DAVID DERODON, GEORGE-LOUIS LESAGE AND THEIR ORTHODOX ATOMS. IS THERE A CALVINIST WAY TO THINK ABOUT MATTER?

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Sunto

Gli studi storici hanno dimostrato che i protestanti del XVII secolo avevano un'affinità elettiva con le teorie atomistiche, dovuta alla loro posizione conflittuale con il dogma cattolico della transustanziazione. Ma c'è qualcosa in più nel *modo di pensare* implicato dall'atomismo che abbia attratto i pensatori protestanti? E più precisamente i teologi calvinisti? Utilizzando l'opera del teologo riformista David Derodon e la sua successiva rilettura da parte del fisico ginevrino Georges-Louis Lesage, questo articolo si propone di tratteggiare i contorni di un possibile «stile calvino-atomista» derivante dall'incontro tra atomismo e teologia calvinista. Al di là della controversia sulla «presenza reale» di Cristo nell'Eucaristia, è la questione più generale del rapporto tra Dio e la sua Creazione a governare la configurazione di un atomismo «ortodosso».
Parole chiave: atomismo; Calvinismo; teologia riformata

Abstract

Historiography has shown that seventeenth-century Protestants had an elective affinity for atomic theories because of their conflict with the catholic dogma of transubstantiation. But is there something more in the 'way of thinking' that atomism entails that appealed to Protestant thinkers? And more precisely to Calvinist theologians? Using the work of Reformed theologian David Derodon and its subsequent re-reading by Geneva physicist Georges-Louis Lesage, this article aims at sketching the outlines of a possible

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«Calvino-atomist style» arising from the meeting of atomistic and Calvinist theology. Beyond the controversy over the 'real presence' of Christ in the Eucharist, it is the more general question of the relationship between God and his Creation that governed the configuration of an 'orthodox' atomism.
Keywords: atomism; Calvinism; reformed theology

Something peculiar was happening in 18th-century Geneva. Alongside a highly phenomenological naturalism obsessed with measurement, embodied in particular by Horace Bénédict de Saussure, a second scientific tradition was developing: a highly speculative corpuscular physics, focused on finding 'first causes', in particular those of gravity [Sigrist, 2004, p. 102; Sigrist, 2011, p. 178-82]. In a tightly knit network of personal and family relations, scientists like George-Louis Lesage d'Aubigné (1676-1759), Gabriel Cramer (1704-1752), Jean Jallabert (1712-1768), Jean-Adam Serre (1704-1788), Jean-Louis Calandrini (1703-1758), Pierre Prevost (1751-1839) and Jean-André Deluc (1727-1817), and before them the Genevan Nicolas Fatio de Duillier (1664-1753), who left for England, defended, at one time or another in their careers, corpuscular explanations of gravity based on an atomistic conception of matter[1].

Among these scientists, George-Louis Lesage (1724-1803), son of George-Louis Lesage d'Aubigné, is the best known and most widely dis-

[1] Since the XVII[th] century, the scientific community in Geneva overlaps almost completely that of the «patriciens» (the gentry governing the city) and that of the calvinist clergy. A handful of powerful families (Turrettini, Trembley, Fatio...) hence controls simultaneously the political, scientific and religious fields of the city [Montandon, 1975; Bert, 2018a]. All aforementioned physicists studied at the Academy, a school founded by Calvin to train Calvinist ministers, and some of them share family ties (Jean Jallabert married Nicolas Fatio's great-niece, Jean-Louis Calandrini's sister married Fatio's nephew). Before Lesage, corpuscularian views have been mostly exposed in philosophy courses and in student thesis. The later were often written by the teacher and defended by the student during a public exam [Borgeaud, 1900, p. 556]. In this way, Jallabert defended in 1731 a collection of *Theses Physico-Mathematicae de Gravitate* under Cramer's supervision, in which a corpuscular theory of gravitation is exposed. Cramer's theory can also be found, in a somewhat amended form, in a 1750-51 philosophy lesson («Sur la nature de la Pesanteur», Bibliothèque de Genève (from now on abbreviated as BGE), Ms. fr. 2017. Notes taken by Jacob Francillon and copied by Lesage). Jean-Adam Serre, later known as a musicologist and miniature painter, defended a similar thesis in 1727 under Jean-Louis Calandrini. Prevost and Deluc, George-Louis Lesage's students, exposed their master's theory in several published works (among them: Prevost and Lesage, *Deux traités de physique mécanique* (Paris, Genève: J. J. Paschoud, 1818) ; Prevost, *De l'origine des forces magnétiques* (Genève: Barde, Manget, 1788), Jean-André Deluc, *Introduction à la physique terrestre* (Paris: Veuve Nyon, 1805)). Lesage's father, George-Louis Lesage d'Aubigné, also expounded a similar mechanism in several popular treatises (notably, *Cours abrégé de physique* (Genève: Fabri & Barillot, 1732)). Lastly, Fatio developped his own corpuscular theory from 1684 to his death in unpublished manuscripts, which circulated in the Genevan circle (see Zehe,1980).

cussed[2]. His unfinished work is of interest to historians, since Lesage spent a large part of his life listing and documenting the theories explaining the causes of gravitation. His aim was to compose a masterly «Critical History of Gravity», which he felt was a necessary preamble to the exposition of his own theory. He paid particular attention to corpuscular explanations inspired, like his own, by Lucretius' poem. In his work as a historian, always supported by a physical interest, Lesage becomes a valuable ally in tracing the influences of atomism in Geneva. Some of Lesage's scattered notes point in a direction where theology is central. In 1802, at the end of his life and still in search of additional "material" for his great work, Lesage placed a small advertisement in the *Feuille d'avis de Genève*: «Lesage, living in the *grand'rue*, would like to buy, rent or borrow the following two books, printed in Geneva, in-8vo format, and especially the first one: Davidis Derodon, De Atomis, 1662 ; Nicolaï Hill, Philosophia Democritea & Theophrastica, 1619»[3].

Nicholas Hill (c. 1570 - c. 1610) is a well-known English atomist, but who is this David Derodon, whom Lesage presents elsewhere as a «famous dialectician, a clear & very subtle mind, free from many of the errors of his century (& who admitted the weight of Air, the Laws of Galileo, Inertia, & the Vuide)»[4]? Although he is generally missing from histories of atomism[5], he is known to historians of Protestantism in the French region of Dauphiné for his sulphurous reputation[6]. His reputation - at least in the Protestant world - earned him a mention in Bayle's *Dictionnaire* and in Senebier's *Histoire littéraire* [Bayle, 1715, p. 426-29; Senebier, 1786, p. 312-14]. As Lesage noted, he was also the author of a treatise entitled *De Atomis* published in 1661 in Nîmes, where he was teaching, and then in 1662 in Geneva. Lesage apparently went to great lengths to acquire this volume, as well as any other book by Derodon, since he wrote to one of his descendants living in Geneva, perhaps after his first advertisement had met with no success:

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[2] Historiography has focused mainly on his unusual archive of 35,000 playing cards, which Lesage used as an extensive file cabinet and which, it appears, took him so much time that he barely published anything during his whole long life (see in particular Bert, 2018a), and on his physics, which is often presented as a distorted version of Newtonian theory [Aronson, 1964; Chabot, 2003]. In addition, his pupil and scientific heir Pierre Prevost wrote an imposing biography [Prevost, 1805].

[3] All translations from Lesage and Derodon are ours.

[4] BGE, Ms. fr. 2012, Georges-Louis Lesage «Histoire de la pesanteur», file 7, playing card.

[5] Kurd Lasswitz quotes him briefly, but says that he is, like Caspar Wyss, a supporter of mathematical atoms, which, as we shall see, seems incorrect [Lasswitz, 1890, p. 500].

[6] The main source on Derodon's life remains Arnaud, 1871. On his philosophy, see de Gérando, 1847, p. 125-130.

> To Mr Derodon – Nouffer
> I am working on a book in which I intend to speak honourably of what was published by your famous ancestor David DeRodon, some of which I have seen, but others of which have escaped my research: I imagine, Sir, that you have some of them. If this is so: Could I hope from your kindness; to have communication of them, for a few hours? The one I am most interested in is entitled De Atomis; it was published in Paris in 1605[7], and in Geneva in 1662; in both cases in the format in 8°[8].

There is no indication, however, that Lesage finally got his hands on Derodon's *De Atomis*. His notes, taken on playing cards, do reveal, however, that he read with great attention the theologian's *Philosophia Contracta*, published posthumously in Geneva in 1664. The third part of this philosophy course is, as tradition dictates, devoted to physics, and Lesage was delighted to find an exposition of atomistic physics in it. Derodon entertains a second connection with the Genevan atomists. He was the teacher of the theologian Jean-Robert Chouet (1642-1731), who introduced Cartesianism to Geneva [Heyd, 1982]. A professor of philosophy at the Académie, Chouet adopted Cartesian corpuscularism after having embraced for a time Derodon's atomism, and taught the famous Nicolas Fatio de Duillier (1664-1753), who, before Lesage, had also worked on a corpuscular theory of gravitation. Derodon also strongly influenced the theologian Caspar Wyss (1634-1668), who was also one of Jean-Robert Chouet's teachers.

However tenuous it may be, a thread runs between the Genevan atomists. A web of references, often theological, emerges and simultaneously raises the questions of place and confession in this atomistic adventure. Historiography has shown that the Eucharistic controversies between Catholics and Protestants encouraged Reformed thinkers to adopt the atomic theory, since it was fundamentally incompatible with the Catholic dogma of transubstantiation. In 1988, Lauge Olaf Nielsen put forward the hypothesis that the seventeenth-century atomist revival was marked by the Protestant stamp, through the works of Daniel Sennert (1572-1637)[9], David van Goorle (also known

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[7] Lesage added the following to the folio: «P:S. Since sending this Note, I have realised that the sentence, in Paris in 1605, was the result of a misunderstanding».
[8] BGE, Ms. fr. 2012, «Histoire de la pesanteur», file 7, loose leaf.
[9] *Epitome scientiae naturalis* (1618) et *De Chymicorum cum Aristotelicis et Galenicis consensu et dissensu* (1619).

by his Latin name of Gorlaeus, 1591-1612)[10] and Sébastien Basson (c. 1580-?)[11], who all published independently in the short period between 1618 and 1621 (Nielsen, 1988). To this trio can be added the Calvinist Isaac Beeckman (1588-1637), who did not publish anything about his atomism but developed it extensively in his scientific journal and in his correspondence with Descartes and Gassendi, among others[12]. Does this profusion of Protestant atomists reveal a deeper dynamic? This is the question asked by Christoph Lüthy in his article on Sébastien Basson: «Is Basson's atomism the consequence of his Calvinism, or *vice versa*» [Lüthy, 1997, p. 39]? In another study conducted with Cees Leijenhorst on several seventeenth-century Dutch atomists, he cautiously suggests that «there existed confessionally specific stimuli in favour of atomist metaphysics and physics, which were present in certain Protestant groups and clearly absent in Catholic circles» [Leijenhorst - Lüthy, 2002, p. 410].

The case of David Derodon invites us to explore the question further by extending a remark made by Pietro Redondi, who, in his atomist re-reading of the Galileo trial, mentions our very David Derodon as having converted «the ideas of Gassendi to Calvinism», in the same way that «Gassendi had converted the ideas of Democritus to Christianity» [Redondi, 1983, p. 349]. In what way is Derodon's atomistic philosophy, beyond the Eucharistic question, properly 'Calvinistic'? Is there a way of thinking, a scientific 'style' that is properly Calvinist, rather than Protestant, that would lead to the adoption of atomism?

In the first part, we will show that Derodon's atomism is indeed the result of a Calvinist affinity linked to the criticism of Catholic and Lutheran interpretations of the Last Supper. Then we will try to show that, in the light of Lesage's reading of Derodon, other more specifically Calvinist components – such as Necessitarianism and synthetic thought – underpin the idea of an «elective affinity» between Reformed thought and Democritean atomism.

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[10] *Exercitationes Philosophicae* (1620).
[11] *Philosophiae Naturalis adversus Aristotelem libri XII* (1620).
[12] Beeckman's scientific diary was found in 1905 by Cornelis de Waard, who edited it between 1939 and 1953 (*Journal tenu par Isaac Beeckman de 1604 à 1634*, 4 vol, The Hague, Nijhoff).

Atoms and Protestant orthodoxy

David Derodon (or De Rodon), born in Die around 1600, is a turbulent figure whose influence and legacy have long remained in the historiographical shadows and have only recently been the subject of initial exploratory work [Ragni, 2020; Sina, 2010].

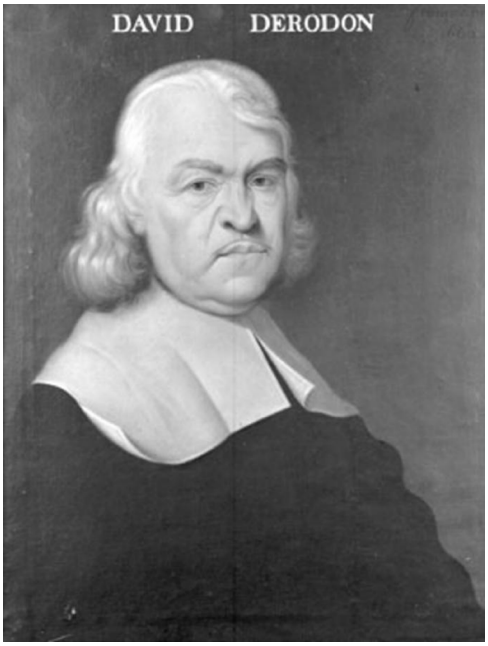

Fig. 1 - Portrait of David Derodon (unknown author, undated, on display in the Salle Bonivard of the Bibliothèque de Genève). Bibliothèque de Genève, inventory number 0143.

Very critical of scholastic physics, like his Dutch atomist counterparts Basson and Gorlaeus, Derodon nonetheless retained a certain loyalty to Aristotelian logic and a mastery of the peripatetic jargon and of the codes of the *Disputatio*. This did not prevent him, as Pierre Bayle wrote, from adopting «the feeling of the moderns and the hypothesis of atoms, to explain, like Gassendi, several effects of nature by mechanical principles» [Bayle, 1715, p. 426]. We shall see later that Derodon did not conceive of atoms in the same way as the French priest, but for the moment, let us remember that he professed the existence of 'physical' atoms. This distinguishes him, for example, from Caspar Wyss, a professor of philosophy in Geneva and also Jean-Robert Chouet's teacher, who theorised *mathematical* atoms without extension. To explain this position,

Michael Heyd wrote: «To assert the existence of physical atoms meant to posit extended entities which were indivisible even by God, an assertion which was clearly blasphemous. Mathematical atoms, by contrast, were not extended, had no parts, and were thus indivisible by definition» [Heyd, 1982, p. 120].

A first question arises: is it true, as Michael Heyd suggests, that supposing the existence of physical atoms, indivisible even by God, is «blasphemous»? A 'conventional' history of atomism has in fact equated this philosophy with atheism, claiming that «the materialism of Democritus as a principle in the interpretation of nature thus automatically led to an atheistic world-outlook» [Dijksterhuis, 1961, p. 12]. This solution might be tempting, given Derodon's sulphurous reputation and the theological controversies that pitted him against the companies of pastors in Nîmes and Geneva. But how can it be reconciled with the fact that Derodon was also a merciless opponent of atheism, whose «Protestant, anti-Papist, & anti-idolatrous zeal» was admired by the theologian Élie Saurin [Saurin, 1694, p. 871]? How can we also explain the fact that his course in atomistic philosophy, his *Philosophia contracta*, was published without a hitch in Geneva by Pierre Chouet, Jean-Robert's father?

This leads us to a second question, which is never addressed in biographical notes or studies of Derodon's philosophy: why and in what context does he use the physics of atoms? Where do we find the details of this physics and what purpose does it serve? Our thesis is precisely that Derodon's atoms are extremely orthodox, and that he cannot therefore be accused of being a blasphemous debaucher. On the contrary, Derodon's atoms are of great doctrinal help in refuting the Eucharistic doctrines of both Catholics and Lutherans.

Derodon: A Biographical sketch

Let's start by recalling a few facts about the man, his troubled career and his supposed taste for provocation. The son of Abel Derodon, a former member of the Consistoire of Die and fourth regent (teacher below the rank of professor) at the Académie protestante de Die, David Derodon studied philosophy in Sedan where, according to Redondi, he assimilated the lessons of Jean Mestrezat's critical text published in 1625, *Communion à Jésus-Christ dans le sacrement de l'eucharistie* [Redondi, 1983, p. 346]. He also studied theology in his hometown, and in 1618 began to stand in for his father as regent. As a young man, he was found guilty of «ordinary debauchery and dissoluteness», which

included «night runs» and writing satires. Removed from his position as regent at the Académie de Die as a result of these misdemeanours, he converted to Catholicism, joined the Jesuits in Vienne, only to return to the Reformed Church a year later [Arnaud, 1871, p. 341-44]. Although not commonplace, these troubles were far from exceptional in the Protestant academies of the seventeenth century, where many professors were dismissed for their taste for «luxury and pleasure» [Bourchenin, 1883, p. 374-76].

In Die, Derodon seems to have rubbed shoulders with Sébastien Basson, whith whom he shared a taste for atomic theories and insubordination. Basson was also a regent at the Académie where he also taught philosophy, but did not hold the rank of professor either. The joint presence of two atomists at the small Protestant university led Christoph Lüthy to wonder whether Basson's *Philosophia* were «the outgrowth of a local philosophical climate» [Lüthy, 1997, p. 58]. Lüthy answers in the negative, arguing that the philosophical environment and the content of the lessons given at Die were exactly the same as elsewhere. He does note, however, that Rodolphe Le Fèvre, second professor of philosophy from 1611 to 1620, showed a slight inclination towards a corpuscular conception of mixtures, although he remained absolutely faithful to Aristotle. Generally speaking, the Stagirite remained the reference in the reformed universities of the seventeenth century, and it was still his philosophy which served as the basis for the *Disputatio de Atomis* that Derodon wrote in 1661. Nevertheless, it seems that there was a Calvinist climate favorable to corpuscularian theories.

After a somewhat turbulent career in Die, Derodon became professor of philosophy in Orange in 1639 and then in Nîmes in 1654 - where the young Jean-Robert Chouet was his pupil. He made a name for himself with a series of polemical writings against Lutherans, atheists, astrologers and, above all, Catholics. One of his books, *Le Tombeau de la Messe* (Nîmes, 1654), led to him him to exile in 1663 when it was reprinted. In a context of increasing persecution of the Protestants, the book was publicly burnt and its author, banished from the Kingdom of France for ten years, found refuge in Geneva, where he died shortly afterwards.

Theological controversies: necessitarianism and God's action in the world

In his theological work, Derodon took a strong stance against the doctrine of *continual* or *continuous creation*, which Pierre Bayle describes in detail in his notice on the theologian:

> «un être tiré du néant par la vertu infinie du créateur ne peut avoir en lui-même aucune cause de son existence : il ne peut donc continuer d'exister que par la même vertu qui l'a produit au commencement : il est donc créé dans tous les momens de la durée ; c'est-à-dire il n'existe à chaque moment, qu'à cause que Dieu continuë de vouloir ce qu'il a voulu, lorsque cet être a commencé d'exister» [Bayle, 1715, p. 428-29].

This thesis of constant divine action, which was widespread among Catholics at the time, is found in particular in Descartes, for whom the objects of nature could not endure in the absence of a continuous creation by God. This position gave rise to the *occasionalism* of Malebranche and early Cartesians such as Louis de La Forge and Gérauld de Cordemoy, who attributed all action to God and none to creatures. God is the "one true cause" and creatures are merely occasions through which he acts. This position implies the idea of an 'immanent' God, almost merged with nature.

Calvinism, on the other hand, argues for the transcendence of the divine and its radical separation from the physical world. This is precisely the position defended by Derodon, who denies that «the preservation of creatures is a continual creation» [Arnaud, 1871, p. 356]. Things were created once and for all, according to rules laid down by a Creator who intervenes - almost - no more in the world. This leads Derodon to teach a more radical and controversial thesis, even in the Reformed world, about God's freedom in the act of creation. In his view, while God remained free in his actions, he was not completely free in his decision whether or not to create the world. The act of creation was, in his view, a 'necessary' consequence of his wisdom and divinity [Heyd, 1979, p. 527]. This teaching of a 'rationalist' and 'necessitarian' version of Creation is known to us from a letter that the young Genevan Jean-Robert Chouet sent to his uncle Louis Tronchin (1629-1705) in 1662, while he was studying with Derodon in Nîmes[13]. The Moderator of the Compagnie de Nîmes, Claude Bruguier, taught an even more radical version. For him, God had no freedom over all his creative acts, and not just over the initial decision to create: God could not have made a world different from this one, because he could only create a world adapted to his divine perfection [Heyd, 1979, p. 528]. Although he did not go so far, Derodon nevertheless taught that God's creative power was limited to the actualisation

[13] BGE, Arch. Tronchin 47, f. 25.

of possible entities. For example, God could not create a «fire that does not heat», or «a non-rational man», because these would present a contradiction in their essence [Heyd, 1979, p. 534]. Derodon thus explained that essences, as possible beings, were co-eternal with God. Here we find a sort of echo of the medieval 'problem of universals': does a concept with a universal character, i.e. one that transcends the particular object (the concept of 'sphericity', 'the animal', etc.), have an existence 'in itself' (in the real world or in a world of ideas, which would be a realist position) or is it merely a convention of language (nominalist position)?

This position was heterodox enough for the Company of Pastors in Geneva to forbid Derodon to teach theology, when he came to the city in 1663, and to allow him to «teach only pure philosophy without any mixture of theology»[14]. This warning does, however, give an idea of what would be tolerated without hindrance: Derodon's philosophy, and therefore his atomistic physics. The course was published in Geneva in 1664, the year of his death, under the title *Philosophia Contracta*. In the third volume, *Physica*, Lesage found this detailed exposition of orthodox atomism. Influenced by contemporary neo-atomism and the Aristotelian tradition, the theologian described matter as an assembly of the four elements, themselves made up of atoms of different shapes, sizes, movements and arrangements. But he suggests that all atoms are made of the same essence: the differences between elements arise from differences in the arrangement, movement and shape of the atoms [Derodon, 1664, p. 18-19]. The «effective cause» of this primary matter of which atoms are made is obviously God [Derodon, 1664, p. 8]. He also explained, in the ancient atomists' fashion, the origin of sensible impressions by the combination and contact of corpuscles [Derodon, 1664, p. 193-205]. His atomism was therefore a 'physical atomism', which led him to reject the concept of 'mathematical atoms' with both logical and mathematical arguments [Derodon, 1661, p. 19].

Although Derodon's teaching in Geneva remained confined to the private sphere, it enjoyed a certain reputation. Vincent Minutoli (1639-1709), Pierre Bayle's Geneva correspondent, reported that the doctor and scholar Jacob Spon (1647-1685) «had the advantage, in addition to the ordinary teachers who were Mr Puerari and Wys, of being able to study under the famous Mr de Rodon, who having recently retired there lived as a private man, and

[14] *Registre de la Compagnie des pasteurs* (1661), cit. in Arnaud, 1871, p. 361.

what was considerable was that this same Mr de Rodon was the one who had taught philosophy to Mr Spon the father»[15]. Jacob's father, Charles Spon (1609-1684), also a doctor and scholar, was in 1625 and 1626 «in Paris, table companion and disciple of the famous philosopher Mr Derodon»[16]. In his eulogy for Charles Spon, Pierre Bayle wrote that Derodon «was a great master. [...] Everyone knows the reputation that M. de Rodon has acquired among Protestants, having taught philosophy in Die, Orange or Nîmes»[17]. Let us also mention the French pastor and theologian Elie Saurin, who met Derodon in Geneva in 1664: «I often discussed various matters with him, and I always found him perfectly orthodox» [Saurin, 1694, p. 867].

After his death, the volumes of the *Physica* were published without a hitch by Pierre Chouet (1610-1676), father of Jean-Robert, whose family had published the complete works of Calvin in 1617 and had a contractual partnership with the Academy [Borgeaud, 1900, p. 409]. Louis Tronchin, then rector of the Académie, even wrote the preface, which was ultimately not published. On the surviving draft, he «praised the philosopher's talents and the usefulness of his work for theology», and stated that Derodon «had wished to give one last testimony to his orthodoxy, just before his death [...] to cut short prejudice»[18]. There is no doubt about the theological validation of atomism in Geneva.

Eucharistic polemics: the atom as a combat sport

The orthodoxy of Derodon's 'physical' atomism vis-à-vis Calvinism must lead us to the question of its purpose. To do this, we need to look beyond his academic works, to a second category of writings mentioned above, but neglected in analyses of Derodon's physics: his polemical texts against Catholics. Written in French rather than Latin, they were aimed at a slightly wider, albeit erudite, audience. We can thus temper Gérando's description of Derodon as a scholastic 'school' writer cut off from the world [de Gérando, 1847, p. 125]. One might even go so far as to say that he was quite the opposite: an informed polemicist who used rhetoric and physics to defend his confessional

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[15] Letter from Vincent Minutoli to Pierre Bayle, Geneva, 15 February 1686. Available on http://bayle-correspondance.univ-st-etienne.fr/?Lettre-517-Vincent-Minutoli-a

[16] Letter from Jacob Spon to Pierre Bayle, Lyon, June-July 1684. Available on http://bayle-correspondance.univ-st-etienne.fr/?Lettre-297-Jacob-Spon-a-Pierre

[17] Pierre Bayle, «Éloge de Monsieur Spon le Père», *Nouvelles de la République des Lettres* (July 1684), p. 499.

[18] Cit. in Fatio, 2015, p. 175 (our translation).

views. As he states in the preface to *La Lumière de la raison*, a text against atheists: «je n'êcri pas tant pour les Grands hommes, que ce ne soit aussi pour les mediocres en sçavoir» [Derodon, 1665].

With *Le Tombeau de la Messe* (Nîmes, 1654), already mentioned, but also *Dispute de l'eucharistie* (Genève, 1655) and *Dispute de la messe ou discours sur ces paroles : Ceci est mon corps* (Nîmes, 1662), Derodon violently attacked the dogma of transubstantiation. As mentioned above, this was one of the favourite areas of confrontation between Catholics and Protestants in the sixteenth and seventeenth centuries. The way in which Derodon mobilises the atomist doctrine precisely in this debate seems be an appropriate way of reading his atomism. Let us look at his *Dispute de l'Eucharistie*. Right from the introduction, Derodon defines the doctrine of the Reformed Church:

> By consecration (which is nothing other than the blessing of the bread and wine by prayer or thanksgiving) the bread and wine are made sacraments and exhibitive signs to the faithful of the body and blood of Jesus Christ and of all his benefits; without the bread & wine being changed as to substance, but only as to use; & without the body & blood of Jesus Christ, being with, or in the bread & wine, nor under the accidens of these, far from having to be adored, sacrificed, & eaten by mouth. [Derodon, 1655, p. 1].

Derodon is opposed, firstly, to the «doctrine of the Roman Church» which holds that «by consecration [...] the bread and wine are transubstantiated, that is to say changed substantially into the body and blood of Jesus Christ, so that the substance of the bread and wine does not remain, but only their accidens» [Derodon, 1655, p. 2]. But he also opposes, when he specifies that the body of Christ is not found «*in* the bread», the Lutheran doctrine of 'impanation' which postulates the ubiquity of bodies and in this case the simultaneous presence of the bread and the body of Christ in the same space – a point refuted by the Calvinists [Leijenhorst, 2001]. Atomism, which is incompatible with the theory of ubiquity, thus enabled Derodon to challenge the Eucharistic doctrines of Catholics and Lutherans in one fell swoop.

His arguments, which are of course multifaceted, are developed on three levels:

- exegetical, by working on the meaning and translation of each word in the phrase «This is my body», where the verb 'to be' is said to have a

«real» meaning for Catholics, but only a 'sacramental' meaning for Calvinists;
- theological, on the meaning to be given to the Eucharist: a 'sacrifice' for Catholics, which Protestants consider to be one of the 'papist idolatries' and prefer to stick to the register of commemoration;
- and finally, physical, by working on the notions of 'place' and 'substance'.

While these angles of attack are recurrent in disputes between Protestants and Catholics, the physical dimension is not systematically present. Derodon devotes the entire first part of the book to the first two types of argument, which are relatively traditional, before getting to his physical demonstration. Still faithful to the Aristotelian model, he begins by demonstrating «that transubstantiation destroys the nature of accidents» [Derodon, 1655, p. 169-77] and that «qualities are substances or ways of being substances» [Derodon, 1655, p. 190-223]. He gradually incorporates corpuscular explanations into this scholastic dissertation, and the text eventually becomes a full-blown exposition of Gassendi's philosophy. In particular, he explains fluidity by the classical analogy of grains of sand, and the hardness of bodies by the fact that their parts «touch and press against each other in such a way that, since they remain closely united, they cannot move around each other». For Derodon, this union of the parts is due in particular to «the hooked figures of the parts, which cause the parts to unite so strongly that they cannot move one around the other». From this development, Derodon deduces that «firmness & fluidity depend absolutely on the close union & desunion of the parts; & consequently they are manners of being which cannot subsist in any way without a subject» [Derodon, 1655, p. 220].

This brings us back to the question of transubstantiation, which assumes that the accidents, the qualities, remain without substance, 'without subject', during the exchange of substances. Derodon's presentation shows that the qualities of fluidity and firmness derive directly from the arrangement of the particles that make up the substance, and therefore that replacing the substance with another does not preserve these qualities. He adds: «Since humidity is a kind of fluidity, [...] it follows that the fluidity and humidity of wine, and the firmness and dryness of bread, cannot be without the substance of bread and wine, even by divine virtue» [Derodon, 1655, p. 221].

In this debate on the origin and nature of the qualities of bodies, the question of the "mixture" occupies a crucial place: what happens to the qualities

of the elements that make up a mixed body? Where do the new qualities of the mixture, distinct from those of its components, come from? Aristotelian doctrine proposes to distinguish between 'actual' and 'potential' properties: the components of a mixture are no longer present 'in actuality', but only 'in potency'[19]. Derodon attacks this view by asserting that according to the atomistic view, the elements of the mixture remain present 'actually' at all time [Derodon, 1655, p. 350].

Derodon deals with the Lutheran doctrine of ubiquity in the same way. He refers to an argument he might have heard, according to which «At high noon, when the weather is calm, the air is completely illuminated, and the light of the Sun penetrates the air to such an extent that light and air are in the same place» [Derodon, 1655, p. 369]. To this proof that localisation is not an intrinsic and exclusive property of bodies, he replies «that there is an incredible quantity of small insensible voids in all parts of the world, & principally in the air; & that the small luminous bodies, of which the light of the Sun is composed, the small odoriferous bodies, the visible images of the corporeal objects, the small igneous bodies, etc. are stuffed in these small insensible voids of the air» [Derodon, 1655, p. 380].

Derodon uses the expression «the visible images of corporeal objects» to demonstrate his knowledge of the Democritean theory of vision, according to which *simulacra*, thin layers of atoms, detach themselves from objects to strike our eyes. He also adopted the corpuscular explanation of light, heat and odours, concluding that all these elements lodge themselves in the empty spaces between atoms, and that therefore «there is no penetration of dimensions, & that for this reason we are not required to place several bodies in the same place» [Derodon, 1655, p. 380].

He also devotes the tenth chapter to «objections to the position of one body in several places and several bodies in one place». The argument then becomes more theological, since the objections to which Derodon responds are based on Scripture. For example, the episode from the Acts of the Apostles where Jesus appears to Paul on the road to Damascus, linked together with the seemingly contradicting prophecy «that heaven must contain him until the day of the restoration of all things», is taken by Lutheran as a proof of Jesus' ubiquity. This time, Derodon quibbles over the precise description of the

[19] Aristoteles, *De Generatione et Corruptione*, X, 5. On this topic, see the seminal work of Anneliese Maier, in particular «The Theory of the Elements and the Problem of their Participation in Compounds» [Maier, 1982, p. 124-142].

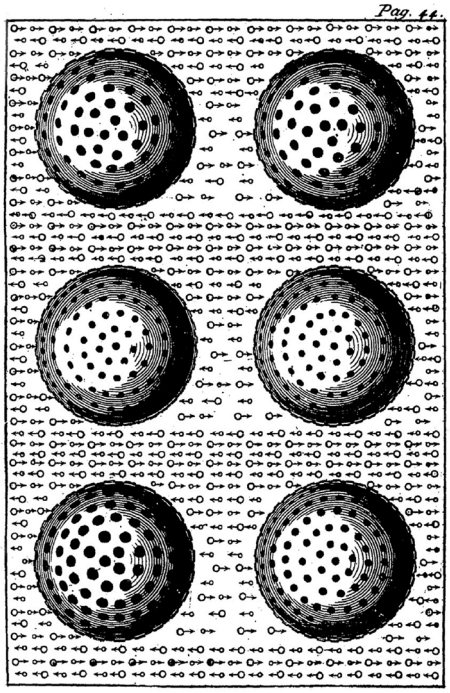

Fig.2 - Plate from Lesage's Essai de Chymie Méchanique (1758) illustrating his corpuscular mechanism responsible of both gravity and chemical affinities. Gallica.bnf.fr / Bibliothèque nationale de France.

apparition, arguing that Jesus manifested himself in the sky and not on solid ground [Derodon, 1655, p. 381-94].

It is by means of an atomistic explanation, even if the word is never used, that Derodon decides to attack the Catholic and Lutheran doctrines of the Eucharist. What used to be a matter of natural philosophy, the ancient debate on the structure of matter, is now mobilised in a doctrinal debate as it was the case with the Dutch atomists.

On the trail of a Calvinist atom

In order to go beyond this analysis of the adoption of atomism as a tool for defending the Calvinist interpretation of the Eucharist, we must try to clarify 'which' atomism Derodon was promoting. Reading Lesage's notes on his predecessor will be instructive in this respect. Lesage worked all his life on a causal, mechanical and corpuscular theory of gravitation. According to him,

gravity is created by the impulsions of thousands of «ultramondane corpuscules», subtle atoms moving extremely fast in straight lines and in all directions. Two bodies will be pushed towards each other because each will shield part of this hail of particles, giving the impression that the bodies are mutually attracted. Lesage's way of thinking is characteristic, since he advocated a science that was above all 'speculative', based on first principles postulated *a priori*, and more specifically based on a single cause from which the consequences of phenomena can be deduced 'synthetically'. It is within this framework that Derodon's philosophy finds troubling homologies.

And Lesage read Derodon

Lesage probably did not read Derodon until the end of his life. It is therefore impossible to attribute to this reading the direction that the physicist's work may have taken. Nevertheless, it is interesting to look at the few surviving reading notes, concerning the *Philosophia contracta* (Geneva, 1664) and the *Quaestiones physicae* (Orange, 1659), in order to get an idea of what Lesage finally found in this predecessor. Although there is nothing in his notes to indicate that he finally got his hands on the treatise *De Atomis*, we can assume that he would not have found it to his liking. In fact, *De Atomis* is a very detailed exposition of the arguments for and against atomism, but Derodon never expresses his personal view. The conclusion actually states that his opinion would be given in a future «dispute», but this one never saw the light of day [Heyd, 1982, p. 122]. In the *Philosophia contracta*, Lesage seems to have stopped, in particular, at the article «De Gravitate et Levitate», at the heart of his subject [Derodon, 1664, p. 104-10]. The part he found most striking was copied on the back of the same card on which he had written a short biographical note of Derodon:

> Il termine cet Article; par les mots suivans (contre le prétendu besoin d'une Déclinaison dans les routes des Atomes pourvû qu'ils fussent dirigés vers le Globe terrestre).
> Sine tali Declinatione ; possent Atomi, sibi invicem occurrere, & cohe-rescere. Quia ; cum moveantur recta è Coelo versus Terram ; moventur per lineas rectas continuo ad se invicem accedentes, & sibi occurrentes necessario antequam perveniant in Terram.[20]

[20] BGE, Ms. fr. 2012, «Histoire de la pesanteur», file 7, playing card, recto.

Derodon here refutes the supposed atomic 'swerve' – the Epicurean *clinamen* – which endows matter with a certain contingency. This idea seems to have been important to Lesage, since this extract is also copied onto a loose leaf and followed by this comment: «This article is entitled De Gravitate & Levitate. And in it he takes the most reasonable view on all points»[21]. Lesage is particularly pleased to note that Derodon, by relating Gravity «to some external Cause», does not endow matter with any intrinsic activity.

The search for causes is a central element of Lesage's scientific programme. Far from empiricism, he asserted that «natural philosophy is rather the science of Causes than that of Facts»[22]. Moreover, according to him, this search must be conducted *a priori* and in a speculative manner: first causes must be postulated and their consequences deduced by synthesis and compared with observed phenomena. In his *Lucrèce Newtonien*, Lesage explains that all the cosmological laws, like Kepler's, «could have been an easy consequence of the system of Atoms» [Lesage, 1784, p. 15]. These «synthetic demonstrations of the Laws of the Fall of the Grave», provided they are correctly carried out, are in his opinion superior to «analytical demonstrations, in which one would have based oneself solely on phenomena» – which is always possible, but «very difficult, because of the inevitable inaccuracy of this kind of experiment» [Lesage, 1784, p. 16–17]. Reasoning, on the other hand, by virtue of the Protestant *lumen naturale* which endows the human mind with the capacity to understand the world rationally on its own, guarantees the accuracy of the solution: «the consequences of the collision of Atoms would have been absolutely unequivocal in favour of the only true principle» [Lesage, 1784, p. 4].

It has been shown that the search for first causes had a certain Calvinist flavour in the sixteenth and seventeenth centuries. As Charles Lohr explains, Calvinist theologians «regarded *their science as essentially speculative* and […] took the glory of God and predestination as their point of departure. *Reformed dogmatics began with God as the first cause* and final goal of all things, and treated his eternal decrees of providence and predestination before taking up his government of the world in time» [Lohr, 1998, p. 374].

This attitude distinguishes them from the Lutherans, who started from the ends (for example, eternal beatitude) and worked their way back to the means put in place by God to achieve this, leading to the first principles. The idea of

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[21] *Ibid*., feuillet.
[22] BGE, Ms. fr. 2052a, «5e partie de mes propres réflexions. Anomalies» packet, playing card.

universal and systematic knowledge, deriving from a single first principle, thus became fundamental to Calvinist thought. François Laplanche has also shown that Derodon's apologetics fitted in perfectly with this seventeenth-century Reformed trend of «demonstrating faith». One of the characteristics of this «collective mentality» was precisely the «order of demonstration», starting with «truths that do not exceed the power of reason: the existence of God and his Providence, the Creation of the world, the immortality of the soul, the necessity of religion» [Laplanche, 1983, p. 50].

The possibility of an orthodox atom

George-Louis Lesage's reading of Derodon begins to point us in the direction of what might be a Calvinist way of thinking about matter. Not only is that atoms fit in this causal approach, it is *Democritean* atoms that are favoured. For what is at stake here relates to the profound problem of reductionism and its tension with the existence of contingent phenomena. As Chomin Cunchillos has suggested, three types of explanation can be offered:

1. everything is determined from the beginning and contingency is an illusion;
2. the origin is determined and «the appearance of these [contingent] behaviours is the product of the intervention of a force external to nature (extra-natural), which leads to a *supernaturalist finalism*», which Cunchillos describes loosely as the «Christian position»;
3. contingent behaviour exists, and «necessarily, it must be traced back to the origin, as Epicurus did», by placing contingency within the atom. The atom is no longer passive but an 'agent', a «focus of action capable of generating forces which, in turn, can change the state of motion inherited from previous situations» [Cunchillos, 1997, p. 361-363].

It is in this second attitude that lie the theological stakes of mechanism, as Keith Hutchison pointed out: «the mechanists' conception of matter as totally barren was used to offer a guarantee that supernatural activity was ever-present in the universe» [Hutchison, 1983, p. 207]. The third solution, an Epicurean one that would proceed from an integral naturalism, is the one rejected by most Christian thinkers. In a text against atheism, Derodon makes a virulent criticism of the Epicureans: he refutes the plurality of worlds, that «atoms, which with time by a fortuitous concurrence, have composed the world in the state it is at present», and that the world would exist from all

eternity [Derodon, 1665, p. 121-25, 104-105]. «Matter, therefore, not being an intellectual and free agent» [Derodon, 1665, p. 106], could not suddenly set itself in motion to form the world, when it had remained at rest for a finite or infinite time.

This position is echoed by Lesage, who writes in *Lucrèce Newtonien* that Epicurus «disfigured» Democritus' movement of atoms by assuming their perfect parallelism and introducing an internal declination of the atoms - the *clinamen* - to make their meeting possible. For both Lesage and Derodon, this capacity for action conferred on matter is a slope towards atheism, because it makes God superfluous. Lesage prefers Democritus' solution, which is ultimately simpler and more economical, of a movement of atoms that is «uniform in all directions». And it is indeed the «greater abstract simplicity» of the Democritus system that appeals to Lesage. The idea of an economy of laws is thus rooted in a necessitarian and rationalist vision of knowledge. As Lesage states, «it was impossible not to fall into these explanations; as soon as one wanted to press the *necessary consequences* of this system» [Lesage, 1784, p. 24-25].

Some Newtonians, such as Samuel Clarke, solved the problem of universal gravitation by postulating that it was the immediate action of God. The consequence of this postulate, which certainly avoids endowing matter with a capacity for action, is to make the divinity immanent and almost merged with its creation. This variation on 'continuous creation' is rejected by Derodon and Lesage. The latter insists that «the first-mover has acted on matter only once» and proposes to characterise accordingly his whole philosophy by the neologism of «semelgician»[23]. Moreover, in line with the doctrine of predestination, Lesage imagines that what looks like chance is in reality «very regular, in the eyes of the Supreme Intelligence», since everything «flows, by invariable laws, from a first disposition, in conformity with a certain Unity of plan»[24]. The resulting system is one of absolute determinism, in line with that advocated by Democritus.

It seems to us, therefore, that an analysis of Derodon's philosophy and its re-reading by Lesage, could enable us to identify a particular Calvinist way of understanding the world and matter. The stances took by the theologian from Die, in the philosophical and theological controversies he got meddled

[23] BGE, Ms. fr. 2053, sachet 9, playing card.
[24] *Ibid*., playing card.

in, makes it possible to locate him on one side or the other in the pairs of oppositions that structured the debate on ideas (necessitarianism/voluntarism; atoms/continuum; synthesis/analysis, etc.), a position that was perhaps still operative among the Calvinist atomists of the eighteenth century.

Style and thêmata

Does the atomism of Lesage, Derodon, but also of Nicolas Fatio and Pierre Prevost, conceal recurring patterns whose origins could be detected in a precise Calvinist theology? Dealing with the concepts of discontinuity, necessitarianism and synthesis, are we faced with Gerald Holton's *thêmata*, those «unverifiable, unfalsifiable, and yet not-quite-arbitrary hypotheses» at work in the genesis of a scientific theory - Holton places the theory above all else -, at once «constraining» and «stimulating» [Holton, 1975, p. 13]? Jean-François Bert has raised the possibility of pursuing this approach to «determine the place that religious beliefs play in the major philosophical presuppositions, transmitted by education, culture or traditional representations», and above all to «see how 'religious' *thêmata* are sometimes actively mobilised by scientists to produce scientific types of reasoning» [Bert, 2018b]. Could we then use the *themata* of divine transcendence, mechanical and causal action, or the primacy of deductive explanation, to explain the genesis of Genevan atomistics? Holton also refers to atomism as a particularly crucial *thêma* in the history of scientific thought «that has experienced a cycle of changing acceptability». For Holton, nobody ever accepted the experimental proofs of atoms, but rather «the thematic hypothesis of atomism» [Holton, 1975, p. 99].

Bert also asks: «Does belonging to a religion determine a *specific approach*, or explain the development of a certain *style of reasoning*»? This reflection links *themata* to the notion of 'thought style' (*Denkstil*) formulated in the 1930s by the Polish physician and epistemologist Ludwik Fleck. The style dictates the acceptable questions, explanations and methods, whether literary or technical, and is produced by a 'thought collective' - *Denkkollectiv* - bringing together people who discuss the same questions in the same terms. Fleck also proposes a genealogical and evolutionary vision of thought styles. These do not follow one another in the manner of incommensurable paradigms, but are transformed, reinforced or disappear, so that «every thought style contains vestiges of the historical, evolutionary development of various elements from another style» [Fleck, 1979, p. 100]. A central element of Fleck's thinking is the notion of «unarticulated» hypotheses, of which the scientist is unaware but which

profoundly affect his way of doing science. The whole point of this topic of style is to be able to play with scales, to navigate between the *micro* scale and the broader movements of the history of thought.

A «calvino-atomist style»

Can we sketch out, from what emerges from Derodon's philosophy and its appropriation by Lesage, the elements of a style that we would dare to call «Calvino-atomist»? Several themes emerge: 'democritean', 'intellectualist', 'rationalist', 'necessitarist', derived from 'synthetic' knowledge, and linked to the vision of a 'transcendent' and 'omniscient' (but not absolutely 'omnipotent') god. These terms contrast with worldviews that may be, alternatively or simultaneously: 'Epicurean', 'voluntarist', 'empirical', 'contingent', derived from 'analytical' knowledge, and linked to the vision of an 'immanent' and 'omnipotent' god. Let's elucidate these terms. As we saw briefly above, Derodon taught that the act of creation was a necessary consequence of divine wisdom, that God was not absolutely free to create or not to create the world. This position, which can be described as 'intellectualist' or 'rationalist' and which assumes elements of 'necessity' in creation, is opposed to 'voluntarism', according to which creation is absolutely 'contingent' and dependent on divine will [Osler, 1994, p. 11]. These two competing positions were at the heart of medieval theological debates, where Thomas Aquinas and William of Ockham respectively represented the voluntarist and intellectualist camps. Thomas Aquinas set out to purge Aristotelianism of all deterministic and necessitarian elements, particularly present in its Averroist version, in order to guarantee God's total freedom and omnipotence. A necessitarian theology preserves God's omnipotence, but in a version constrained by the rules of logic: God is omniscient, he knows in advance the chain of causes and can act freely, in compliance with the physical rules that he himself has established.

These two theological positions lead to two theories of knowledge. In a rationalist world governed by logical necessity, it is possible to use reason to decipher phenomena and above all to produce 'synthetic' knowledge, derived from first principles [Osler, 1994, p. 19-20]. This is what Derodon proposes, for example in the introduction to the *Dispute de l'Eucharistie*, where he explains that he uses «the lights of reason» to uncover «the disguises of error and falsehood [...] with the clear-cut weapons of solid reasoning» [Derodon, 1655, vi]. His aim was to bring the doctrinal question of the real presence of Christ in the host back into the realm of philosophy. This rationalist stance,

combined with his *necessitarian* vision of God's action in the world, made it possible for him to develop a synthetic knowledge of nature based on corpuscular physics. On the other hand, a voluntarist world governed by contingency alone cannot be understood in terms of the «abstract simplicity» of which Lesage spoke. Systematic knowledge is not excluded, but is necessarily 'empirical' and 'nominalistic', proceeding from an 'analytical' order of knowledge [Osler, 1994, p. 19-20]. It is, it seems to us, in this duality that it would be possible to distinguish atomism as it developed among certain Calvinists, from the perhaps more properly Catholic atomism of a Gassendi or an Emmanuel Maignan (1601-1676). This clergyman from Toulouse, a member of the Minimes order, endowed his atoms with an intrinsic capacity for movement - «by principle and by itself, and not by accident»[25] - and even with a natural affinity to come together, a 'sympathy' or an 'appetite', put there by God in a providentialist perspective.

Margaret Osler has rightly asked a simple yet rarely mentioned question about Gassendi: why did he choose Epicurus rather than another ancient philosopher? In her view, it was precisely because Epicurus' philosophy lends itself to a voluntarist reformulation. In the *Syntagma philosophicum*, Gassendi presents a voluntarist and providential view of God's action in the world [Osler, 1994, p. 40-56]: God is the only efficient cause, omnipotent and free from all necessity. Moreover, the primary role accorded by the Epicureans to the senses as the only means of accessing reality is precisely in line with an analytical knowledge based on contingency. As Keith Hutchison has also pointed out, Gassendi preserved, in an attenuated form, a kind of Epicurean swerve that gave autonomy to atoms. Calvin, on the other hand - and to a lesser extent Luther - rejected the slightest shred of power inherent in creatures and matter [Hutchison, 1983].

As we have already seen, voluntarism led to the 'occasionalism' of the early Cartesians, such as Malebranche and Cordemoy, for whom God was the only efficient cause. Derodon, in his controversy on continuous creation, is opposed to occasionalism - even if the term did not exist yet - which has the effect of enslaving God to his creation. Occasionalism is in itself compatible with atomism, but the result is a theological position that differs from that of the Calvinists. For Cordemoy, following Descartes' view on causality, «God has become the First Principle by which not only everything exists, but also

[25] *Cursus Philosophicus* (1673), chap. XIII, Prop. XVI, p. 342, cit. in Libral, 2020, p. 194.

everything acts» [Prost, 1907, p. 97]. But unlike Descartes, who tended to subject «human activity to Providence to such an extent that the initiative in this activity ended up disappearing, and man was no more than an instrument in the hands of God», Cordemoy succeeded in distinguishing the existence of beings from that of their creator by means of his atomism. For him, «existence entails the individuality of what is», so «from the moment that bodies and spirits exist, they are independent of their substance from God». All movement, tendency, impulse and direction come from God, but they manifest themselves in beings only with their consent: «God only acts in us if we give him the opportunity to do so [...]. We have the merit and the demerit of our conduct» [Prost, 1907, p. 94-98]. As Joseph Prost concludes, «occasionalism presented itself as a system of contingency» [Prost, 1907, p. 99]. The calvinist dogma of unconditional election, based on the *Sola Gratia* principle, could not work with the view defended by Cordemoy. Véronique Le Ru also considers that «the *divinisation* of *causal efficiency* by La Forge, Cordemoy and then Malebranche leads to a sceptical refusal to consider causes and forces other than in terms of their effects, which produces a *secularisation of science* that allows itself to establish laws, without taking causes into account» [Le Ru, 2003, p. 183]. It was this radical *hypotheses non fingo* that the Genevan atomists challenged, insisting on the search for causes in physics [Sigrist, 2011, p. 115]. We can therefore appreciate the extent to which the causal research approach is linked to a defined theological position.

Conclusion

Taking theology and the notions of *thêmata* and *Denkstil* as starting points helps to refine the map of atomistics in the seventeenth century, and to distinguish a Derodon from a Gassendi. By playing with pairs of philosophical oppositions, it becomes possible to sketch out what a “Calvinist atomism” might be, in relation to a “Catholic atomism”, in terms of necessity, presence of God in the world and modes of access to knowledge. Osler’s summary of Gassendi’s thought is particularly illuminating: «Gassendi described a world utterly *contingent* on divine will. This contingency expressed itself in his conviction that *empirical* methods are the only way to acquire knowledge about the natural world» [Osler, 1994, p. 222]

On the contrary, Derodon, and then Lesage (but also, as it remains to be

shown, Fatio, Prevost and the Genevan atomists), approached creation as a matter of 'necessity', ordered by reason and comprehensible by an 'intellectualist' and 'synthetic' approach.

The reception of Derodon's atomism, as well as its mobilisation in confessional controversies, made it clear that it was by no means a heterodox theory in a Calvinist context. By offering a clear-cut definition of the concepts of 'place' and 'body' that is resolutely incompatible with the Lutheran and Catholic doctrines of the Eucharist, atomistics combines physical and theological considerations in a speculative register. Far from basing himself on experience and analysis, Derodon *postulated* the discrete nature of bodies – in the purest Democritean tradition. Even though the eighteenth century was no longer the time for Eucharistic disputes, the speculative legacy of the Calvinist neo-atomism of the previous century would be carried forward once again by Reformed scholars, anxious to reconcile their theological necessitarianism with a synthetic search for the primary causes of physical phenomena.

Bibliography

Aronson, 1964 = Aronson Samuel, *The Gravitational Theory of Georges-Louis Le Sage*, «Natural Philosopher», 3 (1964), n. 51, p. 53-74.

Arnaud, 1871 = Arnaud Eugène, *Notice sur David de Rodon, professeur de philosophie à Die, Orange, Nîmes et Genève*, «Mémoires de l'Académie du Gard» (1871), p. 341-67.

Bayle, 1715 = Bayle Pierre, *Dictionnaire historique et critique*, vol. 3, 3rd ed., Rotterdam, 1715.

Bert, 2018a = Bert Jean-François, *Comment pense un savant? Un physicien des Lumières et ses cartes à jouer*, Paris, Anamosa, 2018.

Bert, 2018b = Bert Jean-François, *Les spectres de l'érudition. Un travail de bénédictin!*, in *Actes du colloque "Les spectres de l'érudition"*, edited by Françoise Briegel, SAVOIRS, 2018 https://savoirs.app/fr/articles/les-spectres-de-l-erudition-un-travail-de-benedictin#ftn30_return.

Borgeaud, 1900 = Borgeaud Charles, *Histoire de l'Université de Genève. vol. I. L'Académie de Calvin: 1559-1798*, Genève, Georg, 1900.

Bourchenin, 1882 = Bourchenin Pierre-Daniel, *Étude sur les académies protestantes en France aux XVIe et XVIIe siècles*, Paris, Grassart, 1882.

Chabot, 2003 = Chabot Hugues, *Georges-Louis Lesage (1724-1803), un théoricien de la gravitation en quête de légitimité*, «Archives internationales d'Histoire des Sciences», 53 (2003), n. 150-151, p. 157-183.

Cunchillos, 1997 = Cunchillos Chomin, *Réductionnisme, hasard, nécessité et téléologie*, in *Pour Darwin*, edited by Patrick Tort, Paris, Presses universitaires de France, 1997, p. 357-77.

Derodon, 1655 = Derodon David, *Dispute de l'Eucharistie*, Genève, Pierre Aubert, 1655.

Derodon, 1661 = Derodon David, *Disputatio de Atomis*, Nîmes, 1661, Genève, 1662.

Derodon, 1665 = Derodon David, *La lumière de la raison opposée aux ténèbres de l'impiété*, Genève, De Tournes, 1665.

Derodon, 1664 = Derodon David, *Philosophiae Contractae pars tertia quae est Physica*, Genève, Chouet, 1664.

Dijksterhuis, 1961 = Dijksterhuis Eduard J., *The Mechanization of the World Picture*, Oxford, Clarendon Press, 1961.

Fleck, 1979 = Fleck Ludwik, *Genesis and Development of a Scientific Fact* [1935], translated by Fred Bradley and Thaddeus J. Trenn, Chicago, The University of Chicago Press, 1979.

de Gérando, 1847 = de Gérando Joseph-Marie, *Histoire de la philosophie moderne*, vol. 1, 2nd ed., Paris, Ladrange, 1847.

Heyd, 1979 = Heyd Michael, *From a Rationalist Theology to Cartesian Voluntarism: David Derodon and Jean-Robert Chouet*, «Journal of the History of Ideas», 40 (1979), n. 4, p. 527-42.

Heyd, 1982 = Heyd Michael, *Between orthodoxy and the Enlightenment: Jean-Robert Chouet and the introduction of Cartesian science in the Academy of Geneva*, The Hague, M. Nijhoff, 1982.

Holton, 1975 = Holton Gerald, *Thematic Origins of Scientific Thought: Kepler to Einstein*, Cambridge (Mass.), Harvard University Press, 1975.

Hutchison, 1983 = Hutchison Keith, *Supernaturalism and the Mechanical Philosophy*, «History of Science», 21 (1983), n. 3, p. 297-333.

Laplanche, 1983 = Laplanche François, *L'évidence du dieu chrétien. Religion, culture et société dans l'apologétique protestante de la France classique (1576-1670),* Strasbourg, Association des publications de la faculté de théologie protestante de Strasbourg, 1983.

Lasswitz, 1890 = Lasswitz Kurd, *Geschichte der Atomistik vom Mittelalter bis Newton*, vol. 2, Hamburg – Leipzig, Leopold Voss, 1890.

Leijenhorst, 2001 = Leijenhorst Cees, *Place, Space and Matter in Calvinist Physics*, «Monist», 84 (2001), n. 4, p. 520-41.

Leijenhorst, Lüthy, 2002 = Leijenhorst Cees – Lüthy Christoph, *The Erosion of Aristotelianism. Early Modern Protestant Eucharistic Theology and Natural Philosophy in Germany and the Dutch Republic*, in *The dynamics of Aristotelian natural philosophy from antiquity to the seventeenth century*, edited by Cees Leijenhorst, Christoph Lüthy and Johannes Thijssen, Leiden, Brill, 2002, p. 375-411.

Le Ru, 2003 = Le Ru Véronique, *La crise de la substance et de la causalité : Des petits écarts cartésiens au grand écart occasionaliste*, Paris, CNRS Éditions, 2003.

Lesage, 1784 = Lesage Georges-Louis, *Lucrèce Newtonien*, Berlin, George Jacques Decker, 1784.

Libral, 2020 = Libral Florent, *Conjurer le spectre d'Épicure? Noms et définitions de l'atome dans la philosophie d'Emmanuel Maignan (1601-1676),* «Anabases», 31 (2020), p. 191-97.

Lohr, 1998 = Lohr Charles H., *Latin Aristotelianism and the Seventeenth-Century Calvinist Theory of Scientific Method*, in *Method and Order in Renaissance Philosophy of Nature*, edited by Daniel A. Di Liscia and Eckhard Kessler, Routledge, 1998, p. 369-80.

Lüthy, 1997 = Lüthy Christoph, *Thoughts and Circumstances of Sébastien Basson. Analysis, Micro-History, Questions*, «Early Science and Medicine», 2 (1997), n. 1, p. 1-72.

Maier, 1982 = Maier Anneliese, *The Theory of the Elements and the Problem of their Participation in Compounds*, in *On the Threshold of Exact Science: Selected Writings of Anneliese Maier on Late Medieval Natural Philosophy*, edited by Steven D. Sargent, Philadelphia, University of Pennsylvania Press, 1982, p. 124-42.

Montandon, 1975 = Montandon Cléopâtre, *Le développement de la science à Genève aux XVIII*[e] *et XIX*[e] *siècles - Le cas d'une communauté scientifique*, Vevey, Delta, 1975.

Nielsen, 1988 = Nielsen Lauge Olaf, *A Seventeenth-Century Physician on God and Atoms: Sebastian Basso*, in *Meaning and inference in medieval philosophy: studies in memory of Jan Pinborg*, edited by Norman Kretzmann, Dordrecht, Kluwer Academic Publishers, 1988, p. 297-369.

Osler, 1994 = Osler Margaret J., *Divine will and the mechanical philosophy: Gassendi and Descartes on contingency and necessity in the created world*, Cambridge (NY), Cambridge University Press, 1994.

Prevost, 1805 = Prevost Pierre, *Notice de la vie et des écrits de George-Louis Le Sage de Genève*, Genève, J. J. Paschoud, 1805.

Prost, 1907 = Prost Joseph, *Essai sur l'atomisme et l'occasionalisme dans la philosophie cartésienne*, Paris, Paulin, 1907.

Ragni, 2020 = Ragni Alice, *L'ontologie à Genève: de David Derodon à Jean-Robert Chouet*, «Les Études philosophiques», 203 (2020), n. 3, p. 59-77.

Redondi, 1983 = Redondi Pietro, *Galileo eretico*, Turin, Einaudi, 1983.

Saurin, 1694 = Saurin Élie, *Examen de la théologie de M. Jurieu*, vol. 2, La Haye, Louis et Henri van Dole, 1694.

Senebier, 1786 = Senebier Jean, *Histoire littéraire de Genève*, vol. 2, Genève, Barde-Manget, 1786.

Sigrist, 2004 = Sigrist René, *L'essor de la science moderne à Genève*, Lausanne, Presses polytechniques et universitaires romandes, 2004.

Sigrist, 2011 = Sigrist René, *La nature à l'épreuve: les débuts de l'expérimentation à Genève (1670-1790)*, Paris, Classiques Garnier, 2011.

Sina, 2010 = Sina Mario, *Introduzione*, in *Corsi di filosofia di Jean-Robert Chouet*, a cura di Mario Sina, Marco Ballardin ed Elena Rapetti, Firenze, Olschki, 2010, p. XIII-LXX.

Zehe, 1980 = Zehe Horst, *Die Gravitationstheorie des Nicolas Fatio de Duillier*, Hildesheim, Gerstenberg, 1980.