Earth-Sky Cosmologies: A Reflection on Cosmology Through Human Practices (Part 1)

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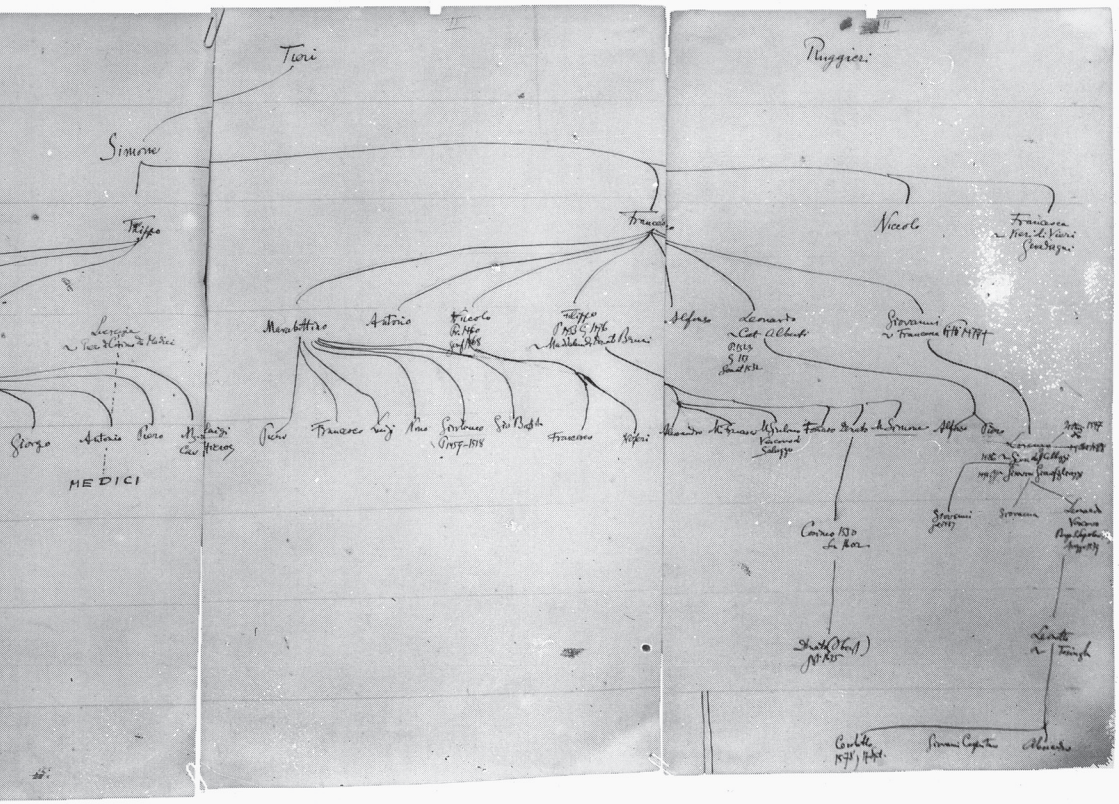

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Abstract

Presently cosmology is regarded as a discipline that is mainly concerned with the understanding of the cosmos in the heavens as an external readable structure that can reveal the origin of the Universe. In this context Man is positioned as an external observer detached from the studied phenomena. Such understanding of cosmology has a history that traces back to the origin of the word cosmos within the ancient Greek civilisation, as informed by a Man-world dichotomy and the symbolic placing of the unknown world in the sky. However, cosmology, as the word cosmos implies, is about the conceptualisation of the world, moreover, about the reflection and expression of the interrelation between world and Man and not about a detached *cosmogenetic* understanding of the universe through the heavens. Overcoming the restricting contemporary accounts of cosmology, the philosopher Rémi Brague presented an argument in the work *The Wisdom of the World* that rethinks cosmology within a framework where the human is fundamentally and inevitably implicated. Departing from Brague's work, in this paper it will be argued that re-thinking cosmology requires a shift in focus to conceive of practices, such as drawing, as human worldly experiences bringing to the surface the role of the human as more than an observer of the world. This shift will be supported by a close examination of two hitherto separate discussions: cosmology as an emerging discipline during the Enlightenment and the role of drawing within the epistemological model of 18th century natural history.

As the philosopher and philologist Rémi Brague (2003, pp. 2-6) reminds us, a triad exists within a contemporary understanding of the cosmos: cosmography, cosmogony and cosmology. From these three words the first two have a deep heritage within Western thought, the usage of which can be traced back to the ancient Greek civilisation (Brague, 2003). Brague defined the first, cosmography, as "the drawing or description (*graphein*) of the world as it appears at a given moment" and the second, cosmogony, as "the story of the emergence of things or, perhaps, the story of cosmogenesis… [; the explanation of] how things come to form (*gignesthai*) the world as we know it, in the structure in which we find it today" (2003, p. 3). Cosmology, however is a much more recent term, the origin of which dates from the mid 17th century (Brague, 2003), yet as a working concept that underlies a discipline, the first records date from the 18th century in the context of German philosophy, particularly in the work of Christian Wolff.[2]

As the discipline of cosmology was created during the 18th century, its conceptualisation consequently bares the ideas and agenda of the time, or of what was called the Enlightenment, the Age of Reason. Supporting the emergence of the Age of Reason was mechanical philosophy[3], but also empiricism, as

> "[t]he enthusiasm for reason in the Enlightenment is not for the faculty of reason as an independent source of knowledge (at least not primarily), which is actually put on the defensive in the period, but rather for the human cognitive faculties generally; the Age of Reason contrasts with an age of religious faith, not with an age of sense experience" (Bristow, 2011, p. 5).

Therefore, the logical and mathematical grounding of mechanical philosophy could also be sustained in combination with an empirical framework. Despite the fact that mechanical philosophy was not at odds with empiricism, at the time, not all philosophers would agree with such an epistemological combination and a multitude of positions emerged. One of the philosophers that despite being a rationalist, was not opposed to empiricism was Christian Wolff. Moreover, Wolff aimed to "include empirical knowledge as the foundation for philosophical knowledge and establish a definitive place for empirical knowledge within his system of Human Science" (Hettche, 2008, p. 15). Another characteristic of the Enlightenment was a general tendency to release knowledge from metaphysics, which is correlated with the rising prominence of both mechanical philosophy and the emergent empirical methods (Bristow, 2011). Nonetheless, a rational and empirical philosophical position was not in opposition with religion and metaphysics in general and consequently, not all philosophers were anti-metaphysics, as was the case with Wolff (Bristow, 2011; Hettche, 2008). Therefore, in trying to understand what cosmology, as a discipline, was at its origins, it becomes necessary to unpack what were the epistemological foundations that could have given origin to the discipline during this period. In doing so, and given the wider outlined perspective of Enlightenment, this paper will use and delineate the foundational principles of truth-to-nature[4], the epistemological model underlying natural history, as an exemplary case of a framework in which rationalism, empiricism and metaphysics where correlated in a same epistemological framework –the same correlation in which Christian Wolff has been positioned.

Up until and for a period during the 17th century, nature was examined pursuing a scheme that had the accidental, the variable and unpredictable as underlying principles within the epistemological framework (Foucault, 1970; Hankins, 2007). A scheme guided by superstition and supernaturalism within religion (Bristow, 2011) unleashing a mythological facet, inside which the ontology of nature existed and that, as the science historians Lorrain Daston and Peter Galison (2007) reveal, can be found in the imagery and curiosity with the monstrous and the aberrant. However, a move was made towards principles such as the typical, the ordinary, the average and characteristic - ultimately the archetypal principles that become ingrained by the mid 18th century (Daston and Galison, 2007; Foucault, 1970). Underlying this process was a shift to a belief in a "natural theology that characteristically praised the regularities of God's laws as more worthy of admiration than the exceptional marvel or miracle" (Daston and Galison, 2007, p. 68). Within this approach to theology, which started to emerge in the 17th century, it was thought that through reason and without calling on the Bible it was possible to find the divine truth that lay in nature; God's creation (Hankins, 2007). Consequently, Man and Nature became close to each other, since the latter stopped being regarded as something unknowable and within an

unreachable domain. Such theological transformation came to have deep implications in 18th century philosophy and science.

The principles of natural theology within 18th century philosophy and science were carried by the belief that the work of God was structured and organised according to rules and principles. As the historians Rienk Vermij (2008) and Thomas Hankins (2007) point out, this was an argument based on a supreme intelligent and designing agent that created and ordered the natural world, which stands in opposition to the idea of a world set in place by irrational and unknowable forces. Thus uncovering the work of God could be achieved through an enquiry of the physical world, or Nature, within which the order of all Nature's elements could be displayed. As such, 18th century Man believed that it was possible to perceive the order within the world directly by observation of Nature and abstract reasoning[5], breaking away from the mythological, and establishing a universal science of order; the taxonomical programme. Thus, this programme had to entail an epistemological shift so that signs can become "tools of analysis, marks of identity and difference, principles whereby things can be reduced to order, keys for a taxonomy" (Foucault, 1970, p. 64); therefore enabling Man to 'see' nature's inner workings, its structure and order, in the end: God's laws. Such framework, according to Foucault (1970), came into existence by the end of the Renaissance and faded at the beginning of the 19th century. From inside this framework a new empirical field came to existence: natural history.

The taxonomy of the natural world as the project of natural history became epitomised in the work of Linnaeus and the making of Atlases[6]. Within the work of natural historians, the taxonomical project entailed a search for the transversal organising principles that could constitute the grid within which elements existed and had their own specific places. According to Foucault, in order to achieve such a grid it was first necessary to detach elements from their linguistic signification; however, such was only possible after the 17th century as before "signs were then part of things themselves, whereas in the seventeenth century they become modes of representation" (Foucault, 1970, p. 141). This change in the modes of signification by means of modes of representation, opened a gap between elements and language, a gap within which natural history found its place by resorting to the practice of drawing in order to bridge the understanding of elements (Foucault, 1970, p. 141). As a result through the "fundamental articulation of the visible, the first confrontation of language and things can now be established in a manner that excludes all uncertainty" (Foucault, 1970, p. 146), regarding what the elements are, their place in the grid - thus in the world - and in God's intentions. The practice of drawing within natural history ultimately enabled the construction of the taxonomical grid in which potentially everything could have a place through its representation as a sign.

Natural history through the practice of drawing made possible a new interpretation and naming system that was accessible to all knowledgeable people given the empirical transparency of this construction. The practice of drawing and the process within which drawings were created[7] in natural history was a process that had embedded in itself the observation of individual elements and the abstraction of their formal characteristics so that the specificity of the individual could stand for a same group of elements and therefore be quantified and translated into the generalisa-

tion and universality of the topographical grid. Drawing was consequently an empirical enquiry that released the morphological aspects of elements from the linguistic signification, enabling order through archetypal disclosure. Thus, within natural history, drawing became the means through which not only knowledge could be discovered and assembled, by the materialisation of signs, but also one in which knowledge could be constructed as a reflective process of 'seeing'. In this dual function - assemblage and construction of knowledge - drawing became an empirical, but also recursive practice as the very own process of usage and construction of the taxonomical grid would be employed to refine, improve and enlarge the grid on a continuous process (Daston and Galison, 2007; Foucault, 1970). The overall process of constructing and using the taxonomical grid through drawing was therefore a recursive method of empirical ordering and abstract reasoning that was used to inform a new epistemological model; the truth-to-nature model.

Nonetheless, within a truth-to-nature model, a third function was also expected from the practice of drawing. As Daston and Galison explain, two types of drawing are expected to be seen within Atlases: the 'ideal' type and the 'characteristic' - or archetypal. In the framework of 18th century scientific drawings, "the 'ideal' image purports to render not merely the typical but the perfect, while the 'characteristic' image locates the typical in an individual" (Daston and Galison, 2007, p. 70). As such, drawings were expected to be perfected by selecting what to represent and how to portray[8] it in order to achieve what was thought would be a beautiful[9] and perfect form. This means that not only the 'perfect' was thought to be beautiful but also, and above all, that it did not exist as a 'pure' form in nature, however Man, through drawing, could reach an understanding of the ideal forms of the elements that structured nature. This belief brings to the surface a re-emergence of Platonic theories in support of natural theology (Daston and Galison, 2007, p. 58). Yet, differently from Platonic theories, and in the context of natural history, 18th century Man considered that through the recursive and empirical practice of drawing it was possible to 'foresee' what was not yet there, or the divine process that the natural world was undergoing to become perfect[10]. Consequently, the taxonomical program within natural history aspired not only to reveal an omnipresent order ruling within nature through the archetypal, but also to 'foresee' the ideal forms within God's intentions.

As it is perceivable, for the practice of drawing to have such a programmatic role, one in which there is no separation between the act of drawing and the understanding of the world, it is highly dependent upon an active and cognisant 'seer' (composed by the eyes of an expert, the scientist, guiding the hand of the illustrator) that determinately seeks to construct the taxonomical grid. The presence of the 'seer' in the 18th century framework is fully recognised and embraced within the overall scientific and philosophical programme (Daston and Galison, 2007), as only through his activity does it become possible to fully unleash the epistemological programme of natural history. As a result, drawing within natural history can be presented as a recursive and empirical practice that enables an enquiry into all existing elements by an active 'seer' that was present in the process, not only as a rational being which would use reason to abstract principles, but also as a subjective and affective being that engaged and connected with

the world. Drawing was therefore also an immersive process in which there was no separation between Man and nature, or the world, enabling Man to make visible the underlying laws, not so much behind the individual elements in front of him, but the overall divine order and laws that guided the natural world. Man was therefore active in the making of knowledge; however, he was not active in the making of the structure and consequently in the making of the world, which were imposed on him by God. Consequently, Man was separated from nature but only in as much as Man was an observer of the world and consequently could make visible and 'foresee' the laws and intentions of God. Nonetheless, Man was still part of the ontological grid, part of the world, which he observed.

The preceding analysis of 18th century Enlightenment through the perspective of natural history, hence brought forward four features that enable the contextualisation of the emergence of cosmology within a wider framework than the one derived by uniquely observing a mechanistic perspective. The first of these features is the role of natural theology in the creation of a truth-to-nature epistemological model. This was prompted by the belief that there was an order to the world that was governed by God's laws and intentions, which could be perceived through observations of the natural world and abstract reasoning. This belief led to the second feature, the taxonomical programme: the construction of an ontological grid within which potentially everything had a place by escaping the previous paradigm of linguistic signification. Such a programme relied on a process of interrogating the world that was based on a method and system for 'seeing' the world through modes of representation. This process was the practice of drawing, the third feature. In this context, drawing comes as a recursive, empirical and immersive practice that by unleashing the archetypal and ideal within elements enables the assemblage and construction of knowledge. Such an epistemological approach evidences the space that was opened for the presence of the human as an active agent in the making of knowledge, bringing forward the fourth feature, the active 'seer'.

Observing the foundational principles of the truth-to–nature epistemological model reveals the way in which rationalism, empiricism and metaphysics were connected within a single perspective, which, as outlined previously in this paper, was coincident with the philosophical perspective of Christian Wolff, one of the first to take cosmology as a working concept that lies at the basis of a field of knowledge. As such, surveying the potential presence of the four features of truth-to-nature within Wolff's understanding of cosmology puts forward the possibility to comprehend 18th century cosmology as beyond a solely rational and mechanistic discipline. According to Wolff, philosophy was divided into three main branches: ontology, metaphysics and physics, in which the three branches were directly related to a top-down hierarchy, in which ontology was the grounding for metaphysics (from which cosmology was a branch), which in turn was the grounding for physics (Hettche, 2008). As such,

> "[j]ust as cosmology and psychology (together) provide the basis for advancing an a posteriori proof for God's existence, it is the result of theology's a priori proof whereby the inquiry into the causes of contingent reality is justified" (Hettche, 2008, p. 24).

Consequently, one can discern in Wolff the presence of the essential ideas of natural theology guiding the cosmological enquiry, in which a metaphysical existence would justify the observed reality, finding the empirical support within the methods of physics to explain the mechanistic[11] laws of God's design (Hettche, 2008). Within Wolff's cosmology, the understanding of God's design as mechanistic is deeply related with the fact that for him the subject matter of cosmology was the "world-whole" (Hettche, 2008, p. 16), in which the "world is a collection of mutable things that are next to each other, follow upon one another, and entirely connected with each other" (Wolff cited in Hettche, p. 18). Therefore, in combination with natural theology and the usage of empirical methods, structuring the knowledge gathered was a mechanical and rational reasoning. If drawing, as in natural history, is regarded as an empirical tool then it is possible to suggest that cosmology as a discipline merged cosmogony and cosmography. As a result, cosmology would combine the need to understand the world through its functioning and organisation, its divine laws - or cosmogony - with empirical methods of enquiry, such as a process of analysis that is conveyed through the practice of *graphein* - or cosmography. Observing cosmology through a perspective that combines an enquiry of the world with a construction of knowledge that is lead and derived from a bodily practice driven by a 'seer' (drawing as the practice previously described), not only opens cosmology as a construction in which the human is present on a multi-level dimension, but also frames cosmology differently from the contemporary approaches.

As a discipline, cosmology underwent a process of transformation in which both Wolff's perspective of cosmology as well as the proposed multi-level presence of the human (emergent through the role of drawing within natural history) would not generally persist. As a consequence, cosmology came to be understood as the "science that accounts for the origin, development and laws that make the universe as a whole, but particularly the astronomical study of the beginning of the physical universe" (Hetherington, 1993, p. 116, cited in Campion, 2010, p. 2). Despite the fact that cosmology is still understood as a joint enterprise - ranging from theology to the arts - to understand what is and makes the Universe (Harrison, 2001, p. 15), cosmology mainly became focused on the scientific dimension. As such, nowadays cosmology as a practice became a science that attempts at an all-encompassing study of the physical[12] (Harrison, 2001, p. 15; Balashov, 2002, p. 107) and material (McWilliams, 1928, p. vi; Narlikar, 1992, p. 362) nature of the Universe, a discussion that is framed by the sky. However, this understanding of cosmology raises a problem as it constrains cosmology to just one dimension, that of cosmogony through the lenses of science. The problem of taking cosmogony for cosmology, however, is not only present in the way that cosmology is practiced today, but also in the way that, as a concept, is applied retrospectively when looking into theological and mythological frameworks[13]. Such state of affairs prompts this paper to revisit the notion of cosmology, questioning what then is fundamental for the conceptualisation and discipline of cosmology nowadays.

In the work *The Wisdom of the World,* the philologist and philosopher Rémi Brague puts forward the argument that cosmology is primarily a discourse about the relation between Man and world and that it is because "the moral status of nature is disrupted in modernity" (Flynn, 2008, p. 219) that cosmology is no longer a reflection of an ontological order. This realisation sets Brague to

discuss the necessity of the re-emergence of a moral foundation in thinking about cosmology and in order to support this pursuit Brague exposes the necessary relation between cosmos and world within cosmology. In the definitions of cosmography, cosmogony and cosmology that Brague puts forward, the word that emerges accounting and leading the definition is not cosmos, but world, as its synonym. By, relenting on the use of the word cosmos, Brague is not only making visible what, given an apparent obviousness could be too quickly dismissed, the straight connection between cosmos and world, but is also opening up the way to dismantle the idea of cosmology as attached to the heavens. Consequently, despite the determinacy of a moral quest, supported by Brague's Catholicism, the argument potentiates a meta-discussion liberating cosmology to be re-thought beyond the restricting vision of a scientific project dominated by astronomy. Fundamental for Brague's argument and underlying is move is the idea that "if the world is to arise as a thematic concept, then Man must arise as the subject for whom the world exists" (Flynn, 2008, p. 218). It is within this framework that Brague defines cosmology as that "as is implied by the word logos, is not that of a simple discourse, but a reflection on the nature of the world that as a world must be expressed" (Brague, 2003, p. 4) and therefore the existence of a human subject is a necessary condition for the conceptualisation of the world. As a consequence, cosmology comes to be a discourse of an ontological but also anthropological order (Brague, 2003, p. 5), however, in order to fully understand Brague's concept of cosmology and its implications, it becomes necessary to look at the history of the emergence of the word cosmos.

For Brague, the primary foundations of cosmology, as well as its limits, lie within the origin of the word 'cosmos' in the ancient Greek civilisation. As a result, a distinction and separation is made between the moment where a word to mean the world – cosmos - came into being and the previous conditions set by pre-Greek civilisations, where the process of imagination and construction of such a concept had started. Brague shows evidence that leads to the conclusion that early civilisations, as the Mesopotamian and Egyptian, did not have a word such as world in order to designate the entirety of all things that constitutes a world. Previous to the Greek civilisation, on a first stage, there existed enumeration - the listing of elements that made the whole - after the utterance of the whole - the usage of words that meant entirety and wholeness, expressing therefore the idea of a totality (Brague, 2003; Rochberg, 2007). According to Brague, this meant that these civilisations had not yet grasped things in themselves in order to create a structure that makes of all things a unity. Phenomena were observed, understood, explained and integrated in an overall system without, however, Man looking to understand them as a unity from a single perspective; what Emma Brunner-Traut designated as 'aspective' (Brunner-Traut cited in Brague, 2003, p. 13). Consequently, a word that in itself expresses all things as a unity and that grows to be more then the sum of its parts, the word world, could not exist. It is therefore possible to conclude from Brague's work that the word world came into being out of a necessity to designate the possible and different models for the structures and orders in which the entirety of all things could be organised and observed as one. However, because in pre-Greek civilisations Man existed in communion with the world, such an independent structure could not be conceptualised and named. Consequently, without a word for world there could not exist an explicit and intentional reflection upon it. As such, following Brague's argument,

it is not feasible to discuss cosmology prior to the existence of the word cosmos, which in the Western world only came into being with the ancient Greek civilisation.

The word chosen by the Greeks to express the unity of the whole, cosmos, is one that reflects the idea that the entirety of things needs a structure in which to be organised, as the word designates order[14]. From the idea of an ordered whole, the cosmos, to become synonym of world, Brague argues that two fundamental ideas that came to light during Socrates' time had to take place. The first was Nature becoming unknowable and consequently unreachable. The second was the separation of Man from the natural world; or the entirety of all things that constituted the whole. These two ideas occurred when Socrates observed that only Man, in its ethical dimension, could be known and discussed and that therefore the domain of physics and nature were truly unknowable, because they were not subject to the moral laws of Man. It is important to note, as Brague does, that the Socratic understanding broke away from the dominant paradigm as "[t]he Greeks believed that the world and its human subjects were primarily connected through the existence of laws that governed them all, and that those laws were of a moral nature" (Brague, 2003, p. 29). Such transformation in belief created a chiasm that separated the laws of Man from those of the physical world, or ethics from physics and Nature.

With the chiasm opened by Socrates, the first outcome was a symbolic deferment of the world, cosmos, to the sky. The physically distant sky came to symbolise the unreachable and consequently, the unknowable (Brague, 2003). Nature became unknowable, what once had been the reachable and close domain of the earthly and everyday phenomena, became merged with the unreachable domain of the heavens. Nature and heavens, earth and sky, or the whole, were now part of the same domain. The second outcome was Man becoming an independent entity from the whole, the world, or cosmos. A construction that followed, which may seem a necessary contradiction: that in order to have a word - the cosmos - that denominates the whole - the world - a part of the whole has to been taken from it - Man (Brague, 2003). According to Brague, this construction is however fundamental as in order to think of the whole as a unity it is first necessary to see the entirety of that unity from the outside, more precisely that the whole becomes an object that is seen and conceived as separate from the thinking subject. Therefore it is possible to conclude that the very own emergence of the word cosmos, as the ordered world, goes hand in hand with the creation of the dichotomies inner and outer, Man and world.

Socrates therefore prompted the fundamental step of Man seeing himself independent from the whole, observing it as a separate entity, and opened up the possibility for the cosmos to mean the world, a world that however existed symbolically in the heavens. Nonetheless, the reflection of the cosmos as world, and therefore cosmology, only occurred with Plato, more precisely with the work *Timaues* that Brague sees as being the first Western cosmological work written down. In order to do so, Plato had to bridge the chiasm opened by Socrates and to establish a relation between Man and the world - the cosmos - reconciling Man with the ordered structure of the whole (Brague, 2003), while still keeping humans on a separate domain. Plato bridged this chiasm by enabling moral ideas to be integrated in the structure of the order that makes the whole, by placing good as the principle that ruled both the physical and the human dimensions (Brague,

2003) and establishing a macro-micro correspondence between them. Good stopped being a feature of the moral laws of Man and became the moral nature of the divine laws to which both nature and Man were subjected. As the ancient philosophy scholar Francis M. Cornford (1937) expresses regarding the *Timaeus*:

> "Looking deeper, we see that the chief purpose of the cosmological introduction is to link the morality externalized in the ideal society to the whole organization of the world… Now Plato intends to base his conception of human life, both for the individual and for society, on the inexpugnably foundation of the order of the universe. The parallel of macrocosm and microcosm runs through the whole discourse. True morality is not a product of human evolution, still less the arbitrary enactment of human wills. It is an order and harmony of the soul; and the soul itself is a counterpart, in miniature, of the soul of the world, which has an everlasting order and harmony of its own, instituted by reason[15]" (Cornford, 1937, p. 6).

As a result, with Plato, cosmology thus can be understood as the conceptualisation of a framework within which Man and nature existed as resultant of a higher divine moral programme. A programme that had its most perfect expression in the sky, as this was the domain of the unattainable divine knowledge, which, following a top down structure emerged on every single stage of the structure as a less perfect version of the previous structural stage. Within the shift to the structure of the world as moral, thinking about the world became inseparable from thinking what the human being is as well as his position in the structured order that constituted the cosmos, or the world. Consequently, Brague departs from Plato's *Timaeus* to support the necessity of a moral foundation in thinking the world, as Man and world are necessarily bound by morality. Such necessity associated with the analysis of the emergence of the word cosmos in ancient Greece, takes Rémi Brague to defend that cosmology is a human reflection and articulation, not so much about the heavens as it is about the world and our relation with it, from the perspective of an observer that is subject to the same divine moral laws as the world. Therefore cosmology becomes an *onto-anthropological* enterprise however molded by morality.

Given Brague's understanding of cosmology it becomes possible to overcome the problem of a restricting vision of cosmology within a contemporary context. If the cosmos at a certain moment in time signified an unattainable realm where divine laws decree and for which the sky was the best representative, when it comes to thinking about the cosmos as world from a *onto-anthropological* perspective there is no distance between sky and the tangible nature, or the everyday world which humans inhabit, which has been symbolised by the earth. Therefore what seemed to be distant, antagonistic and irreconcilable realms (the laws of the heavens and the everyday life on earth) becomes united releasing cosmology from the contemporary approaches. In this paper, however, it is argued that three disputable premises underpin Brague's cosmological definition. The first is a necessary moral cause binding Man and the world within the cosmological structure. This premise lessens Brague's argument by restricting the human, the world and their interrelations to a moral feature, which moreover, only fully exists in its relation with the divine. Furthermore, it also assumes an existing separation between Man and world within a cosmological conceptualisation. Consequently, the first premise is supported by the

second: that it is not possible to conceptualise the structural order of things without the human being seeing himself as existing on a separate realm. Thus, that Man exists as an autonomous entity that observes the world from the outside, raising a dichotomic epistemology. The third premise emerges from the belief that the conceptualisation of an idea is dependent not only on a separate thinking entity, but also on language. Therefore, a reflection upon the world relies on the existence of a word to express it. As a result, a conundrum is created within Brague's work: that the conceptualisation of cosmology within an *onto-anthropological* perspective is something that begins with ancient Greek civilisation but also curiously ends with Enlightenment, the time that created the discipline of cosmology, and the disbelief in a moral world.

In order to re-think cosmology outside Brague's limited framework and within which an *onto-anthropological* conceptualisation can still exist, a different conceptualisation of the anthropological dimension within cosmology is required; one that does not rely on the three premises previously outlined. As this paper shows, the key to surpass the problems raised by Brague may lie in the 18th century framework of natural history. As outlined through the account of natural history, an underlying programme that relied on drawing as a recursive, empirical and immersive activity in which was embedded a human conceptualising presence, supported the 18th century epistemological framework. This presence was acknowledged and accepted, moreover, incremental to the construction of that very same epistemological framework, as within the practice there was no separation between Man and nature, or the world, pointing towards the possibility of knowledge not having to be expressed in words in order to be thought. Consequently, although a conceptual separation of Man from nature in order for the word world to appear might have been important, it does not imply that Man exists as separate from the world, nor that the existence of the word world is necessary for a conceptualisation of the world, the human and their interrelation. If Man and world are seen as an interconnected and integrated system, then an *onto-anthropological* conceptualisation is also embedded within practices and all modes of expression.

Cosmology can therefore be redefined as a discourse about the *onto-anthropological* reflections and expressions of the multiple and contingent relations between Man and world, in which practices are recognised as modes of embedded conceptualisation and expression; escaping the requirement of an outside observer (in addition, a moral foundation) and a word to conceptualise and express cosmology. As a result, it becomes possible to attempt a framework of analysis of cultures prior to ancient Greece and post-Enlightenment in which the reflection on the world does not come through the form of a written text, but can be found within a everyday practice or system of practices. An example of a practice deeply rooted within a pre-Greek society - the Mesopotamian – that not only embodies in itself an understanding of the world, the human and their interrelation, but also sits outside an astrology/astronomy context, is hepatoscopy, or divination through liver readings. Through the analysis of this practice it is possible to unleash this society's cosmological model from an *onto-anthropological* perspective, dismantling part of Brague's conundrum: the idea that before Greek civilisation there was no conceptualisation of the world as a structured whole in which is recognised and reflected Man's position and role. Such analysis of the Mesopotamian practice of hepatoscopy will inform the second part of this paper.

Endnotes

[1] The present paper undertakes a reflection on Cosmology informed by disciplines such as History, Cosmology, Art, Assyriology, Anatomy and Philosophy. The analysis is driven by a transdisciplinary approach to research, within a PhD context of which the title is: Enquiry on the Essence of Space: Khôra, Kinaesthetic and the Sublime.

[2] Christian Wolff's *Cosmologia Generalis* published in 1730 was, according to Brague, the first out of a series of German publications to present works dedicated to cosmology and its reflection.

[3] Mechanical Philosophy is a term coined by Robert Boyle (Westfall, 2000, p. 412) that indicates the belief that the natural world was arranged by combinations of inert particles of matter, featuring only size and shape, that moved according to mechanical laws and therefore natural phenomena could be explained in terms of such mechanical laws (Westfall, 2000; Hankins, 2007, p. 13)

[4] Truth-to-nature as defined by Daston and Galison is a "code of epistemic virtue" (2007, p. 18) that precedes Objectivity as the main epistemological force driving natural philosophy. Characterising it is a "metaphysical dimension, an aspiration to reveal a reality accessible only with difficulty… the true genera of plants and organisms" (p. 58). In order to achieve such a goal the naturalists would combine empirical methods with abstract reasoning and would actively intervene in revealing the truth of nature without, however, being commanded by it.

[5] In the context of the naturalists, abstract reasoning implied the acts of selecting, comparing, judging and generalising (Daston and Galison, 2007).

[6] Within this context atlases are conceived as visual records of the present states of affairs of knowledge and in which is "identify[ed] a discipline's most significant objects of inquiry" (Daston and Galison, 2007, p. 17).

[7] In order for drawing to come to have such a programmatic role within natural history, it was necessary to develop both a system of analysis and a method of analysis (Foucault, 1970) so that the questioning of the object of research and construction of the grid could happen. The first - the system - was the unleashing of the guiding principles of a formal grid with determined sites against which individuals could be 'seen', 'read' and placed in. The system of analysis therefore demanded a reflection on what constituted the construction of a grid, or on what constituted an order based on an a-temporal differentiation (Foucault, 1970). The second - the method - was a process according to the grid's principles of 'seeing' and 'reading' each individual being/element in order to place them in their specific site, thus informing the grid. The method of analysis relied on algebraic operations to organise elements according to their differences and consequently on what constituted identity (Foucault, 1970), not however of the individual, himself, but of the overarching characteristics of a same group of individuals.

[8] For instance, in a typical period drawing, the usage of colour as an accidental trait was discouraged; it should even be avoided. What was supposed to be portrayed was the form, quantity, proportion and position of elements. (Daston and Galison, 2007, p. 59; Foucault, 1970, pp. 145-146).

[9] The idea of a perfect form was, at the time, related with the idea of a beautiful form, as both 'perfectness' and 'beautiful' were features of the true. As a consequence a true drawing was one where not only the accidental had been eliminated, but also one where a form had been made beautiful trough the perfectness and perfect through beauty (Daston and Galison, 2007).

[10] According to Foucault this cannot be seen as the evolutionism of later 19th century and in fact two types of 'evolutionism' existed. The first, as mentioned, believes that all the species evolve on a continuum towards the perfection of God, being that all species have their own perfect form, although possibly will never achieve it. The second says that species have moved through time from one place in the taxonomical grid to another; explaining, for instance, that birds have wings as for one moment in time, when the earth was covered by water, they had had fins (1970, pp. 165-166). As such, the underlying idea is that there is a "general table of variables that defines all the possible forms of the living world" (Foucault, 1970, p. 167).

[11] Given the fact that "mechanical philosophy was [seen as] a program of explanation, not a program of investigation" (Hettche, 2008, p. 411).

[12] According to Balashov, the usage of contemporary physics to explain the beginnings of the Universe by cosmology did not happen "until the 1970s, when … physics began to assume a truly historical dimension [by observing physical laws as dynamic]. The idea that the temporal career of the universe may include not only the history of matter but also the history of its basic properties, which figure in the laws, is largely a product of this interplay between particle theory and cosmology in their joint effort to probe the physics of the very early universe" (2002, p. 110).

[13] In a contemporary context, cosmology is used indistinctly from cosmogony, even when looking back into mythological accounts of the conceptualisation of the world. For instance, within the Mesopotamian culture, what is offered is a description of the mythological stories in which such conceptualisation may have happened (Brague, 2003). Yet, one example in which an analysis and elucidation of those stories happen in relation to questions such as: What is the world within Mesopotamian culture? Or, in the context of a Mesopotamian culture, what is the place of human kind in relation to the whole? Going beyond a cosmogony is the contribution of the Assyriologist Francesca Rochberg (2007), *Mesopotamian Cosmology in A Companion to the Ancient Near East*. In this study, the usage of mythological stories to attempt to answer such questions is justified by the fundamental role of the gods in their creational and transformational actions, signifying that it was not possible to think of the world as an independent structure from the gods. However, if, as supported by Rochberg, in the Mesopotamian culture gods were not specific places or beings but metamorphic entities, and therefore should not be strictly associated with an understanding and interpretation of the heavens, then there is no reason to restrict such an analysis to a search within a combination of Mesopotamian mythology with Mesopotamian astronomy/astrology sources.

[14] The order put forward through the word cosmos is one that beyond recognising the existence of the whole as an ordered entity denotes the quality of such order, as the term refers in particular to the beauty that emerges from the perfectly ordered (Brague, 2003, p. 19).

[15] However this reason, and as Cornford denotes, "[W]e shall find that if Plato's language is to keep any

substantial meaning, we must not ascribe to him either the belief in an omnipotent creator or the notion of natural law as a closed system of causes and effects. His Necessity is irregular and disorderly, and not inexorably determined, but open to the persuasion of Reason; and Reason has need to persuade her, not having unlimited power to compel" (1997, p. 36).

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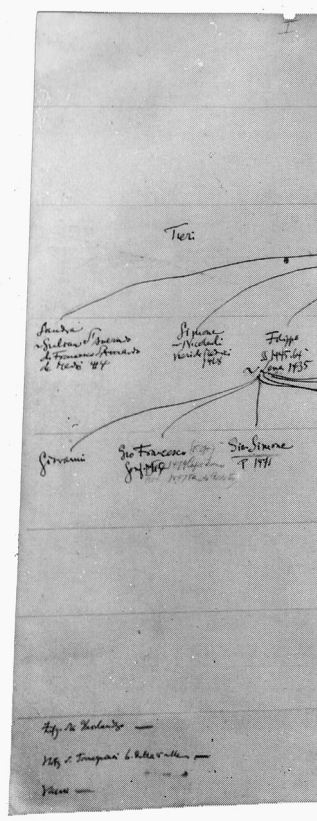
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