

## PRELIMINARY NOTES

Ces astres qui brillent sur la terre ont deux sortes de ciel que la nouvelle philosophie a appelé Alcôve ou Ruelle. L'un et l'autre ne composent qu'une sphère, et sont dans un même cercle que l'on appelle de Conversation. On ne laisse pas d'y distinguer les endroits et les zones froides, torrides et tempérées; mais il y souffle un vent qu'on appelle Déguisement qui rend les unes si semblables aux autres, que les plus habiles Astrologues n'en peuvent que très malaisément les distinguer et éviter la confusion. Mais quand nous n'aurions appris de ces nouveaux phénomènes que la certitude de ce dogme de Copernic qu'on a tant de peine à établir, je crois que toute la Mathématique leur est infiniment obligée de les avoir mis si nettement devant les yeux, comme les astres sont fixes et stables et comme la terre est mobile et agitée. On voit, mais clairement, dans une Ruelle, le mouvement de toute la terre; et trois ou quatre débiteront dans un après-midi tout ce que le Soleil peut avoir vu dans ses divers tours de différentes<sup>1</sup>.

In its themes and structure, the novel *La Precieuse* clearly belongs to the category known as 'courtly literature', typical of French drawing rooms in the 17<sup>th</sup> and 18<sup>th</sup> centuries. What characterizes the courtly style is its subtle decoding of the linguistic and the extra-linguistic through interaction between the means of communication and the structure of society.

In the defined space of the *alcôve*, conversation appears as an operation that sets out a place, just as a circle generates a sphere, and with it a system of shapes that map out space (thinking of Hobbesian or Spinozian geometry, for example). We are no longer dealing with a mathematical entity and its *a priori* properties, even within an actual pre-established cosmological order.

<sup>1</sup> Abbot Michel de Pure, *La Précieuse ou le mystère des ruelles. Dediée à telle qui n'y pense pas*, Paris, Lamy (avec Luyne et Sercey), 4 voll., 1656-1658. Modern French critical edition by É. Magne, Paris, STFM, Droz, 1938-1939, 2 voll., I. t., p. 66.

It is rather an instrument for the creation of a new order of hypotheses, starting from the possible: from what can be thought, and so said.

These disguised *pensées* that flutter there, as undiscernible centres of force, move a kind of ‘Copernican revolution’ in the production of knowledge, compared with human logic, in the sense of logic aimed at a merely purpose-related model of knowledge. Obviously, the *rouelles* were well protected from the natural light that lit up the *Regulae ad directionem ingenii* discourse wants to reveal something else, something perhaps hidden from its own creator, creating a crossing point of ideas for new knowledge. Here there is no intention to look into how the seduction of *alcove* took the place of the obvious, closing the curtains that had been opening onto the front covers of the treatises of the previous century; rather, what is interesting about this small excerpt is that it can be shown how the connection between discourse and construction of a universe is a requirement, rather than just a theme, that has characterized philosophical thought from its beginnings.

This volume of *Azimuth* has as its aim the examination of the relationship between cosmology and *ratio*, and will be looking in particular at the Renaissance, opening the way through to the contemporary age.

What supports the conformity between the definition of a world, understood as a uniform, homogeneous, coherent system, and the logical and narrative character of our description of it as such, is a connection that is logical and at the same time dialectical. Any way of thinking about the world, whether in a metaphysical or epistemological or phenomenological sense, consists, since it is a way of thinking, in an explanation and setting out of an object first understood and later ‘invented’ *cum discursu*, according to specific logical and descriptive categories.

The co-structural belonging of the concept of the cosmos to its intrinsic narrative dimension is stated right from the beginning in the *Book of Wisdom*, in which it is declared that «God has set up every thing according to its size, number and weight» (Wis. 11, 21); thus it is possible to understand cosmology as a long series of descriptions, but above all of creations and re-creations of the world, which allow us to distinguish only partly, and only notionally, between naturalistic and theological discourse or between the metaphysical and the imaginary. Returning to ‘the light’ of observations, we would like to give an account here of how the conformity of the two fields is characteristic of both the neo-platonic tradition and the more strictly Aristotelian one, through a few examples.

First and foremost, here we should remember the influence of Cusano, thanks to whom ideas like the relativity of the Earth’s movement or the ac-

ceptance of reduction by approximation began to take root in philosophical and in mathematical thought (thanks also to the new edition of Euclid's *Elements* revised by Luca Pacioli in the *Summa de Arithmetica et Geometria* in 1494, or again in *De divina proportione* in 1509, illustrated by Leonardo da Vinci). The list of authors worth bearing in mind is endless: Purbach, *Theorica nova planetarum*, 1454; Regiomontano, *De triangulis omnimodis*, 1464; Cardano, *Opus novum de proportionibus*, 1570 (who was himself preceded by Giordano di Nemi, Albert of Saxony, Thomas Bradwardine, William of Ockham, Nicola Oresme, Richard Swineshead, Biagio da Parme), and so on all the way to Galileo at least, and Bruno along the way, and earlier still Copernicus and the criticism of him by Osiander: the direction being followed was a purging of Aristotle's metaphysics and physics, tied to the quality of elements and their intrinsic properties, in favour of the introduction of mathematics in practical techniques. Astronomy, irrigation, ballistics, hydraulics, metallurgy and perspective were to become horizontal homogeneous applied sciences governed by theories springing from possible hypotheses by means of the reduction of space to units that could be measured, represented, understood and joined up.

Let us dedicate a few extra lines to the famous but complicated issue that led Kepler to write up his defence of Brahe *contra Ursum*: his accusation against the Danish astronomer, though he recognised the 'mechanical' validity of his work, aimed mainly at discrediting his competence as a grammarian and mathematician, on the basis of his inability to measure things, no matter whether they were the syllables in a line of verse or the distances between stars. Below are a few lines from the poem that begins the *De astronomicis hypotesibus*<sup>2</sup>:

At contra vate metior omnis ait,  
 si modo ritememor servata remetior astra:  
 metire astra Tycho, ne metiaris ea.  
 Metiri se quemque suo modulo ac pedem verum est.  
 Tycho etiam modulo tu metiare tuo.  
 Cur metiaris ais? Cur syllaba langa brevis fit?  
 Admirandus inest huic modulo modulus.  
 Qualis gramaticus, talisquoque es arte poeta.  
 Arte poeta miser, gramaticus malus

Kepler, refraining from such spectacular antagonism, emphasizes that by means of his deduction of polyhedrons it is possible to get examples of how

<sup>2</sup> R. Ursus, *De astronomicis hypotesibus seu systemate mundano tractatus astronomicus & cosmographicus*, Praga Bohemorum 1597.

God uses quantities (the *Curbum* and the *Rectum*) so as to create the world. About that claim, Marion in his *Théologie blanche*<sup>3</sup> emphasizes the remark «loquimur humano more, ut homines intelligamus», identifying in it proof of an effort to show correspondence between divine and human thought.

Quoting from *Mysterium cosmographicum*:

Corpus erat id, quod initiò Deus craeuit [...]. Dico quantitatem Deo fuisse propositam: ad quam obtinendam omnibus opus fuit, quae ad corporis essentiam pertinent [...]. Cum igitur Idaeam mundi Condidor animo praeconceperit (loquimur humano more, ut homines intelligamus). Atque Idaea sit rei prioris, sit verò, ut modò dictum est, rei optimae, ut forma futuris operis et ipsa fiat optima<sup>4</sup>.

To end this little selection of texts with the «light-heartedness» it was opened with, let us remember a particular passage among the infinite curiosities brought together in one of the most eclectic texts capturing the spirit of the 17<sup>th</sup> century, *The Anatomy of Melancholy* by Richard Burton:

The whole world belike should be new moulded, when it seemed good to those all-commanding powers, and turned inside out, as we do haycocks in harvest, top to bottom, or bottom to top: or as we turn apples to the fire, move the world upon his centre; that which is under the poles now, should be translated to the equinoctial, and that which is under the torrid zone to the circle arctic and antarctic another while, and so be reciprocally warmed by the sun: or if the worlds be infinite, and every fixed star a sun, with his compassing planets (as Brunus and Campanella conclude) cast three or four worlds into one; or else of one world make three or four new, as it shall seem to them best<sup>5</sup>.

The contributions brought together in this volume of *Azimuth* give us the latest thinking on some theoretical issues at the root of the history of philosophical and cosmological thought. Yael Nazé examines four different methods, from ancient times until today, of constructing a cosmological theory. Her article *Structure de l'univers. Quand l'observation guide la théorie... ou pas* brings out the distinctive and innovative features of each of them. Jonathan Regier's article *A perfect knowlwdge is a finite world*, centred on

<sup>3</sup> J. L. Marion, *La Théologie blanche de Descartes*, Paris, PUF, 1981, pp. 178-203.

<sup>4</sup> Johannes von Kepler, *Mysterium Cosmographicum de admirabili proportione orbium coelestium*, 1621, cap. 2.; Kepler confirms his position in *De Quantitate*: «Et horum principiorum plura sunt in mathematica, quam in aliis contemplationis scientiis, propter ipsam intellectus humani naturam, quae videntur talis esse lege creationis, ut nihil nisi aut quantitates, aut per quantitates perfecte cognoscere possit»; in *Johannis Kepleri, Opera Omnia*, 8 voll., Frankfurt am Main, 1658-1671, vol. 8, p. 148.

<sup>5</sup> Robert Burton, *The Anatomy of Melancholy*, 1621, lib. II, sez. 2, mem. 3: *Air rectified. With a digression of the Air*.

Kepler and the influences on him, clearly illustrates the oneness of measurement and knowledge, and his disagreement with Bruno's concept of the infinite. Michel Blay asks the question *Copernic est-il copernicien?*, and answers it by illustrating, by Copernicus's operation of embodying the Earth in a sphere, the application of a theoretical model starting from the observing subject rather than the object observed.

Nunzio Allocca takes up Italo Calvino's thinking about contemporary science, often accused of seeing nature only as an object to transform or smash up. The article *La luna e il libro della natura. Su Italo Calvino e l'eredità di Galileo* brings together the accounts of the Italian writer's efforts towards reconnecting mytho-poetical language to the language of science. The Cartesian use of *fabulatio*, i.e. the reconstruction of the world through a pseudo-literary account, far from being a mere rhetorical device, is described and examined in Simone Guidi's article *La favola della materia. Epistemologia e narrazione nel Monde di Descartes* as having an epistemological function.

Martine Pécharman grapples with another approach, Pascal's. Moving from thoughts on the definition of a primitive term like *temps*, in *L'idée du tempest letemps universel chez Pascal*, she comes to the position of the individual as the mid-point between the infinite and the infinitesimal.

This volume ends with the contemporary philosophical issue of talking about the world. In particular, Bruno Leclercq and François Dubuisson, in *Le monde tient ses formes du langage. Wittgenstein et le tournant linguistique imprimée à la Critique de la Raison Pure*, illustrate Wittgenstein's linguistic turn, or the need to bring things back to ordinary language so as to get away from the deceptiveness of Kantian transcendental categories.

Hoping you enjoy the read, we invite you to look forward to the next issue of *Azimuth*, due in March 2015, dealing with *Rethinking Exchange. Itineraries through Economy, Sociology and Philosophy*.

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