of volumes, by the conception of space as a place 'carved out of the solid'.

Tracing the origins of this need apparently common to many cultures is hard, if not impossible, and although it is fascinating to think that all this has its genesis in the gesture of the excavation of the first tombs, the hypothesis would remain indemonstrable. Through three quick incursions, we will try to reflect on the sense of space in places devoted to the sacred and the ritual.

Keywords

Hypogeum — Underground — Similarity

Prologue

The territory of architecture does not tolerate taxonomies and prefers "similarity"¹ as an instrument of investigation and design.

Unlike categorizations that do not admit trespasses and, therefore, obliterate the shades of the boundaries², the analogical similarity accepts numerous degrees of consonance, hosts contradictions and allows new works to be placed side by side with the oldest ones³.

It must be admitted that the architectures called into question in this text – Agrippa's Pantheon, the Basilica of Sant'Andrea in Mantova, the sacred mountain of Tindaya in Fuerteventura – differ not a little: a central plan, a basilica and an aula; three types for as many compositional principles direct ideas of space with profound differences. But if the dissonances appear with a certain determination, there is nevertheless a distant and profound consonance: these spaces offer «the image of a buried architecture» (Boullée 2005, p. 85), or the characteristic of a place that «descends into the sepulchres to give form to [...] ideas» (Boullée 2005, p. 85).

These architectures are, in different ways, the result of massive forms and subtraction of volumes, the manifestation of a particular relationship between fullness and emptiness where the first always wins over the second, the consequence of the use of light as a limited and precious resource, the outcome of the conception of space as a place 'carved out of the solid'. With a synthesis that is perhaps excessively reductive and guilty of generalization, it is asserted that the places of the sacred recall, in distinct ways and forms, more or less deliberately, soil movements and underground places.

All this is stated ‘whispering’, surreptitiously insinuating into an open conversation⁴ without the illusion of being able to end it. Because these examples are neither decisive nor exhaustive; they have been chosen for reasons of convenience and their role in this study is instrumental, their presence serves only to investigate the reasons for the form and not to enunciate theories; the intention is not to demonstrate any law, but simply to indicate a path – already beaten, though very little explored – for further reflections on both research and design.

The author is aware that we are about to mention exceptional architectures on which a lot has been written, for this reason we will avoid assertions and proceed with the awareness that we are just scratching the surface of things, reminding (both the reader and the writer) that the main aim is the similarity of spaces and not of matter, and to do this it is necessary to focus not so much on what is there, but on what is missing.

On that nothing, that nothing is not, we direct the reflections of this essay.

The Pantheon’s door

«Louis Kahn, who saw with singular acuity, remarked: one thing disturbs me about the Pantheon, that big entrance door» (Venezia 2012, p. 22), referring to the betrayal that inevitably suffers any central type that, by its nature, would require a rigid symmetry – geometric, tensile, figurative – with respect to the center of the composition. Pantheon’s door, however, does not only clash with the central type, whose perfection would not admit any other entrance than along the vertical axis, emerging from the underground as in Boullée’s cenotaphs⁵ or descending from above as when entering the chambers of a buried city, but also with the very idea of a place that, in its settlement principle and in the forms of its space, evokes the depth of the earth where any relationship with the outside is precluded except for a small disc of sky placed at the zenith.

Looking closely, chapels, exedras and niches around the center are carved into the thickness of the wall and offer themselves to the observer as incursions of the space of the into the thickness of the wall. This not only seems of considerable size, but from inside the Mausoleum is not allowed even an estimate of its true thickness.

However, it must be remembered that the subject of the discussion is an architecture and although symbols and allegories are, in this case, allowed by definition⁶, the thickness of the circular septum has the precise purpose of collecting and dissipating to the ground foundation of the horizontal components of the loads of the hemispherical calotte.

The static device of the wall tracing, according to compositional needs, the inner or outer edge of the septum, which therefore appears thicker than it actually is, produces a perimeter wall that can be ‘excavated’ by retreating. Thanks to these gaps, chapels and exedras around the hall seem to be excavated from the solid as are the niches in the walls of the rupes-trian dwellings, apparently heedless of tectonic issues and conceived as offshoots and appendages of the interior space. With the exception of the pronaos necessary to weave a relationship between the hall and the urban space, the epidermis of the building seems to indicate the intention of its creator to deal with a ‘cavity’ in the broadest sense, to construct «a building conceived solely from its interior [...] that brings it closer to the logic of construction through excavation» (Algarin Comino 2006, p. 58) (T.d.A.). So ‘caved architecture’ shows one of its most interesting characteristics: lacking the technical problem, static constraint and issues related to the

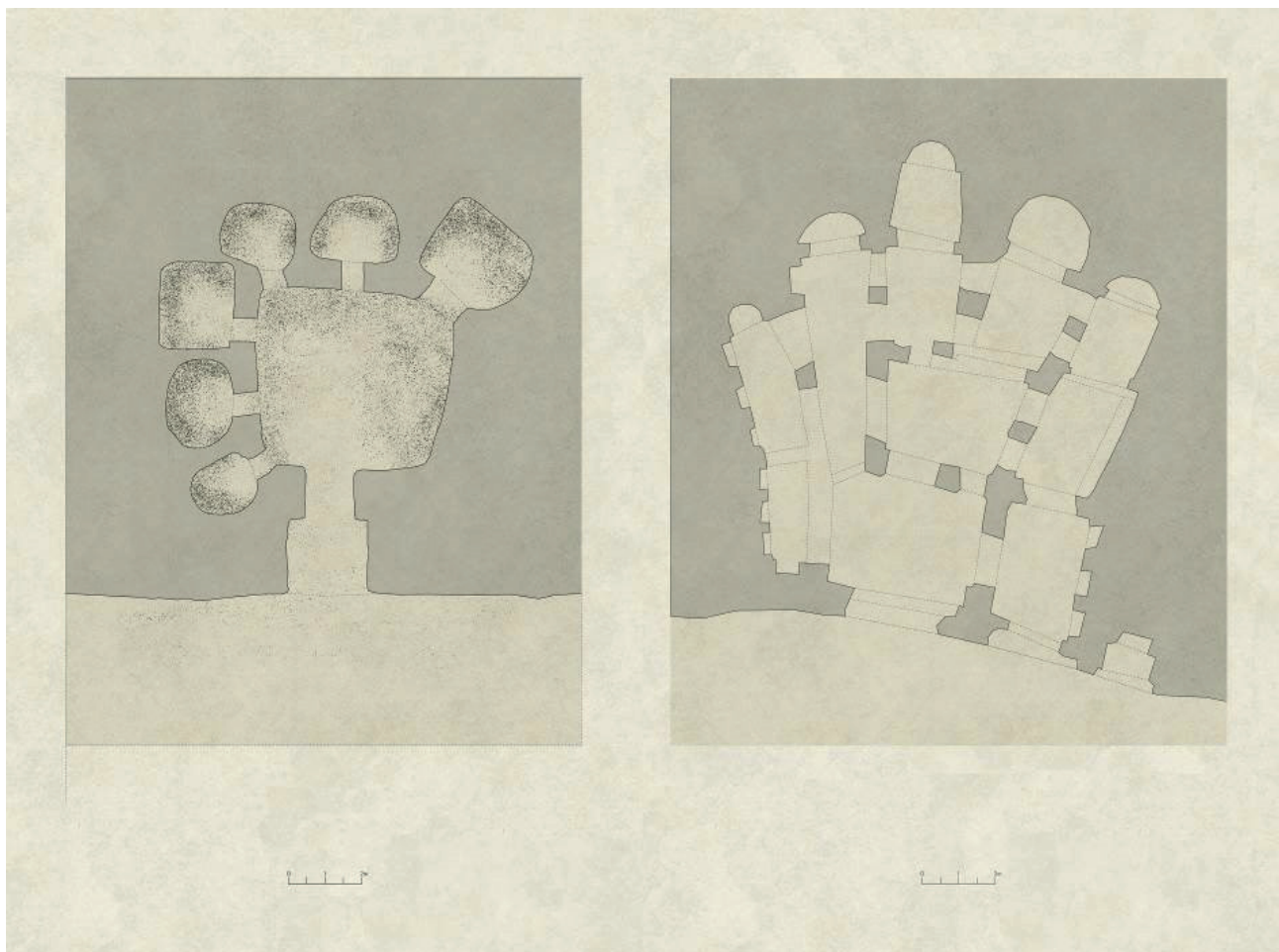


Fig. 1

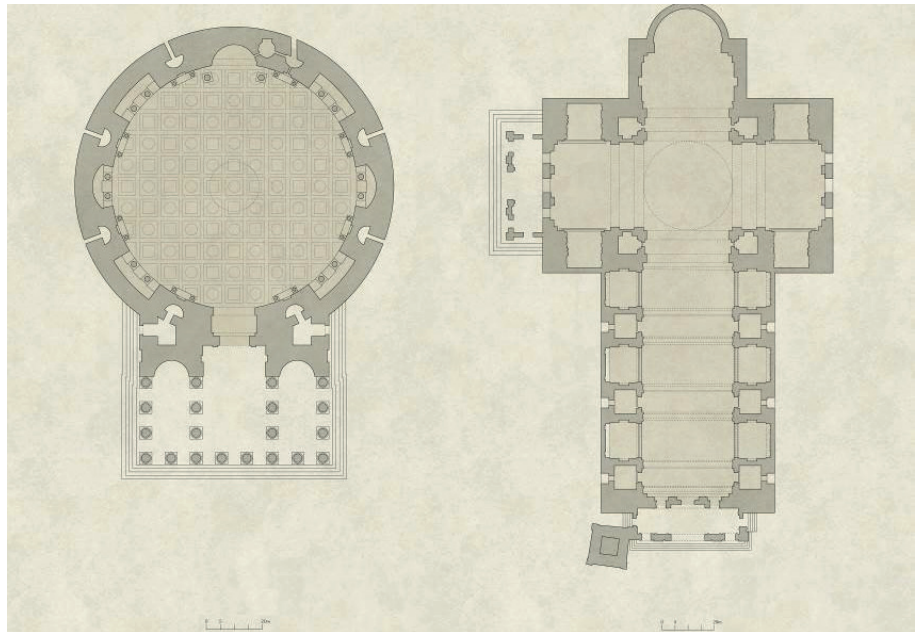
Examples of rupestrian architecture on typological variations. Left: Tomb of the necropolis of Pantalica. Right: Church of Santa Candida in Bari; note the fan-shaped layout guided by the sources of light. Author's drawing.

[Smithson 1979, p. 7].

shell, the space is not generated by definition of what is built but it is the space itself to be built by subtraction; this freedom is then counterbalanced by the elaborations on the type and the constraints imposed by it. And as in the caverns, leaving the city behind and with our backs to the enormous door mentioned by Kahn, our height in relation to the earth's surface sinks to the only available measure: the oculus height.

The Alberti's wall

We do not know if Leon Battista Alberti had foreseen the 'buried nature' of the building, but in *De re Aedificatoria*, proposing a constructive analysis of the Pantheon's drum, he considered that «those empty spaces, which incompetents would have filled [were] occupied with niches and openings» (Grassi 2007, p. 115). Alberti was probably aware of the fact that that wall thickness was required by the horizontal forces of the roof, and he sensed that, as happens in the territories of art, every technical problem is basically an artistic problem; the internal articulation of his basilica of Sant'Andrea in Mantova suggests this. Directional space is defined by three elements: a coffered vault and two walls into which the chapels are excavated. The technical problem is similar to the pantheon: the barrel vault of the same span as the central nave directs horizontal loads that would have required a considerable wall thickness or the presence of counterforts. Alberti adopts the same constructive expedient as Agrippa's Pantheon: a load-bearing wall that, by incorporating counterforts, disappears between the limits of the nave and the exterior of the building, producing 'solids' that overcome the voids of the chapels, expressed through «a large wall that, through successive lightening, becomes almost a grid» (Grassi 2007, p. 120),

**Fig. 2**

Left: Agrippa's Pantheon. Right: Basilica of Sant'Andrea in Mantova. Notice the similarity in the wall articulations. Author's drawing.

[Webster 1997, p. 36].

just as the voids of the chapels of the Pantheon sink into the thickness of the wall. The light comes – as in all churches – from above, and there is nothing that suggests – in Mantova and, again, in all churches – that the purpose of the windows is nothing else than to capture the light – scarce and precious – giving up their potential to establish a relationship with the external space. Inside the basilica of Sant'Andrea, the 'wall of Alberti' reiterates the idea of a hollowed-out space, illuminated by the 'thermal' windows – half-moons shaped – that indicate nothing to the inhabitant about their position with respect to the ground. Conscious or not, Leon Battista Alberti caved out the basilica space of Sant'Andrea.

Chillida's void.

Rock excavation and «the opening of a mine [...] are ritual operations often marked by a surprising archaicity [and this operation leading into the belly of the earth] always involved religious ceremonies» (Eliade 2018, p. 50). Maybe Eduardo Chillida's utopian intuition of «creating an interior space inside a mountain that could offer itself to men of all races and colors, a great sculpture to tolerance»⁷ does come precisely from an archaic restlessness to which certain artists seem particularly sensitive.

Chillida wants «a temple» (Algarin Comino 2006, p. 274) hollowed out of the solid. Some previous works anticipate and seem to confirm the idea that the void, understood as a delimited space, is to all intents and purposes a sculptural material. The purpose is not so much to quarry the rock, but in directing a mining operation already in progress, giving form to the 'void' that «miners [unconsciously put] inside the mountain when they extract the stone» (Algarin Comino 2006, p. 275).

After a survey among the mountains that for size, position and geological nature could host the sculpture, the choice fell on Tindaya, a mountain of volcanic origin composed of trachyte, a magmatic effusive rock, located on the island of Fuerteventura in Canary Islands.

The walls of the long sides of the hall slightly converge towards the "roof", in such a way that the short ones, at plumb, took the form of an isosceles trapezium. However, these small angles are not perceivable, if not in their optical effects, due to perspective aberrations: this narrowing of the roof produces in fact a 'distancing' of the ceiling that expands the space

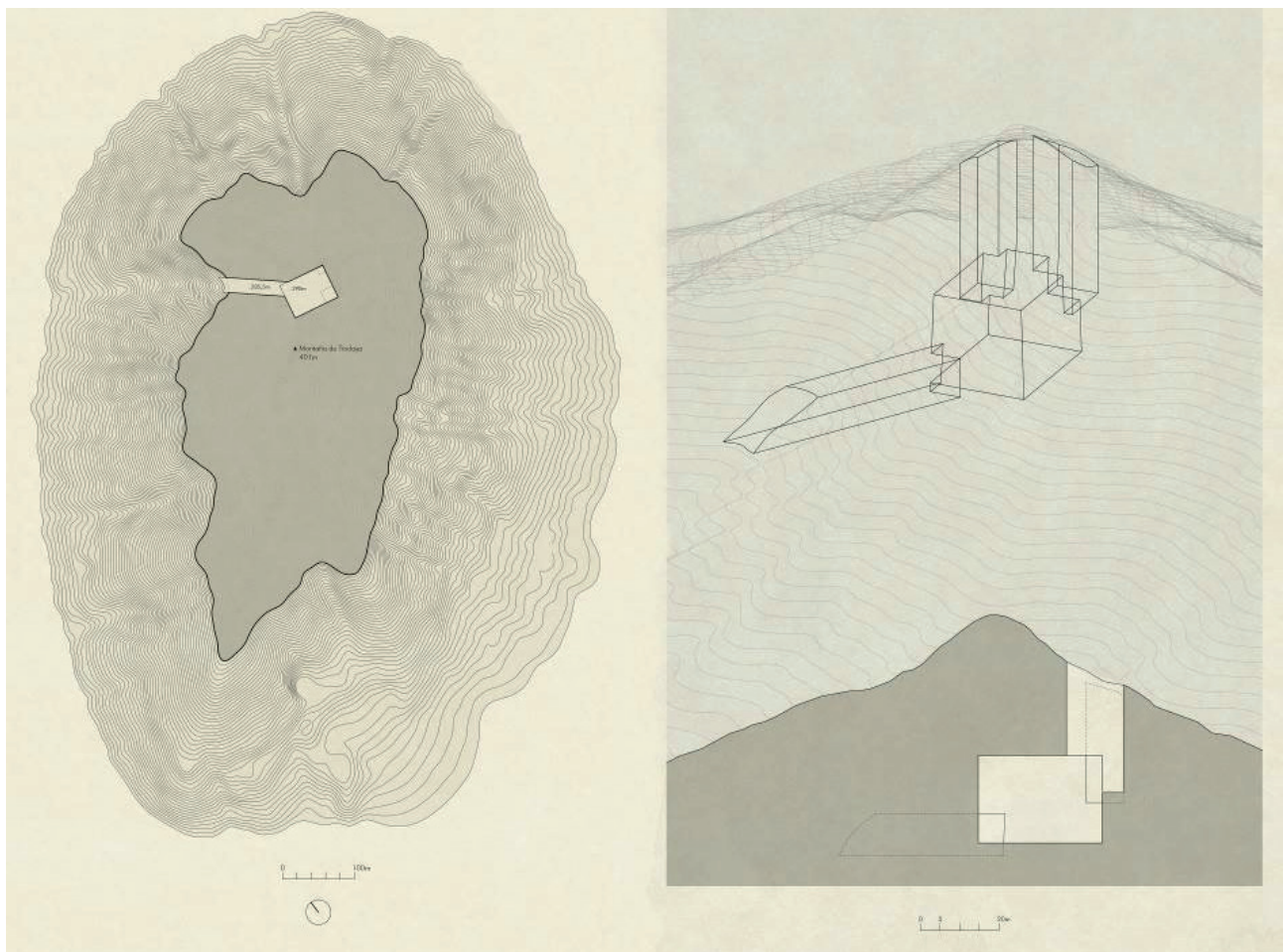


Fig. 3
Project for the Sacred Mountain of Tindaya by E. Chillida. Author's drawing.
[Smithson 2001, p. 113].

of the room vertically; in addition, the bell shape follows the fan-shaped distribution of light that, as in many older cases⁸, guides the excavation of the cave by orienting the walls on the directions of the light sources.

Three galleries connect to the great chamber, two of which, assuming a vertical direction, convey the light from the top of the mountain to the interior of the hall; the third gallery, developed horizontally and oriented on an independent vector, allows access from the ridge of the mountain.

It's worth observing the volumetric relationship that these three elements establish with the central hall. For Edoardo Chillida void is a material moldable through the definition of its limits⁹; its actual presence is emphasized through the character of the excavation. The parallelepipeds that define the space of the two light wells, placed in correspondence of the two corners of the short side opposite to the access, present a definite gap: in fact, the internal faces are not coplanar to those of the room and produce, by 'Boolean subtraction', resegmentations that seem to claim the autonomy and identity of each 'absence'; in other words, it is possible to identify the shapes of the void by eye, with geometric precision. In a similar but opposite way, the access gallery developing horizontally a little lower than the hall loses consistency connecting to the hall, where it is the floor governing the Boolean operation, defining its rectangular shape in its entirety.

Unlike Chillida's alabasters, where the idea of the void remain confined to the minute scales of small stony elements, the sacred mountain of Tindaya suggests an idea of space that, gaining the dimension of the monument, trespasses towards the territories of architecture, recalling that «the internal volumes have a concrete presence in themselves, independently of the image and structure of the material that encloses them, almost as if they

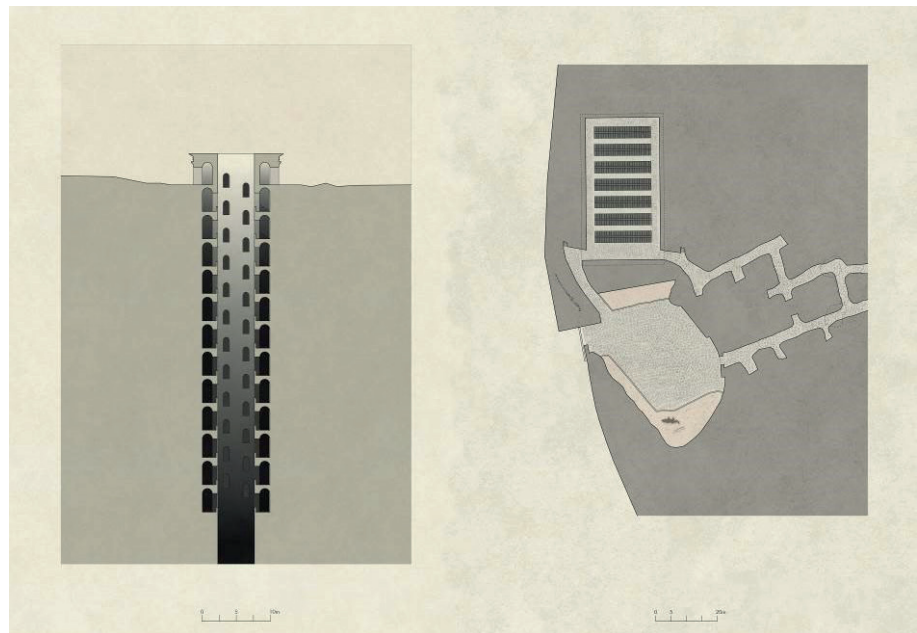


Fig. 4

Left: Saint Patrick's Well in Orvieto. Right: Plan of the Mausoleum of the massacre of the Fosse Ardeatine. Plan of section +1,20m. Author's drawing.

were formed by a rarefied substance lacking of energy but very sensitive to receive it» (Moretti 1952-1953, p. 10).

It is the shape of the emptiness, «the space of the cavern [that] ‘floating’ almost completely free of structural constraints» (Nicoletti 1980, p. 21). 21); it is the sacred well of San Patrizio at Spoleto sinking towards the groundwater of Orvieto; it is Wright’s Guggenheim museum that unravels with a similar downward spiral on the model of Dante’s *Inferno*¹⁰; it is the Mausoleum of the massacre of the Fosse Ardeatine, whose tomb hall hangs from the labyrinthic tunnels artificially maintaining itself underground, compressed by a rough and convex tombstone ceiling like .

These are the rupestrian architectures around the world where «no trace of human habitation has been found [and it is the character] of sacred places where, with the help of magically powerful symbolic paintings, rituals could be performed» (Espuelas 2011, p.25).

These are ritual places that differ in shape, type, and compositional principle – and they all look alike.

A side note upon the blind spot

Notwithstanding the ifs, buts and all the ritual formulas typical of indemonstrable investigations – those that are not made of numbers and calculations but of words and reasons and whose unspoken purpose consists in orbiting around a subject without ever really setting foot on it – the writer believes it’s good to remind that what has been exposed is not the reality of things but its reflection¹¹.

Architecture – its essence – cannot be observed directly¹².

As with the mask of Medusa, we are allowed to see only a reflection, a vague approximation, a partial description¹³. Because although theories are necessary for the construction of an idea – or of a building – these, like the wooden ‘centina’, must disappear once the work is completed, leaving to the forms the task of directing loads and suggestions¹⁴. And that’s because the nature of things in the world – and man – is varied and unpredictable and, despite our constant demands, reality does not seem inclined to harness itself in theories; indeed, it refuses taxonomies, avoids categories and dodges any scheme, because «gray is my friend every theory, green is the golden tree of life»¹⁵ (Goethe 2015, p. 99).

Notes

¹ The ‘similarity’ exposed in this essay should be understood as a ‘quality’ peculiar to some architectures whose interaction between type, layout and character recalls other buildings, places and spaces. See among others Marti Aris (2010, p. 187) and Focillon (2002, pp. 67-83).

² This is not meant to deny the usefulness of scientific classification tools, nor even lessen their role, but rather to focus towards that region of distant consonances that elude the narrow grids of traditional models of analysis.

³ «The appearance of a work does not mean the overcoming of the one that comes before, [but] the construction of a historically defined fragment of truth that approaches the previous work» (Gregotti 2009, p. 70)

⁴ Several authors have directly or indirectly dealt with the topic of hollow space, among them are Boullée 2005, Espuelas 2011, Venice 2011 and 2012, Algarin Comino 2006, Nicoletti 1980.

⁵ Boullée elaborates several versions for Newton’s Cenotaph, thinking more and more about the requirements of an absolute central type. One of the latter version presents a burrowed access that emerges at the center of the spherical room (Boullée 2005, p.22).

⁶ In *Architecture* Adolf Loos exposes the differences of purpose and results that exist between Art and Architecture, concluding that «Only a small part of architecture belongs to art: the tomb and the monument» (Loos 2005, p. 254), not because the discipline’s principles disappear, but rather because values such as metaphor, symbol and meaning come into the design.

⁷ «Hace años tuve una intuición, que sinceramente creí utópica. Dentro de una montaña crear un espacio interior que pudiera ofrecerse a los hombres de todas las razas y colores, una gran escultura para la tolerancia» Taken from the newspaper *El País* of July 27, 1996, translation by the author.

⁸ See, among others, the fan-shaped rupestrian structures of the Monastery of the Madonna della Scala in Massafra, the church of Santa Candida in Bari, and the churches of San Vito and Santa Barbara in Matera. See Nicoletti (1980, p. 195).

⁹ The Basque artist had addressed the same subject in many small sculptures prior to the proposal for Mount Tindaya, including the series *Omenaje to Wolfgang Goethe*, the alabasters *Mendi Huts I* and *Gasteiz*, and the marble *El profundo es el aire*.

¹⁰ In *Divertimento* Francesco Venezia (2012) imagines the Guggenheim Museum of New York plugged in the rocky bank of the city of Orvieto, next to the well of San Patrizio.

¹¹ «Every point of view is partial [and there is no way] of seeing reality that does not depend on a perspective. There is no absolute, universal point of view» (Rovelli 2020, p. 190). In the face of this uncertainty, despite the lack of universal footholds, structuring our routes on these landmarks remains the only possible way to navigate, and this is because «points of view [...] communicate, knowledges are in dialogue with each other and with reality, they modify, enrich, converge [and] our understanding of reality deepens» (Rovelli 2020, p. 190).

¹² Any «question [...] formulated within the same ‘scale’ of axioms, will remain in the usual world [...] and will have a demonstration or a refutation. But if its writing requires a different scale, then it will run the risk of belonging to that submerged world, infinitesimal but latent everywhere, which is neither provable nor refutable» (Martinez 2021, p. 55). In other words, any statement can be elevated to the rank of an axiom and, consequently any axiom loses its validity once the plane of its references is abandoned.

¹³ Each law describing a phenomena has a field of existence beyond which its validity, inevitably based on the approximation of our language, gives way to other truths, each confined to its own domain. This phenomenon allows new scientific theories to invalidate the previous ones, while these maintain their validity if confined within the domain of reference (Kuhn 2009).

¹⁴ The metaphor of the centina is a direct reference to the analogy proposed by Carlos Marti Aris in *La centina e l’arco. Pensiero, teoria, progetto in architettura* (Marti Aris 2007) through which he establishes both the decisive importance of a solid and coherent theory and its instrumental role.

¹⁵ «There’s still no simple way to remove our experience [...] from the characterisation of the physical world. [...] Because we lose sight of the necessity of experience,

we erect a false idol of science as something that bestows absolute knowledge of reality, independent of how it shows up and how we interact with it» (Frank, Glaiser, Thompson 2019).

References

- ALGARIN COMINO M. (2006) – *Arquitecturas excavadas. El proyecto frente a la construcción del espacio*, Fundación Caja de Arquitectos, Madrid
- BOULLÉE É.T. (2005) – *Architettura. Saggio sull'arte*. Einaudi, Turin
- ELIADE M. (2018) – *Arti del metallo e Alchimia*, Bolati Boringhieri editore, Turin
- ESPUELAS F. (2011) – *Il vuoto. Riflessioni sullo spazio in architettura*, Christian Marinotti edizioni, Milan
- FOCILLON H. (2002) – *Vita delle forme seguito da Elogio della mano*, Einaudi, Turin
- FRANK A., Glaiser M., Thompson E. (2019) – *The blind spot. It's tempting to think science gives a God's-eye view of reality. But we forget the place of human experience at our peril*. [online] Available at <<https://aeon.co/essays/the-blind-spot-of-science-is-the-neglect-of-lived-experience>> [Last access 04 ottobre 2021]. Traduzione di Giovanni Mazzitelli in <<https://giovannimazzitelli.blog/2019/01/28/il-punto-cieco-fisica-tempo-e-coscienza/>> [Last access 04 ottobre 2021]
- GOETHE J.W. (2015) – *Faust e Urfaust*, Feltrinelli, Milan
- GRASSI G. (2007) – *Leon Battista Alberti e l'architettura romana*, Franco Angeli, Milan
- GREGOTTI V. (2009) – *Una lezione di Architettura - Rappresentazione, globalizzazione, interdisciplinarietà*, Firenze University Press, Florence
- KUHN T.S. (2009) – *La struttura delle rivoluzioni scientifiche*, Einaudi, Turin
- LOOS A. (2005) – *Parole nel vuoto*, Adelphi Edizioni, Milan
- MARTÌ ARÌS C. (2007) – *La centina e l'arco. Pensiero, teoria e progetto in architettura*, Christian Marinotti ed., Milan
- MARTÌ ARÌS C. (2010) – *Le variazioni dell'identità. Il tipo in architettura*, Città studi edizioni, Turin
- MARTINEZ G. (2021) – *La serie di Oxford*, Marsilio editori, Venice
- MORETTI L. (1952-1953) – “Strutture e sequenze di spazi”. *Spazio*, 7, p. 10
- NICOLETTI M. (1980) – *L'architettura delle caverne*, Laterza, Bari, p. 195.
- ROVELLI C. (2020) – *Helgoland*, Adelphi, Milan.
- VENEZIA F. (2011) – *Che cos'è l'architettura. Lezioni, conferenze, un intervento*, Electa, Milan
- VENEZIA F. (2012) – *Divertimento. Un'interpretazione del Guggenheim Museum di Frank Lloyd Wright*, il Melangolo, Genova

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