

Vlad Alexandrescu, ed.

Branching Off: The Early Moderns in Quest for the Unity of Knowledge.

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This collection of essays addresses the topic of the unity of knowledge by analyzing early modern ways of organizing and systematizing knowledge and by bringing to light the complex interactions between the different traditions which contributed to the making of modernity.

Part 1, 'Faces of Knowledge', opens with a treatment of *mathesis universalis* by Nathan Smith, 'Mathesis, Mathematics and Method in Descartes' *Regulae*: A Reprise'. Smith depicts knowledge as the result of a mathematically-inspired method applicable to all subject-matters. Contra Jean-Paul Weber (*La constitution du texte des Regulae*, Paris 1964) and John A. Schuster ('Descartes's *Mathesis Universalis*, 1619-28', in S. Gaukroger, ed., *Descartes: Philosophy, Mathematics and Physics*, Sussex 1980, pp. 41-96), Smith shows that Descartes' *Rules* were written around 1624 when Descartes was frequenting Mersenne's circle in Paris. He contends that an interpretation of *mathesis* has to stand on its own merits and recommends placing this concept in a broader historical perspective, by looking at its uses both before Descartes (emphasizing its Renaissance uses) and after (all the way to Husserl and Heidegger).

Next, using Descartes' vortex hypothesis, in 'Théorie de la science et physique chez Descartes' Elodie Cassan maintains that neither Descartes' emphasis on deduction nor his use of 'hypotheses' undermines his scientific realism. Although planet earth does not change its vicinity to other bodies and thus cannot properly be said to move, it is transported by the fluid heavens. Grounded in features of corporeal nature such as fluidity (the feature of bodies with parts always in movement) and solidity (the feature of bodies with parts at relative rest), this 'hypothesis' purports to reveal things about the real, visible world.

According to Vlad Alexandrescu in 'The Double Question of the Individuation of Physical Bodies in Descartes', despite doing away with the matter/form schema, Descartes is not stuck with a homogenous, continuous world but rather devises two ways of individuating bodies. The Cartesian pure intellect employs the concept of surface to pick out stationary bodies by way of algebraic description. Dynamic unities are differentiated by means of the notion of relative motion. This process requires the cooperation of the imagination and the senses, alongside the intellect; it is also dependent upon observation and systems of reference.

Roger Ariew ('Descartes and Leibniz on the Principle of Individuation') compares Leibniz's and Descartes' positions on individuation and traces them back to Scholastic positions thus diminishing their claims to originality. Ariew identifies three Leibnizian views on individuation: the whole entity (in the 1663 *Disputatio Metaphysica de Principio Individui*); the substantial form (in his 1668 treatment of transubstantiation); and his mature view, according to which there is no principle of individuation since all properties are essential to the identity of a thing. For Descartes bodies are individuated by similarity of dimensions, informed bodies by the same soul.

In 'Descartes and the Internal Senses: On Memory and Remembrance', Lucian Petrescu aims to remedy the relative neglect in Cartesian scholarship of Descartes' physiological writings by comparison with his metaphysical and physical works. Petrescu takes the issue of memory as a focal point for properly treating the relation between these three areas of Cartesian thought. Descartes' physiological treatment of memory is mechanistic (and thus based on assumptions about matter and its laws) but also intersects with his metaphysical account of psychosomatic interaction.

According to Stephen Gaukroger ('The Unity of Knowledge: Natural Philosophical Foundations of Spinoza's Politico-theology'), Spinoza intended to reduce not just natural philosophy but also religion, morals, law and politics to foundational basic mechanical principles which are self-evident and clearly and distinctly perceived. Spinoza's enterprise is based on a metaphorical exploration of Descartes' claims that the quantity of motion in the universe remains constant although differently distributed, and that the laws governing this distribution are eternally true. Gaukroger thinks that Spinoza's system crumbles because its foundational principles are mistaken and it lacks an adaptive feedback feature. A more piecemeal, one-off type of inquiry (such as Boyle's pneumatics and Newton's chromatics) is seen as standing a better chance of success.

In 'Leibniz, Theology and the Mechanical Philosophy', Daniel Garber argues that alongside his commitment to mechanism Leibniz attributes to God the role of efficient cause in the 1660s and that of final cause starting with the 1670s. In the late 1670s bodies are characterized as having a kind of soul, and particular phenomena are explained exclusively by general mechanical laws demonstrated from the wisdom of God. Starting with 1695, Leibniz holds that everything in the world can be explained not only by efficient causes but by final causes as well. These parallel explanatory structures are seen by Garber as a speculative program for natural philosophy, grounded in a metaphysical vision rather than in detailed argument.

Sorana Corneanu ('Locke on the Study of Nature'), reads Locke as a proponent of natural histories and the experimental method. Locke rejects the use of hypotheses aimed at uncovering the hidden nature of things since (like his contemporaries Walter Charleton, Joseph Glanvill, Thomas Sprat and Robert Hooke) he opposes speculative system-building at the expense of observation and experience. Formulating such hypotheses

represents a failure of the human intellect due to laziness, haste and impatience. Locke's chain-of-being ontology accounts for the limited and error-prone human faculties. Carefully circumscribing inquiry to the realm of experience brings us closer to God, so the counterpart of Locke's natural historical method is an act of natural religion.

The second part of this book, 'Mapping Knowledge and Traditions', opens with Massimiliano Savini's look ('La *Panacea Philosophica* de Johann Heinrich Alsted: un projet architectonique d'accès au savoir') at Alsted's plan for the creation of a new encyclopedia in his *Panacea Philosophica*. Seen as an important step in the development of ontology in modern times, the *Panacea* is similar to other projects of this time, but it is also original by combining Lullist, Ramist and Aristotelian influences and by seeking to articulate the totality of disciplines in a unitary way.

In 'The Fascination of Solomon's House in Seventeenth Century England: Baconianism Revisited', Dana Jalobeanu accounts for the popularity of Bacon's *Sylva Sylvarum* and the *New Atlantis* in terms of the efficacy of Bacon's model for communicating knowledge. The *New Atlantis* contains a presentation of this model (and of Solomon's House, the ideal community to which this model gives rise) and shows how this theory is supposed to work in practice. Bacon's views functioned as a model, ideal, and permanent reference for evaluating the development of science in the 17th century.

Next, in "'Toute hyperbole tend là, de nous amener à la vérité par l'excès de la vérité, c'est-à-dire par la mensonge": les parcours hyperboliques qui amènent à la vérité de Balzac à Descartes', Giulia Belgioioso traces the Cartesian notion of hyperbolic doubt to French man of letters Guez de Balzac, who had transformed the traditional rhetorical hyperbole into a methodological tool for seeking truth by means of an excess of lies. Descartes' reference in Meditation VI to the doubts of the last few days as 'hyperbolic and ridiculous' is a Balzacian technical expression indicating that the doubts of Meditation I do not extend to the conduct of life and are thus not that serious after all.

Igor Agostini ('Caterus on God as "ens a se"') maintains that the Cartesian view of positive divine aseity was criticized by Caterus not for its original and unheard of character but rather because it was an attempt to resurrect a view that had already been shown to be untenable (since involving a contradiction). Rejected by Suarez, the view that God makes Himself finds some support in the works of Lactantius and Jerome, and is explicitly defended by Taurellus. Although Descartes himself claims he knew nothing of Taurellus' position, later in the 17th and 18th centuries Descartes, Taurellus and Lactantius' views are all criticized together.

In 'Descartes and Henry More on Living Bodies', Justin Smith takes differences over the nature and causes of life as the main reason why, despite More's enthusiasm, no real dialogue took place between More and Descartes. Blood or the 'spirits' concocted from the blood are the principles of life, but for Descartes they are purely corporeal while

for the Neoplatonist More they are both material and immaterial. This mixed character, considered by Descartes as a flaw in More's account, allows More's spirits more easily to meditate between mind and body and to account for their interaction.

In 'The Scientific Journals of the Seventeenth-Century: Cartesianism in *Journal des Sçavans* and *Philosophical Transactions*, 1665-1670', Mihnea Dobre shows that Cartesianism has the same comparatively weak presence in the first five years of the first philosophical journals of the 17th century. Though new editions of Descartes' works get prompt review, few works appear by Cartesians or on Cartesian topics. The place Descartes had hoped for his system was not achieved because the *Journal des Sçavans* had an insufficiently disciplinary or methodological focus, while *Philosophical Transactions* aspired to consolidate the scientific program of the Royal Society via natural histories.

Eric Lewis ('Sir Kenelm Digby and the Weapon Salve in Seventeenth Century England') deals with Kenelm Digby's modernization of Paracelsus' recipe for remotely curing the wounds of a victim when applied to the offending weapon. Digby provides a mechanistic explanation of the weapon salve: the vapors all objects emit join to a warm body of the same kind they might happen upon. If some medication is also encountered along the way, these vapors will apply it to the wound more efficaciously than a surgeon.

In the book's last essay, 'Leibniz and Locke on Real and Nominal Essences', Brandon Look compares and contrasts Locke and Leibniz's nominalist positions on natural kinds. For Locke there are no genuine divisions in nature, since individuals are classified according to sortal terms and these sortal terms are just our mind-dependent abstract ideas. By contrast, there are gaps in Leibniz's world: natural kinds are the results of the strivings of possible individual essences and God's free choice of one world over others—although all sets remain within the divine understanding.

To conclude, this anthology presents the unity of knowledge as overarching systems of knowledge based on fundamental principles and as tightly connected disciplines. In Descartes the cognizing mind engenders a single method for all science; the emphasis is on the manner in which unity is achieved. Spinoza identifies the origin of unity in a set of mechanical principles, from which the whole system unfolds deductively. In Descartes, Leibniz and Locke natural philosophy ties in with metaphysics, ontology, physiology, and/or theology. Finally, this anthology portrays modernity as the result of the intersection, collision and mingling of Aristotelian Scholasticism, Lullism, Ramism, Neoplatonism, mechanism, experimental philosophy and Cartesianism. The volume lives up to the editor's hope of proving the fruitfulness of a history-of-ideas-approach to modernity, and it is a welcome addition to the literature on the early modern period.

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