

# Drawn Visions. Athanasius Kircher's Research between Interpretation and Resolution of Reality

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## Abstract

*The figure of the German Jesuit Athanasius Kircher (1602-1680) is significant within the graphic culture emerging in 17th century Europe. His writings, richly drawn, and his research, in the whole Baroque spirit, are strongly characterised using hermetic and neo-Platonic philosophies. These become an opportunity to build a bridge between medieval systems of thought and the growing empirical movement of the scientific revolution. The essay aims to demonstrate the richness of Kircher's study, capable on the one hand of grasping the connections of a nascent scientific thought and on the other of pushing the imaginative power of drawing to its limits. This dual nature –of science and representation– is investigated by bringing out the role of drawing in the representation of reality. Where what can be directly observed coexists on the same plane with what can only be imagined. The research highlights the crucial passage between the dimension of the circle and that of the ellipse. The former represents the certainty of the Renaissance man, the latter –Kircher's one– highlights the unstable and dialectical nature of Baroque knowledge. It is precisely in the shadows of the Jesuit's thought that we rediscover the connective power of his thinking, which is most evident in the visionary dimension of his drawings.*

*Keywords: Kircher, iconisms, visionary drawing.*

## Kircher's underworld and its interaction with Nature

Since the early modern age onwards, Europe witnessed a renewed cultural fervour that became evident in a remarkable awareness of man's privileged position in nature. Culture began to be increasingly shaped by individual thinkers devoted to the study of reality. In this sense, the invention of printing plays a fundamental and catalytic role in conveying new ideas and making knowledge available in an assortment of new fields, opening the way to new literary genres and volumes of non-fiction with an almost encyclopaedic character.

In this respect, the German Jesuit Athanasius Kircher (1602-1680) is a relevant figure. His richly illustrated writings and research, in the whole spirit of the Baroque, are strongly characterised using hermetic and neo-Platonic

philosophies, which became an opportunity to build a bridge between medieval systems of thought and the growing empirical movement of the scientific revolution.

His best-known work is an eclectic scientific treatise entitled *Mundus subterraneus, quo universae denique naturae divitiae* (1665). His experience as a direct observer of the simultaneous eruption of Stromboli and Etna, together with subsequent descent into the crater of Vesuvius to make measurements (fig. 1), is collected in an enormous and illustrated work. Here, empirical observations are accompanied by illustrations showing the scientific methodology. The aim of the treatise is to understand and organise knowledge of the world through graphic tableaux summarising the data collected or, more generally, drawings



Fig. 1. A. Kircher, *Typus Montis Vesuvii Prout ab Authore A° 1638 Visus fuit* [Kircher 1665, foreword].

documenting the empirical observation of reality and, at the same time, the imaginative and imagined world. The intention is to reread this work with the purpose to show the dual significance of Kircher's 'visionary drawing'. On the one hand, the ability to 'interpret reality', on the other, the ability to "resolve reality": two souls that appear precisely through the drawings that accompany the text. In fact, some graphic representations respond to research methods comparable with today's scientific standards, made up of experimental approaches, intuitions and speculations, as shown by the illustrations that prefigure specific theories of terrestrial geophysics (fig. 2). Other drawings highlight the resolving nature of reality, as revealed by the map of mythical *Insulae Atlantidis* –located in the middle of the Atlantic Ocean between Spain and America– or even more so by the representations of dragons (fig. 3) –which according to the author live and nest in the hollow structure of the Earth.

This dual nature is explored by emphasising the role of drawing in the representation of reality. What can be directly observed coexists on the same plane with what can only be imagined.

Before addressing the central theme of this essay, it is essential to refer to some considerations on the figure of Athanasius Kircher, placing him in his time and in the culture in which he was immersed.

Although today, it is considered that he did not make any original or significant contributions, his constant desire to document his studies textually and graphically ensures him a suitable place in history. He wrote more than forty books. Various museums and libraries preserve more than two thousand of his manuscripts and letters. His most significant historic achievement was the establishment of one of the first natural history collections, initially housed in a museum named after him in the Collegio Romano. However, following the Italian unification and proclamation of Rome as the capital of the new kingdom, the collection was dispersed among various institutions and museums. One of the few examples of the original arrangement is provided by an engraving by Giorgio Sepi (fig. 4). Although its accuracy is debated –given the perspective and proportions of the rooms– it fully expresses the spirit, curiosities and disciplines Kircher dealt with. The museum was a true *Kunst- und Wunderkammern*: a huge corridor in which precious works of art and machines (*artificialia*), rare natural objects (*naturalia*), scientific instruments (*scientifica*), things

from exotic lands (*exotica*), and natural wonders of wonder (*mirabilia*) alternated.

As just mentioned, Kircher's interests were varied, and his texts bear witness to this. The German Jesuit taught mathematics, physics, and oriental languages for many years before receiving his licence to devote exclusively to his research. He is known for many reasons and is linked to the beginnings of many disciplines as we know them today. Famous are his first attempts to decipher Egyptian hieroglyphics (Marrone, 2002; Mori, 2016), his studies in optics, geology and Roman archaeology [1]. Kircher was so productive and so brilliant that he could be remembered as a kind of 17th century Leonardo da Vinci. His texts circulated in courts all over Europe and, although not fully respected, were read by many intellectuals of the time. His research oscillates between the desire to recognise a 'magical' world and the attempt to make sense of it. Kircher was certainly a Jesuit who looked with interest at the Copernican system, just in the aftermath of the trial of Galileo Galilei (1564-1642) that took place in the same Roman College where he lived and worked. One can also have in mind his work as a demystifier of alchemy when Isaac Newton (1643-1727) was undertaking his experiments [Glassie 2015].

However, it must be remembered that modern science, far removed from the principles of transcendence that explain the natural reality of things, did not yet exist at its birth. Still, Kircher lived long enough to see its birth. It was not until the late 17th century that a conception of science as objectively verifiable knowledge.

With today's eyes, many of Kircher's ideas lie beyond any verifiable basis, to the point where it can be said that most of his observations appear to be wrong. But as Umberto Eco states in his essay *Perché Kircher?* [Why Kircher?]: "he guessed a lot, he got a lot wrong, and the evil ones will suggest that, since he was involved in everything [...] it could only happen to him in this way, to get a few things right and a few things wrong [...] I would say that he fascinates us for the same reason that he got a lot of things wrong" [my translation from Italian] [Eco 2018, p. 83].

His curiosities and his extensive studies are part of a typically baroque scenario and of the encyclopaedic architecture of Jesuit culture. Indeed, as Andrea Battistini recalls in his book *Il barocco. Cultura, miti, immagini* [The Baroque. Culture, myths, images], the baroque Jesuit culture: "is based on a subtle and difficult work of connection between a philosophical framework still Aristotelian and Ptolemaic

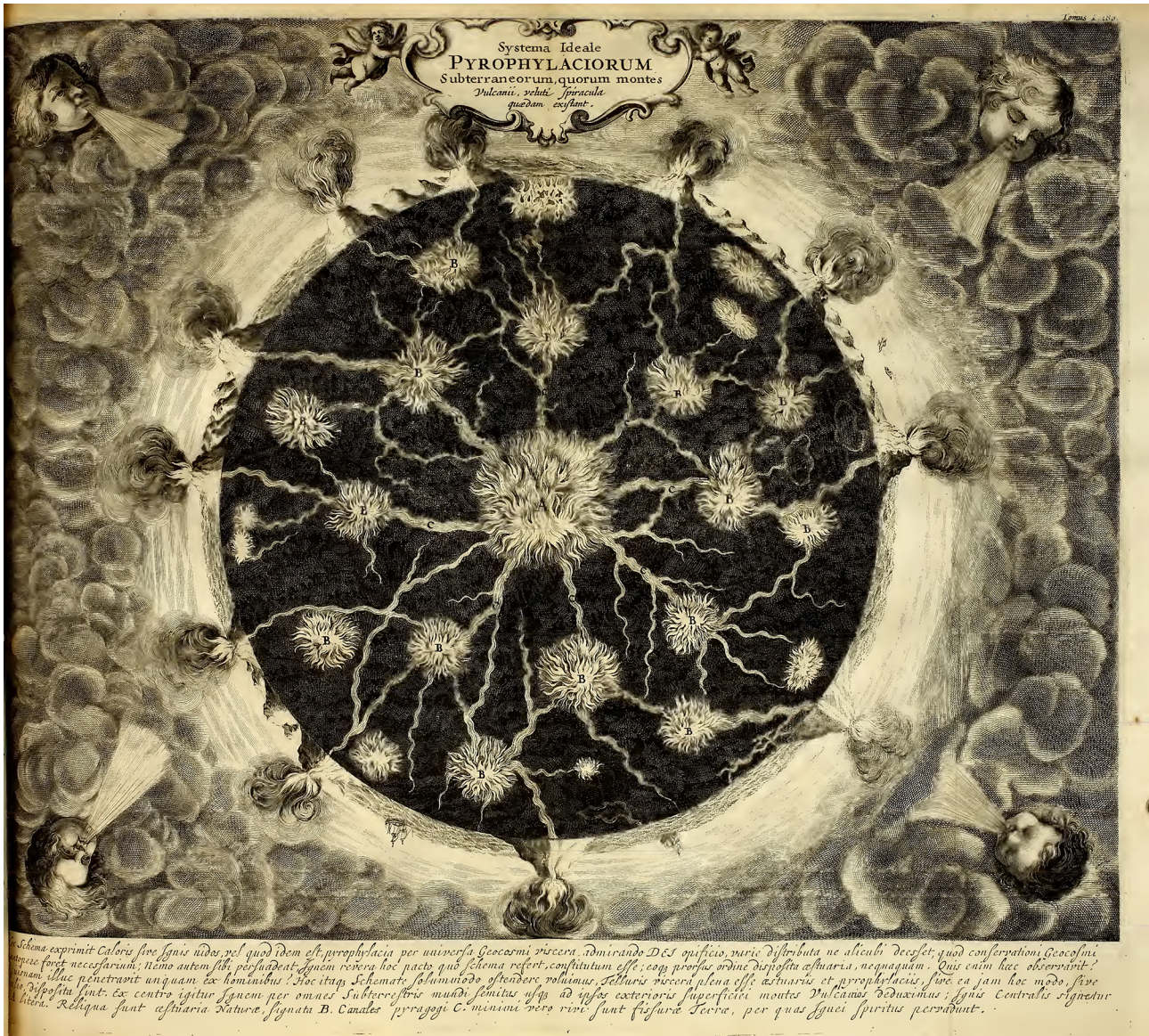


Fig. 2.A. Kircher, Systema ideale pyrophylaciorum. [Kircher 1665, p. 181].

and the experimental epistemology of the new, often arriving at an eclecticism of instances that are juxtaposed without really harmonizing” [my translation from Italian] [Battistini 2000, p. 77]. A culture was supplanted less than a century later by the *Encyclopédie* (1751) by Denis Diderot and Jean-Baptiste Le Rond d’Alembert, which amid Enlightenment culture gathered knowledge in a scientific and proven manner, leaving no room for the curiosities and wonders of the Baroque and even medieval matrix.

Kircher’s revolution concerning the neo-Platonic Renaissance model, based on the higher principles of the world of ideas, is based on the conviction that these universal principles must be followed by direct experience, capable of involving the senses, of creating a dialectical dimension between the principles and the experience of the fields of force acting on nature. It is no coincidence that Leon Battista Alberti (1404-1472), interpreter of the Renaissance spirit and ideal, handed over the experience of the building site to ‘masters’ of construction after having verified, quantified, marked and drawn all the evidence and underlying geometries of the *fabrica* [building sites] [Borsi 1975; Bulgarelli et al. 2006; Ferrari, Medici 2006].

Consequently, the Kircherian world is a complex world insofar as the cognitive dimension, through experience, belonging to previous centuries: think of Aristotle’s philosophy and the recovery of scholastic philosophy of medieval matrix.

Fig. 3.A. Kircher, *Hic est Draco* [Kircher 1665, p. 91].



Fig. 4. G. Sepi, Engraving showing the gallery of the Kircherian Museum in the Collegio Romano [(Kircher, Sepibus, Janssonius et al., 1678, frontispiece)].





Fig. 5. Raffaello Sanzio, *The Marriage of the Virgin* (1504, Pinacoteca di Brera, Milan).

One wonders about the meaning and the reasons for the complexity of Kircher's thought. The scholar is intent on reaching universal principles. At the same time, he understands that this desire is no longer practicable by following only the world of ideal and general principles, as was the case in the Renaissance. At the same time, he is aware that direct experience of the world of physics can be fallacious if it is not projected into a reflection on the principles of the higher world. The impression is that Kircher had attempted to connect the Platonic world of ideas with

that of Aristotle's efficient and final causes. Worlds that remained unconnected for several centuries. Consequently, he is not satisfied with the experience of the 'simulacrum', which can be deceptive, but neither does he accept a higher principle that is detached from the real world of forces. In the 18th century, the advent of the Enlightenment culture of the encyclopaedia systematised Kircher's reflections on the subterranean and celestial worlds from a strongly scientific perspective, capable of 'illuminating' and clarifying the object-subject of the reviews. It also follows that this clarity eliminates the mystery and resolving points of Kircher's typically baroque thought. The intention was to make studying the physical world and its manifestations evident and proven, eliminating any 'imaginative' and 'esoteric' dimensions.

While the Enlightenment structured scientific knowledge as we know it today, it also rejected the Jesuit's multiform and unknown world, which in its reflections attempted to show the complexity and multiple connections of the intuitions of his research.

Kircher's universe doesn't aspire to clarity as to mystery. This is revealed through writings and, above all, through drawings that interpret and offer a possible reality resolution.

### From central vision to Kircher's unconscious and elliptical drawing

To understand the epistemological transition from the Renaissance to Mannerism and Baroque culture, we must introduce the vision of space and its representation in the evolution from the fifteenth to the seventeenth century. As Giulio Carlo Argan (1974) explains, the instrument capable of representing the vision of Renaissance man is the central perspective. This allowed the artist to construct an objective urban scene where the man (the observer) was perfectly inserted into the city's space and governed its entirety. It was a way to support man's loss of centrality in the universe. The only possibility was to find a centrality where a man could measure and commensurate things through himself. A principle that can be perfectly traced with the figure of the circle, which embodied better than any other form the idea of perfection, founded on the harmony of the parts and on the representation of a finite and ordered cosmos. Evidence of this can be seen in Raphael Sanzio's depictions of ideal cities or the *Marriage of the Virgin* (1504) (fig. 5), where

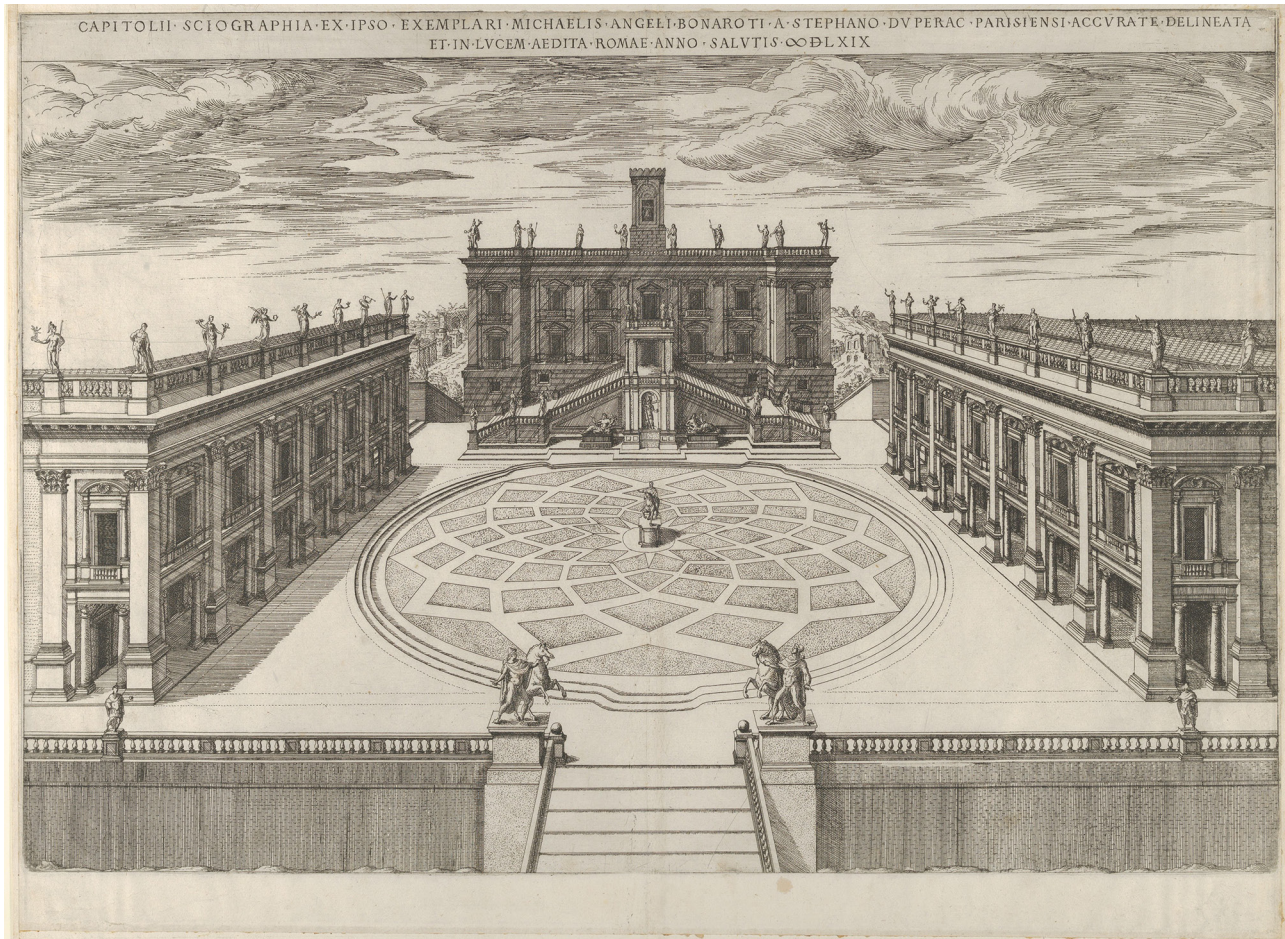


Fig. 6. É. Dupérac, *Speculum Romanae Magnificentiae*: View of the Roman Campidoglio (1569, Metropolitan Museum of Art).

the circular temple is the optical centre of the scene, the fulcrum of the entire space.

Indeed, a revolution from the ideal Renaissance model is represented by the Piazza del Campidoglio (1534-1538), designed by Michelangelo Buonarroti (1475-1564) (fig. 6). Michelangelo designed the entire square and the buildings that make it up, introducing an ellipse inscribed in a trapezium to enhance the perspective. The artist had

already challenged the Renaissance model in 1525-1530, orienting his poetics towards the non-finite. The body now immersed in the marble mass that imprisons it expresses the crisis of Renaissance man, who has lost his coordinates for being in the world. It is no coincidence that with the works of his last production, Michelangelo opened to so-called Mannerist phase, which in turn opened to the Baroque. The square located close to

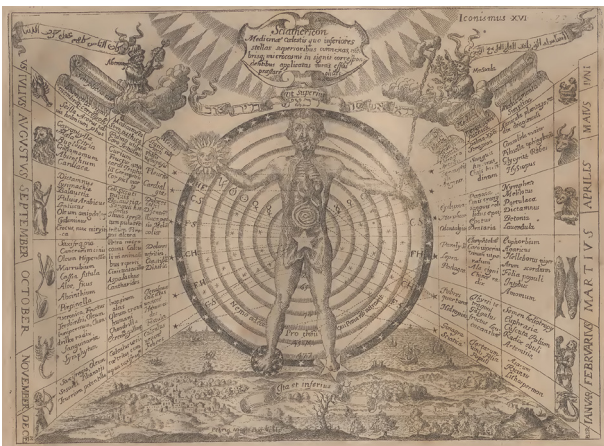
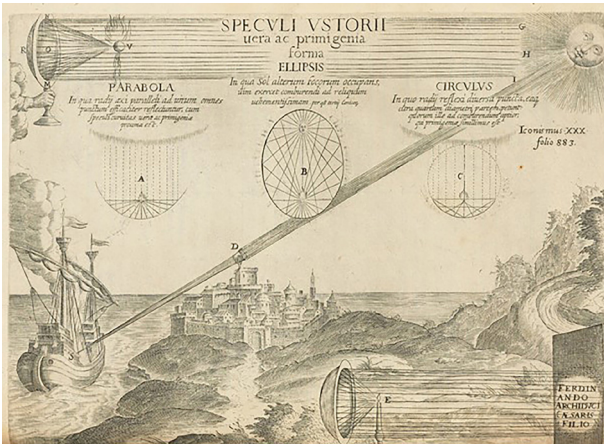


Fig. 7.A. Kircher, *Speculum vistorii verae primigenia forma*. [Kircher, 1671 p. 764].

Fig. 8.A. Kircher, *Iconismus XVII. Sciati iericum micro cosmicum*. [Kircher, 1671, p. 396]. Iconism shows the influences of the stars on the human body about the days of the week.

the archaeological area of the Roman forum will see in the artist's interpretation an opening and a positioning not towards the ancient remains but towards St Peter's church, the new political centre of the city. In his essay *Il potere del centro* [The power of the centre], Rudolf Arnheim explains that when an ellipse is perceived as a deviation from the circle, the loss of central symmetry leads to an increase in tension. The Renaissance favoured the circle as the form of cosmic perception, while the mannerist phase of the Baroque favoured the ellipse, which produces high tension by playing on the ambivalence of roundness versus extension [Arnheim 2011, p. 141]. If the Renaissance conceived circularity as heavenly perfection, interpreting the circle as an interior space and retrieving it from the building symbolising the relationship with the universe, namely the Pantheon. The Mannerist and then Baroque evolution would interpret the ellipse as a dynamic and hollow city space to generate a place that does not establish a centrality of being as a dynamic relationship with other sites.

Marjorie Hope Nicolson, in her book *The breaking of the circle* [1960], argues that during the Baroque, the order of the system was disrupted by turbulence and fluctuations that shifted the centre of gravity towards the boundaries, forcing the circle to turn into an ellipse. This has meant that secular beliefs have been transformed into problems susceptible to divergent solutions shrouded in uncertainty. In fact, the ellipse represented the contradictions and polarities to which the individual, who lives by dialectical contrasts, is subjected.

Kircher's work becomes fundamental for understanding the folds of a thought that still offers unprecedented perspectives today in this dimension of overcoming centrality. In the optical studies documented in the volume *Ars magna lucis et umbrae* [1671], Kircher graphically verified (fig. 7) the design of Archimedes' (287-212 b.c.) burning mirror, a lens with an elliptical plan and parabolic cross-section whose purpose was to direct the sun's rays to the point that could set fire to an enemy vessel. What is striking in his work is his intention to depict the object of his study in a precise and accurate manner. The engraving depicts the sun, the lens through which the sun's rays pass, and Marcus Claudius Marcellus's ship (268-208 b.c.) struck by the refractive mechanism. But he also documents with extraordinary detail the ancient city of Syracuse, defended by walls, set in a coastal environment. In addition, one can immediately understand his desire to



detail the mechanism developed for military defence in a 'scientific' manner.

Consequently, the highly iconographic drawing is completed by conceptual and technical diagrams using explanatory sections and graphs accompanied by a concise scientific text. Consequently, the author while seeking scientific transmissibility, does not lose the pleasure of iconographic narration. The result is a complex design with a solid synthetic and narrative character, which with the help of imaginative "iconism" [Vlad 1999; Eco 2018, p. 78], allows the reader of the treatise to benefit from a graphic synthesis of complex levels, both aesthetic and technical (fig. 8).

As pointed out by Maria Grazia D'Amelio and Tod Alan Marder [2014], the sculptural-architectural work that best synthesises the studies and diverse interests of the German Jesuit is the Fountain of the Four Rivers in Piazza Navona (1648-1651). The collaboration with Giovan Lorenzo Bernini (1598-1680) for creating the fountain is an accurate condensation of Kircher's research. Although the work is commonly attributed to Bernini, there is no doubt that Kircher's thought fuelled its formal, symbolic, and figurative content. The exotic creatures that enrich the base rock comes from the Collegio Romano museum from exotic lands (exotica). The use of the obelisk recalls a further interest in Egyptology and the study of hieroglyphics, which Kircher investigated at length in his text *Obeliscus Pamphilius* [Kircher, Grignani 1650], where he not only explains the symbolism but also the significance of the dove above it. But the most surprising aspect is the comparison between the illustration of the underground rivers in the treatise *Mundus subterraneus, quo universae denique naturae divitiae* [Kircher 1665] and the plan of the same fountain [D'Amelio, Marder 2014] (figs. 9, 10). The four main rivers of the then known continents –Danube, Nile, Ganges and Rio Plata, represented in a sculptural way by the four giants in the four corners– emerge from the hollow rock carved from a block of travertine from Tivoli, as illustrated in Kircher's engraving. The elliptical plan of the pool fully reflects the Baroque symbolism associated with this figure. The creatures that animate the entire sculptural complex tell of synergy between animal, vegetable, and esoteric life, which they represent in a symbolic and veiled way. In the final analysis, Bernini's desire to arouse feelings of wonder in the observer is evident, in the same way, that Kircher used in his museum and in the illustrations accompanying his books.

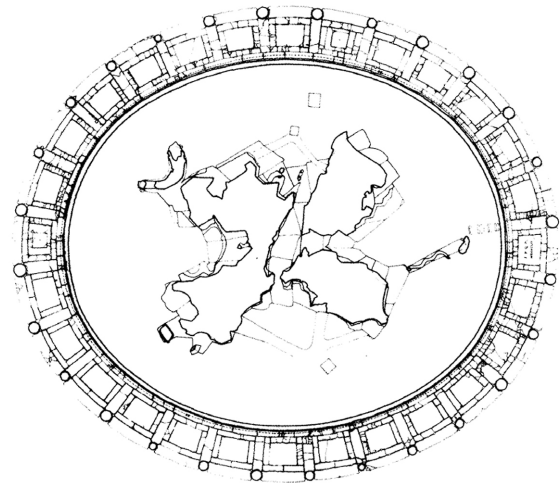


Fig. 9. A. Kircher, *Systema Ideale Qui Exprimitur, Aquarum*. [Kircher 1665, p. 176].

Fig. 10. D.M.T. Abbate, *Architectural relief of the Four Rivers Fountain, plan* (Fagiola, P. Portoghesi 2006, p. 210).

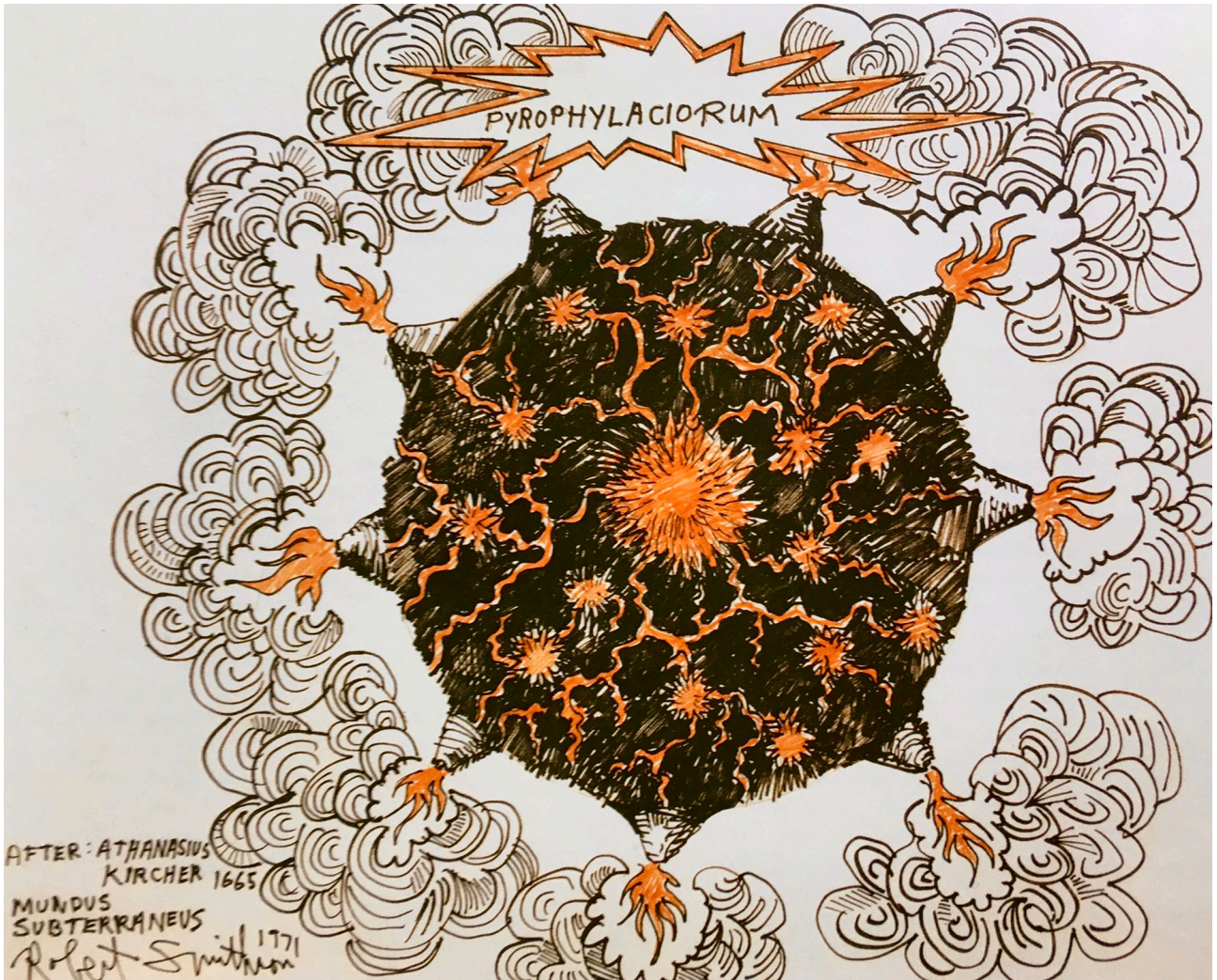


Fig. 11. R. Smithson, After: Athanasius Kircher, 1665, *Mundus Subterranus* [Tsai et al. 2004, p. 277].

The eclectic Jesuit scholar offers the artist a universe of unconventional signs and symbols, an underground world capable of moving the ordinary observer and delivering the more attentive observer unprecedented details of understanding and hidden meanings.

## Conclusions

As Giulio Carlo Argan argues in his book *L'arte barocca* [The baroque art] (1989) there are different interpretations of Baroque culture. According to the thought of Benedetto Croce [1993], expressed in 1929, Baroque in Italy expressed a dimension of false values concerning the sphere of morality and artifice. In contrast, according to Eugeni d'Ors [1968], the Baroque fully expressed a measurement of the soul and spirit, driven by an irrational impulse. Argan argued, comparing the two positions, that this irrational nature was intentional and even theorised.

This reading seems to really bring into focus the intellectual dimension of Athanasius Kircher's research. His writings fully illustrate the Baroque culture in which he lived and on which he fed. The drawings that accompany his texts do not have the exclusive purpose of illustrating reality but are a fundamental component in interpreting and resolving reality.

It is symptomatic that the Italian engineer, an expert in defensive systems and mechanics, published his treatise *Le diverse et artificiose machine* in 1588. He illustrated and described a reading wheel that allowed a scholar, using a pedalboard, to read eight books at once. This was a manifestation of the Renaissance desire to aspire to real knowledge. It is no coincidence that the circular shape refers to the encyclopaedic dimension, which recalls a circular education in its etymology, recovered during the Enlightenment. Intending to make knowledge systematic, the Age of Enlightenment favoured reason over sentiment and rationality.

## Notes

[1] His famous planimetric representation of Hadrian's Villa is compared with those of Pirro Ligorio (1512-1583), Francesco Contini (1599-1669),

It was precisely the Enlightenment's encyclopaedic culture that obscured the enormous and valuable work of the German Jesuit. As Umberto Eco recalls, Kircher was a baroque character if ever there was one, the Arcimboldo of the history of science, who has ended up enchanting dreamers more than scientists [Eco 2008, p. 85]. An example of this is the drawing by the land artist Robert Smithson *After: Athanasius Kircher, 1965, Mundus Subterranus* (fig. 11).

If the light characterises the scientific construction of the eighteenth century, it is the baroque shadow that emerges in Kirchner's research. In the final analysis, it is his *Mundus subterraneus* that requires listening. It is no coincidence that the twentieth century is strongly imbued with an unconscious and subterranean dimension. In 1864, Fyodor Dostoevsky published his manifesto *Memorie dal sottosuolo* [Memories from the underground] [2021]. The narrator challenges the optimistic and progressive ideals of positivism. The author brings man back into a more complex, suffering world. The underground is a battle against customs and habits of action.

Similarly, Kircher's writings and especially his imaginative drawings suggest the image of a subject who is active and involved in the act of knowing reality and participating in its manifestations. His 'drawn visions' tell of a universe of signs capable of interpreting and resolving the shadowy areas of existence. A journey that oscillates between the need for scientific exactitude and the need for an imaginative component. Observing and re-reading Kircher's drawings today allows us to re-read the tension between these two fundamental components of his brilliant work.

In the same way, the drawing, even today, allows it to be traversed and traced in both directions. On the one hand, it will enable it to be concretised to understand reality. On the other, it allows imagining and resolving those parts of reality that are not yet fully illuminated. This is the capacity of practice and a discipline that still today can provide current tools for a resolution, even if not definitive, in investigating what surrounds us.

Jacques Gondoin (1737-1818) and Giovanni Battista Piranesi (1720-1778) in Giuseppina Enrica Cinque's book [2017].

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