Proclus, the Cambridge platonists and leibniz on soul and extension

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Resumo

No presente artigo, discutiremos uma ramificação da tradição neoplatônica que defendeu a substancialidade da extensão. Proclo é o expoente dessa tradição, tentando explicar como a alma seria o princípio que fundamenta uma noção realista de extensão. Mais tarde, seus seguidores foram os Platônicos de Cambridge. Leibniz seguiu Proclo em alguns aspectos, mas considerou a extensão como sendo uma entidade irreal, possuindo um caráter meramente ideal.

Palavras-chave: Proclo, Leibniz, More, Extensão

Abstract

In this article we discussed a branch of Neoplatonic tradition that defended the substantiality of extension. Proclus is the exponent of this tradition, trying to explain how the soul would be the principle that underlies a realistic concept of extension. Later his followers were the Platonists of Cambridge. Leibniz followed Proclus in some aspects but he considered extension as unreal, having a purely ideal character.

Keywords: Proclus, Leibniz, More, Extension

Introduction

Proclus, perhaps the last great Greek philosopher (411–485 A.D.), systematically reviews all Neoplatonic philosophy. Nicholas of Cusa, in the fifteenth century, referred to him many times as an important authority.[1] In this paper I want to mention him because he opened a way for an interpretation of Platonism that supports the substantiality of space, a thesis defended by the Platonists of Cambridge. We need to remember that Leibniz followed Plotinus in considering space as non-real. Thus, in the first part of this chapter there is a short exposition about Proclus and how he differs from Plotinus. In the second part there is an exposition of the soul considered as the objective principle of mathematical extension. This theory was the basis of the view of the Platonists of Cambridge, who defended the substantiality of space, and concerning whom I present a short exposition in the third part of the paper. In the last section I compare the Platonists of Cambridge with Leibniz.

[1] Hegel also praised him: "... Proclus is hence much more detailed, and he went much further than did Plotinus; it may indeed be said that in this respect we find in him the most excellent and best that was formulated by any of the Neo-Platonist" In HEGEL, G. H. *Lectures on the History of Philosophy*, p. 440.

Proclus' Doctrine

Proclus still supported the theory of the One of Plotinus but in another sense he returned to a more genuinely Pythagorean position, in the sense that he put the Limited on the same level of Unlimited. Proclus affirmed, following the Pythagorean tradition, that all levels of reality, including the superior hypostasis (*henads*), the mathematical beings, the Soul, and even physical beings, are composed of Limit and Unlimited. Everything is therefore a synthesis or mixture of different degrees of these two terms. In this context, the Unlimited (dyad or the requirement of the infinite) corresponds to the moment of the procession, generating diversification and movement, whereas the Limit (unity or structure requirement) corresponds to the conversion and the return, generator of identity and rest.[2] These principles are the laws of realisation of reality and they condition their productions in diverse ways. Each one is inseparable from its opposite and necessarily assumes it. Isolated from the other, the procession would deteriorate in an inexhaustible incoherence, while the conversion, without its opposite, would be perverted into a barren and monotonous identity. Proclus elaborated these complementarities dialectically and thus there is no superiority of one of these principles with regard to the other. In this he is radically different from Plotinus, whose One was always superior to its emanation.

[2] In a passage of the *Commentary on Timaeus*, Proclus explains these two terms: "Orpheus likewise delivers the very same things. For as Plato produces twofold causes from the one, viz. bound and infinity, thus too the theologist gives subsistence to ether and chaos from time; ether being the cause of bound everywhere, but chaos of infinity. And from these two principles he generates both the divine and visible orders of things; from the more excellent indeed, producing every stable, effective of sameness, and source of measure and connexion; but from the less excellent, everything motive, effective of difference, never failing progression, the nature which is defined, and the last infinity by which matter is comprehended" PROCLUS, *Commentaries of Proclus on the Timaeus of Plato*, vol. 1, p. 324.

However, Proclus' position was in another way close to Plotinus' because he also considered that the Unlimited itself was a procession from the One. Thus, the Unlimited is the condition for existence of matter but the One is the foundation of its existence. However, against the Plotinian pessimism regarding the material world, Proclus affirms that matter cannot be evil. There is not any ontological sphere that can be deprived of the Good, therefore the divine is present in all the beings and all the levels of the Real. In so far as it originates from the infinite, matter is the last degree of manifestation of the abundance of the One. Or, as Trouillard said , "the mystery of matter would be the privileged expression of the mystery of the One, because it is its inverse replica."[3] Thus matter is the feminine receptivity which Proclus opposed to the virile and seminal power of the formal element. Using mythical vocabulary, he still called it: "Night", "Chaos" and "Silence", it being the sources of all infinitude, either of intelligible, psychic or material nature. But as we have seen, it only works in dialectical conjunction with its opposite. In this way, according to Trouillard, he recovered in the Homeric and Orphic hierogamies the thesis – according to which only fecundity appears in the conjunction of antithetic principles.[4]

Proclus' theory of emanation, as we have said, is nonetheless similar to that of Plotinus in the sense that each one of the inferior subjects is produced and supported by the superior principle, that is, it can be said that everything is in One and One is in everything, according to the formula found in *Timaeus.* This principle is the basis whereon Proclus erected the monadological principle that each being expresses the entire universe according to its particular law.[5] Thus each point of the universe reproduces the standard of formation of the

[3] TROUILLARD, J. *Le néoplatonisme de Plotin à Damascios,* p. 130.

[4] TROUILLARD, J. *Le néoplatonisme de Plotin à Damascios*, p. 130.

[5]Trouillard used the expression "monadology of Proclus". He justified the use of this term: « Employer cet mot leibnizien n'est pas commettre un anachronisme, mais souligner une source néoplatonicienne de Leibniz, d'ailleurs reconnue par lui." "To employ this Leibnizian word is not to commit an anachronism, but it is to underline a Neo-Platonic source of Leibniz, moreover recognized by him." TROUILLARD, J., *La Mystagogie de Proclus,* p. 124.

universe, that is, it reproduces the procession scheme, according to its proper perspective. And so the centre of the universe is everywhere, and in each point we can find it, in some sense, totally present.

Therefore, the unity is said to be simultaneously the maximum (in that it transcends everything) and the minimum (in that it is the substance even of the "minimum" being), since each unity of matter is unified by a subjacent unity. As minimum it is contained by the whole but as maximum it contains everything as it is the whole. It is, perhaps, this doctrine that makes the Neoplatonic conception of matter so similar to the notion of One, an aspect recognised by Proclus. In fact, both matter and the One are unlimited or infinite, both are the potentiality of everything, both are formless, both are sources of power, *dynamis*. In *The Elements of Theology*, prop. 59, Proclus indicated the situation of matter (or the last being) in this way: "For the last being is, like the first, perfectly simple. For the reason that it proceeds from the first alone; but the one is simple as being above all composition, the other as being beneath it."[6] Dodds said that Proclus explained in the *Theology Platonic* III (vi) 127–9, that the One which is uncaused has maximal unity and the matter which is caused by the One has minimal unity.[7] But this minimal unity, in fact, derives ultimately from the all embracing unity of the One.

The immanent principle or the One which is present in each being of the cosmos is referred in terms such as "One of the soul", "top of the soul", "centre of the soul", "flower of our substance", "seed of non being that there is in us" or still the "divine immanence in the sanctuary of the soul".[8] Proclus called the spirit the "*monad"* because of this immanence. All the three, spirit, soul and matter, are constituted of Unlimited and Limited (dyad and monad) as we have seen. But the denomination "monad" is more appropriate to the spirit (or intellect), because its procession is more concentrated, not advancing until the last

[6] PROCLUS, *Elements of Theology* .
[7]PROCLUS, *Elements of Theology*, p. 232.
[8] In Remp. 1, 177, 16–23, 18, 10–179, quoted by TROUILLARD, *La Mystagogie de Proclus*, p. 100.

determination, and so it stays enveloped in itself. Proclus explained this distinction in this way:

> For the monadic alone pertains to intellect, on which account also intellect is impartible. But the dyadic pertains to body, whence in the generation of the corporal-formed nature Plato begun from the duad (...) the soul however, being a medium between intellect and body, is a monad and at same time a duad. But the cause of this is, that in a certain respect it equally participates of bound and infinity; just as intellect indeed, is allied to bound, but body rather pertains to infinity, on account of its subject matter, and divisibility ad infinitum.[9]

But Trouillard explained that it is not the spirit but the soul which is the best ontological sphere to represent the monadology of Proclus. This is because the soul is in the middle position and consequently it is in the best position to incarnate the unified Pythagorean principles of Limit–Unlimited. Thus, in the *Elements of Theology*, Proclus believed in the necessity of beginning with the soul to study the universal order, since it is in the soul that all the characters of the cosmos are determined in concentrated form. The soul, situated in the middle point, is the recapitulation of the entire procession, from the sphere of intellect to the matter.

> Every soul is all things, the things of sense after the manner of an exemplar and intelligible things after the manner of an image. (…) Accordingly it pre-embraces all sensible things after a manner of

[9] PROCLUS, *Commentaries of Proclus on the Timaeus of Plato*, vol. 2, p. 77.

> a cause, possessing the rational notions of things immaterially, of bodily things immaterially, of extended things without extension; on the other hand it possesses as images the intelligible principles, and has received their Forms (…).[10]

Proclus explained that the soul is substantially monad and dyad, unit and multiplicity, but it is unified before being divided though the soul does not subsist prior the plurality of its parts:

> If we affirm these things correctly, it is not proper to separate the soul from the union, dividing it, nor to consume the totality of itself in a generation of parts (…) It is necessary, therefore, that the whole remains always the whole; that the generation of parts is realized with the totality remaining; and that this is not consumed in the division of the parts. Therefore we must conceive, that the essence of the soul is one, and at the same time multiple, the whole remaining and being distributed in parts, and possessing continuity, and being, at the same time, divided.[11]

In this last line Proclus arrived at a conception of soul different from that of Plotinus. It is not a pure or non-dimensional unity any more (as Plotinus desired). It can be distributed into parts (being multiple) while remaining one. Its character of multiplicity does not destroy its unity.

[10] PROCLUS, *Elements of Theology,* Prop. 195.
[11] PROCLUS, Idem, p. 54.

Psychic vehicle and imagination

In Proclus' scheme the imagination (*phantasia*), together with discursive thinking, occupies the intermediary place between the intuitive *nous* and sensation (*aisthesis*). Properly speaking, the scheme is *nous-dianoia-phantasia-aisthesis*. But, as we have seen, it is the soul which achieves this mediating status between mind and body. Thus these two faculties, *dianoia* and imagination, can be grouped together as upper and lower faculties of soul. In this way they achieve a graduated passage from the predominant unity of *nous* to the predominant multiplicity of sensation.

Proclus also called imagination the passive *nous* as it receives the projection (procession) of the content of the *nous* in its intelligible matter, through the dianoetic reason. Thus *dianoia* has the rational notions organised logically and discursively and imagination unfolds them, presenting them separately (as the dyad is a power of separation), so that they are in a way presented figuratively or projected in space. Hence imagination is almost inseparable from *dianoia.* It is possible to illustrate their relation using the model form–matter. Thus *dianoia* contains the pure rational *forms* that are projected in the intelligible *matter*, forming an imagined notion.

But Proclus also assumed the intermediary character of mathematics between the intelligible world and the physical world, or in other words, that mathematics results from a mixture of the indivisible and the divisible, Limit and Unlimited, one and many. In this sense Proclus, as well as other Platonists such as Iamblichus, Xenocrates (who said that the soul is a self-moved number) and Speusippus (who said that the soul is the all-extended) was a conceptual realist or anti-abstractionist.[12] Again, this is consistent with the Parmenidian notion that what is thought must be real. Consequently, Proclus believed in the full reality or subsistence of mathematical

[12] MERLAN, p. 47.

objects or mathematicals. Furthermore, because of the intermediary character of these two realms of being, he identified soul with mathematicals, a point of view also shared by the aforementioned Platonists. Thus, for him, the soul does not simply know mathematics, it is mathematics. However, this association of mathematics with the principle of life is certainly much older than the time of Proclus. As we saw in the first chapter of this thesis, it was a Pythagorean doctrine.

Thus, in the *Commentary on the first Book of Euclid's Elements* the thesis is that the creation of mathematics confounds itself with self-creation or the self-constitution of the soul, following the circuit of procession and conversion when the soul, in a kind of substantial movement, projects and recoils again to itself. For Proclus, all branches of mathematics are generated within the soul through its faculty of imagination. He even said that the imagination is the mirror of the soul.[13] Considering only geometry we come to know that the geometric equivalent of procession is the movement (fluxion) of a point creating a straight line, which, being extended indefinitely, is the expression of the generative power of the infinite. The corresponding geometric for conversion is the circumference, which is a movement that returns back to the centre the multiplicity previously generated, thus limiting and determining multiplicity. With only these two movements, the line and the circle (or the curve), all possible objects of geometry are generated:

> For this reason the soul contains in advance the straight and the circular in her nature, so that she may supervise the whole array of unlimiteds as well as all the limited beings in the cosmos, providing for their forthgoing by the straight line and for their reversion by the circle, leading them to plurality by the one and collecting them all into unity by the other.[14]

[13]PROCLUS, *Commentary on the First Book of Euclid's Elements,* "…so the soul, exercising her capacity to know, projects on the imagination, as on mirror, the ideas of the figures" p. 141.
[14] PROCLUS, *Commentary on the First Book of Euclid's Elements,* p. 107.

And since the two movements have the same origin in the point which contains both, they cannot be radically different and in some sense they can be identified. Thus, Proclus says:

> … so also the idea of the figure shows that circular lines are implicated in straight and straight in circular; that is, it projects its whole nature in characteristic fashion in each thing, and all of them are in all when the whole is simultaneously in all of them and in each separately.[15].

Thus it is a living and substantial movement (*kinesis* or fluxion) that generates extension in the soul and gives to it a certain plasticity. Instead of imagining a space receiving the rational notion, we could view the whole process happening together: the space being created together with the procession of the rational notions. In addition, Aristotle also conceived that the properties of geometric figures were discovered through activity (*energeia*).[16] In fact, ultimately, this movement results from the activity considered as thinking, since there cannot be thinking without moving from one thought to another. Hence thinking goes along with extension, because extension is a space created, in the intelligible matter, by this noetic movement, in a kind of process of becoming. The continuous activity of mind which is connected with the notion of duration, or flux of consciousness, manifests itself in this growing imagined extension.[17]

For Proclus, the soul considered as principle of motion is inseparable from its mathematical character. And because the

[15] PROCLUS, *Commentary on the First Book of Euclid's Elements,* 145.

[16] In NIKULIN, D., *Matter, Imagination and Geometry*, p. 226 (Aristotle, *Met* 1051a 21–32).

[17] Moreover imagination was not only a movement. Aristotle even considered imagination as capable of causing movement in the body. NIKULIN, p. 227, *De an.* 432a 15 sqq, esp. 433a 9–10.

movement is not discrete, but continuous, we cannot consider this space composed of summed unities. This generation of extension by the soul follows the principle asserted about the soul that we have seen Proclus assert: "the generation of parts is realized with the totality remaining; and that this is not consumed in the division of the parts." And so we conclude that this space was conceived preserving its unity. At same time, extension is generated, and so it is conditioned by the opposite realm of dyad, of more or less, of expansion and contraction. Although, since Proclus claimed that the soul is a union of monad and dyad, we can deduce that something of the extension (or of intelligible matter) always remains with it.

The following passage is a sample in which we can find the claim of realism about mathematics as a product of imagination, the plastic capacity of the soul:

> For imagination, both by virtue of its formative activity and because it has existence with and in the body, always produces individual pictures that have divisible extension and shape, and everything that it knows has this kind of existence. For this reason a certain person has ventured to call it "passive *Nous*'". Yet if it is *Nous*, how could it be other than impassive and immaterial? And if feeling accompanies its activity, has it any longer a right to be called *Nous*? For impassivity belongs to *Nous* and intellectual nature, whereas whatever can be affected is far removed from the highest being. But I think he intended rather to express the middle position it occupies between the highest and the lowest types of knowledge and so called it at the same time "*nous*", because it resemble the highest, and "passive", because of its kinship with the lowest. (….) By contrast the imagination, occupying the central position in the scale of

> knowing, is moved by itself to put forth what it knows, but because it is not outside the body, when it draws its objects out of the undivided centre of its life, it expresses them in the medium of division, extension and figure. For this reason everything that it thinks is a picture or a shape of its thought. It thinks of the circle as extended, and although this circle is free of external matter, it possesses an intelligible matter provided by the imagination itself. This is why there is more than one circle in imagination, as there is more than one circle in the sense world; for with extension there appear also differences in size and number among circles and triangles.[18]

This passage illustrates the plasticity of imagination which is associated with its formative or creative capacity. The "he" to whom Proclus referred is possibly Aristotle, who proposed the idea of passive intellect. Thus the imagination reproduces the intelligible species in its intelligible matter. But imagination is not only replicatory but can also diversify, producing variation in the forms, variation in sizes and even achieving combinations and compositions of different intelligible forms, since its plasticity is conditioned by its own will. In this sense, in the capacity of infinite variability it shows its relation with the Unlimited and, as Nikulin said, the imagination is enabled to imitate (or incarnate) the divine infinite creative power. [19] But the imagination, as a faculty of the soul, is itself also a mirror of two faces, as it replicates not only the reasons of intellect but also images (*phantasmata*) of the sense, which are in the last instance also appearances of other externalised reasons. The imagination is the only way to represent

[18] PROCLUS, *A Commentary on the First Book of Euclid's Elements,* 52. But the intelligible matter is present in the imagination and also in the *nous*, since, for example, to discern an idea of triangle from the idea of square, the difference is only a certain broader extension of intelligible matter.
[19] NIKULIN, D., *Matter, Imagination and Geometry*, p. 221.

extended external objects and so it is the stance where the two kinds of images meet and interact.

Proclus considered the imagination as equivalent to the first vehicle or first body, being neither material nor immaterial. It is an intermediate between pure power and pure spatiality, and so has attributes of both. As Trouillard said, it is a passage from the intensity psychic to somatic extension.[20] Each soul, he said, has attached to itself this first body which is co-eternal with the soul. In Prop. 196 we read:

> Every participated soul makes use of a first body which is perpetual and has constitution without temporal origin and exempt of decay. For every soul is perpetual in respect of its existence (prop. 192), and if further by its very being it directly ensoul some body, it must ensoul it at all times, since the being of every soul is invariable (prop 191). And if it is so, that which it ensouls is on its part ensouled at all times, and at all times participates in life; and what lives at all times a fortiori exists at all times; and what exists at all times is perpetual: therefore a body directly ensouled and directly attached to any soul is perpetual.

He said that this psychic vehicle or envelope of the soul (*ochema*), being always material, descends to the temporal sphere by addition of more material to itself, and so it is greater or smaller depending on the addition or removal of these vestments.[21] This notion, Dodds remembered, can be traced back to the notion of a vehicle of the soul in Aristotle, the *pneuma,* also called the fifth element or *quintessentia* which is present in the divine bodies of the stars. In *De Gen. Animal.* 736b27 Aristotle said: "the spirit which is contained in

[20] TROUILLARD, *La Mystagogie de Proclus,* p. 46.
[21] In the proposition 209 and 210 of *Elements of Theology.*

the foamy body of the semen, and the nature which is in the spirit, analogous to the element of stars."[22] Porphyrius added that this substance, although of ethereal origin, is progressively thickened as it absorbs moisture from the air and that it alters its forms in response to the imaginings of the soul.[23] Furthermore, the Stoics, sustaining their monism, regarded the *pneuma* not only as vehicle but as the soul itself.

As we have seen already, Plotinus had the conception that the emanation (dyad) of the One is light. But the *quintessentia* of Aristotle was also to be considered a kind of light as it was conceived as the substance of the stars. In fact, in Proclus we also find the identification of space and light in a lost work, *On space*, which is nevertheless mentioned by the Neo-Platonist commentator of the sixth century C. E., Simplicius.[24] And Proclus supported Porphyry's idea that this light is the luminous vehicle of the world soul.[25]

In our discussion this concept has importance because it is the foundation of the substantiality of space as propounded by philosophers in the Middle Ages (for instance, Grosseteste) and in the sixteenth and seventeenth centuries. And with the Platonists of Cambridge we have the debate of substantiality of space with Leibniz. We will see that More said that it is the spirit (the soul) that is the cause of extended substance and that it occupies space.

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[22] ARISTOTLE, *De Gen. Animal.* 736b27. Dodds mentioned this theory in the comments to *Elements of Theology*, p. 306 to 318. Dodds recalled also that in the *Timaeus* 41 D f., the demiurge is said to have mounted the souls upon the stars.

[23] For Proclus the psychic vehicle is said to imitate the life of the soul, and in certain souls it reproduces its intellectual movement by circular revolution "For the congenial vehicles imitate the lives of the souls which uses them, and moves everywhere with their movements: the intellectual activity of certain souls they reflect by circular revolutions." *Elements of Theology,* prop. 209. Besides in the *Commentary on Timaeus* (in *Timaeus* II 72.14) Proclus maintains that this vehicle is spherical like the human skull, the stars and the universe itself.

[24] JAMMER, Max. *Concepts of space, the history of theories of space in Physics*, p. 38 (Simplicius, *Physics* 612, 32).

[25] SORABJI, Richard*, Matter, Space and Motion, Theories in Antiquity and Their Sequel*, p. 109.

Substantiality of space defended by the Cambridge platonists

Henri More, Ralph Cudworth and Barrow, the seventeenth-century Platonists of Cambridge, discussed the substantiality of space. Their premises were not radically different from those of Spinoza, as Leibniz himself recognised.

The idea that spatial extension is the same as corporeal extension appears in the Middle Ages. At that time the philosopher Robert Grosseteste propounded a metaphysics of light in which he adopted Proclus' notion that light is the first corporeal form. It was also the first principle of motion, and the creation of the universe was regarded as nothing but the work of diffusion of the dimensional tenuous body of light. From this comes the importance given to the development of optics, the discipline wherein the science of space, geometry, meets with light.[26]

This idea of a tenuous spatial substance was radicalised by the Platonists of Cambridge. Henri More (1614–1687) who was the main figure of this movement exerted strong influence on the others of the group, and also on Newton, Clarke and Locke. He studied the Platonic tradition, including the works of the Italian renaissance thinker Ficino, but studied also and wrote about the cabalist theories, for example, his *Cabalist catechism*. As a Neo-Platonist, More defended the idea of an intermediary stance between God and matter, which is his Hylarchic spirit. Contrary to Ficino, he did not consider matter as being produced by this spirit. For him, matter was essentially inert and different from spirit. But he nevertheless stated that matter is animated by spirit. In the preface to the *Immortality of the Soul* he called this spirit the invisible agent which is "the vicarious power of God upon the matter", that is, the immediate plastic agent of God through which his will is

[26] CROMBIE, A. C., *Robert Grosseteste and the Origins of Experimental Science.*

fulfilled in the material world. He also called it the "universal soul of the world."[27]

More was initially very interested in the philosophy of Descartes, with whom he exchanged letters. In some sense he reproduced, some years earlier, the intellectual itinerary of Leibniz. In the beginning, he was an enthusiast of the Cartesian natural philosophy, but his mood evolved in an opposite direction, and he developed a desire to refute Descartes. More based his arguments on notions taken from old philosophical tradition, mainly the Platonic doctrines as seen by a Christian reader. He thought that the Cartesian attribution of all phenomena to blind matter left almost no place for God and the spirit in the universe, which for him led to a dangerous materialism and atheism. And so he proposed a different definition of extension:

> By true extension you understand that which is accompanied with the faculty of being touched and possesses impenetrability. I admit with you that this is not a case with God, with an angel, and with the soul, which are devoid of matter; but I maintain that there is in angel, and in souls, just as true extension, however little acknowledged by the run of the schools.[28]

Thus More claimed that it is not matter but the spirit which truly has the essence of an extended substance: it is a substance because it occupies space and can affect matter. Differently from inert matter, the nature of spirit is to be indivisible, penetrable and self-moving. Also, the spirit is a plastic power and so it is able to expand or contract in such a way that it can produce many phenomena in nature, like directing or moving parts of matter, making it cohesive and causing

[27] MORE, H. *Philosophical Writings of Henry More*, in *Immortality of the Soul* Bk III, Ch 13, Par. 7.
[28] BURTT, Edwin. *The Metaphysical Foundations of Modern Physical Science*, p. 144.

effects that cannot be explained mechanically. As he considered matter to be inert, so its forming atoms as well are only building blocks submitted to a motion which is not generated by them. In a letter of 1649 to Descartes, More wrote:

> Lastly, since incorporeal substance has this stupendous power (*virtus*) that by its mere application it can bind together or separate, divide and project or control matter without the use of strings or hooks, wedges or fastenings, may it not seem likely that it can contract itself together, since nothing impenetrable impedes it, and the like?[29]

Lady Anne Conway, the pupil of More, was to radicalise his ideas, denying real existence to matter, considering it merely a derivation of spirit.[30]

Thus his doctrine begins with the recognition that extension was the feature existing in both spirit and matter. The pervading spirit conferred extension to brute matter and consequently achieved the interaction between the two spheres of reality. More claimed that the whole space was spiritual or divine, a fact that guarantees its status as a very real thing. In the work *Enchiridion Metaphysicum* he identifies Space and God, eliminating the distinction between God and the Hylarchic Spirit or between Spirit and universe. He was accordingly somehow defending a doctrine with strong pantheist connotations. Thus the spirit is not only the moving force in the universe but also the immobile background to where the matter is moved:

[29] HALL, A. R., *Henri More and the Scientific Revolution,* p. 153.
[30] HALL, p. 7.

> If after the removal of corporeal matter out of the world, there will be still space and distance, in which this very matter, while it was there, was conceived to lie, and this distant space cannot but be conceived to be something, and yet not corporeal, because neither impenetrable nor tangible, it must of necessity be a substance incorporeal, necessarily and eternally existent of itself; which the clear idea of a being absolutely perfect will more fully and punctually inform us to be the self-subsisting God.[31]

The notion is based on the idea of the omnipresence of God, central as we have seen in Neoplatonic thought, but is also present in the Jewish religious tradition, as we can see in a letter to Descartes.[32] More says:

> …you define matter or body in too broad fashion, for it seems that not only God, but even the angels, and everything which exists by itself, is an extended being; whence extension appears to possess no narrower limits than the absolute essence of things, though it can nevertheless be diversified in accordance with the variety of the same essences. Now the reason which makes me believe that he is omnipresent, and fills immediately the whole universe and each of its parts; for how could he communicate motion to matter, as he has done betimes, and as he is

[31] JAMMER, Max, *Concepts of Space, the History of Theories of Space in Physics,* p. 47 (the appendix to the *Antidote against atheism*).

[32] More attributed his idea of divine extended space to Pythagoreans: "I on the contrary when I have so manifestly proved that the internal space or place (*Spatium sive Locum*) is really distinct of matter, I conclude that it is for that reason a certain incorporeal substance or spirit, jus as the Pythagoreans formerly thought. And through that same gate through which the Cartesian philosophy seemed to intend to exclude God from the world, I on the contrary strive to reintroduce him. And this infinite and immobile extension appears to be not only real but divine." Quoted in Hall, p. 189.

> actually doing according to you, if he did not have immediate contact with matter … God is therefore extended and expanded after his fashion; whence God is an extended being.[33]

Thus, if this extension communicates motion to nature it does not do it irregularly or miraculously. It does it in such an orderly way that we can acquire scientific knowledge of it. The gravitation of planets was supposedly to be explained by this agency, as was the resonance between musical strings and the formation of the animal foetus and development of plants.[34] Thus the working of this principle is not only the blind necessity of mechanical causation. Nonetheless the principle can have its effects predicted: "the only thing mechanical about the spirit of nature is that it acts in predictable ways in its interaction with matter."[35]

Another point of disagreement between More and Descartes concerns the absolute or relative character of space. This will be important for us as we look to Leibniz's work. According to Hall, Descartes considered the recognition of motion to be dependent on the position of observer – each observer having an account of space that is necessarily relative to himself and so different from the position of other observers, it being impossible to discern a best choice between the alternatives.[36] Against this relativist vision, More defended the idea of a privileged observer, who was obviously God, who could have a unified vision of everything.

Newton defended the same notion of absolute space. Many historians of science (for instance, Hall, Westfall and Koyré) presumed that this conception of Newton was due to the influence of More, directly, or by means of Barrow. Referring to the concepts of absolute

[33] Idem, p. 144.
[34] HALL, A. R. *Henri More and the Scientific Revolution,* p. 115.
[35] HALL, p. 115.
[36] HALL, p. 207.

space and absolute time of Newton, Alexandre Koyré says that they are: "the selfsame concepts for which Henry More fought his long-drawn-out and relentless battle against Descartes."[37] And the conception is sustained as a consequence of metaphysical or theological motivations of Newton, to which he also added axioms necessary to his dynamics. But the presence of theological assumptions is clear, since the idea of absolute space is to be connected or explained by the idea of the omnipresence of God. Thus Newton says: "God is one and the same God always and every where. He is omnipresent not as in *virtue* only, but as in *substance*. In him the universe is contained and moved, but without mutual interaction, for just as God has no feeling of the motions of bodies, so bodies feel no resistance from the omnipresence of God." [38]

The second most important Cambridge Platonist, Ralph Cudworth (1617–1688), published his massive *The true intellectual system of the universe* in 1678. In this book he developed the notion of Hylarchic spirit derived from More, which he calls "plastic spirit". It suffices here to stress a few points from this work.

Cudworth also claimed that the principle is present strongly in the history of philosophy. In most cases, however, he stresses the intermediary nature of what he calls the Plastick principle:

> And as Hippocrates followed Heraclitus in this (as was before declared) so did Zeno and the Stoicks also, they supposing besides an Intellectual Nature, as the Supreme Architect and Master – builder of World, another Plastick nature as the Immediate Workman and Operator; which plastick nature hath already been described, in words of Balbus, as a thing which acts not fortuitously, but regularly, orderly and artificially (…) Lastly, as the latter Platonists

[37] HALL, p. 219.
[38] HALL, p. 217.

> and Peripateticks have unanimously followed their Master herein, whose vegetative Soul also is no other than a Plastick nature, so the Chymists and Paracelsians insist upon the same thing, and seem rather to have carried the notion on further, in the bodies of animals, where they call it by a new name of their own, The Archeus.[39]

In the case of the Stoics, the principle is presented in a monist way, and for this reason Cudworth called them atheists.[40]

Cudworth mainly developed the idea that nature acts like an artist, but it acts without explicit consciousness. Cudworth, like More, asserted that the plastic nature does not act blindly by necessity of mechanism or by fortuitous chance: "Nature is art as it were incorporated and embodied in matter, which do not act upon it from without mechanically, but from within vitally and magically."[41]

Again we have the same reference to passages of Aristotle that inspired the thinking about unconscious teleology:

> How the Plastick Nature is in general to be conceived, Aristotle instructs us in these words: If the Naupegical art, that is the art of shipwright, were in the timber itself, operatively and effectually it would there act just as Nature does (…) And thus we have the first general conception of the Plastick Nature, that it is the art itself, acting immediately on the matter., as inward principle.[42]

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[39]CUDWORTH, Ralph, *The True Intellectual System of the Universe*, London: Printed for R. Royston, 1678, p. 153.

[40] "Stoical atheists, who made the whole world to be dispensed by one Orderly and Plastick Nature." CUDWORTH, p. 141.

[41] CUDWORTH, p. 156.

[42] CUDWORTH, p. 155.

In many places he discussed the unconscious work of the Plastick Nature and it suffices here to only mention a short passage: "there is in the next place another imperfection to be observed in the Plastick Nature, that as it doth not comprehend the reason of its own action, so neither is it clearly and expressly conscious of what it doth …"[43]

But for nature to act in this way, Cudworth said, it must follow a program inserted in its seeds, as the Stoics propounded: "Nature is a habit moved from itself according to Spermatick Reasons or Seminal Principles, perfecting and containing several things, which in determinate time are produced from it, and acting agreeably to that from which it was secreted." Thus in Cudworth we have the meeting of the idea of plastic nature, which is the shaping extension, with the Aristotelian notion of *energeia/entelecheia* which notion is, in its turn, coloured with meanings of Stoic origins: the seminal principles. To all this is also added the idea of the presence of the unconscious work. In other words, all that Plotinus presented as an attribute of his non-extended soul, was established by More and Cudworth as properties of the extended or plastic soul.

It should be also mentioned here that Leibniz recognised the link between the doctrines of More and Spinoza.[44] He quoted in the same text in which he discussed the Platonists of Cambridge the doctrine of Spinoza that "thinking substance and extended substance are one and the same, known now under the attribute of thought, now under that of extension." For Spinoza, the principle of continuity precludes that extension can be regarded divisible and thus only by a superficial approach can account for such divisibility.[45]

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[43] CUDWORTH, p. 158.

[44] LEIBNIZ, In *Refutation of Spinoza*, 1708, Wiener, p. 486.

[45] "… but if we regard it (extension) as it is represented in our intellect, and conceive it as substance, which it is very difficult to do, we shall then, as I have sufficiently proved, find that it is infinite, one, and indivisible." Part I, Prop XV, SPINOZA, *Ethica*, MSTU (Middle Tennessee State University), Philosophy Web Work Hypertext, 1997.

Leibniz

Leibniz followed the Platonic tradition represented by Proclus in some aspects, but in others he modified it. He acknowledged three levels of objects of knowledge: sensible, imaginable and intelligible. And he said, like Proclus, that "Mathematics is the science of imaginable things" and that geometry is the science of universal imagination.[46] He also considered the space of imaginable objects as an ideal thing, like the intelligible matter of Aristotle. Proclus, however, assumed the notion of intelligible matter but his concept of imagination is substantial, as it guides the plasticity of soul when it informs matter. In contrast, for Leibniz, the imagination is only an ideal entity of the mind.

Thus for Leibniz we see the extended thing and then the mind obtains a dimensionless idea of that extension. But the extended thing we see is not really substantial extension. As we saw in the last chapter, its extension is a well-founded phenomenon that results from the harmony of the set of monads. Thus the extension we see is not a real continuum. It is not real, but is a creation of the mind. In this sense extension is an entity of reason. As abstraction it is an imagined entity and so in this sense, surfaces or spaces and lines are also imagined things. In a letter to De Volder he explained this point:

> For space is nothing but the order is the existence of things possible at the same time, while *time* is the order of the existence of things possible successively (…) extension is an abstraction from the extended and can no more be considered substance than can a number or a multitude, for it expresses nothing but a certain non-successive (i.e., unlike duration) but simultaneous diffusion

[46] JOLLEY, *The Cambridge Companion to Leibniz,* p. 184.

> or repetition of some particular nature, or what amounts to the same thing, a multitude of things of this same nature which exist together with some order between them; and it is this nature, I say, which is said to be extended or diffused.[47]

The two orders result from relations among a plurality of discrete things. Because they are abstractions, these two orders are only an extrinsic denomination and indifferent to the things from which they were abstracted. Number and time also have the same status of things of the imagination, as they are abstracted from numbered things. In this case, they are an order of succession, whereas spatial objects pertain to the order of coexistence. Thus Leibniz sustained that space and time are not substantial: "space and time are order of things but not things." Space and time are well-founded phenomena and can be explained in terms of perceptions of the souls.

In both cases, the order of co-existence and the order of succession, the unities are organised in relations by perception, that is, by the understanding or imagination. In this sense, Leibniz wrote in the *New Essays*:

> It may be that dozens and score are merely relations and exist only with respect to the understanding. The units are separate and the understanding takes them together, however scattered they may be. However, although relations are the work of the understanding they are not baseless and unreal. The primordial understanding is the source of things; and the very reality of all things other than simple substances consists only in there being a

[47] LEIBNIZ, *Correspondence with De Volder*, June 30, 1704, Loemker, p. 536.

> foundation for perceptions or phenomena of simple substances.[48]

Thus, although the relations are only in the understanding they are not altogether unreal. Their reality is guaranteed by the fact that they are present in the understanding of God.

It is because of this process that Leibniz maintained the constructive character of a perception. In some sense, this is the second function for imagination, which is also a function of the understanding: to bestow unity to sensible things. Thus the sensible world, as a phenomenon, does not have true unity: "a body is not a true unity, it is only an aggregate, which the Scholastics call a being *per accidens*, a collection like a herd. Its unity comes from our perception. It is a being of reason, or rather, of imagination, a phenomenon."[49]

These thoughts about imagination, extension and phenomena are associated with Leibniz's conception of matter. Leibniz rejected the Cartesian idea of matter as a perfect fluid or as equivalent to extension. The idea of a perfect fluid is to be opposed as being as absurd as the idea of the perfect hard atom which cannot be split. All matter must be something between these two extremes of absolute cohesion and absolute fluidity, and so even liquids have some kind of cohesion. Leibniz thought that matter must be a kind of elastic fluid, since it can be separated. Consequently, it must be discrete in its deepest nature. The ultimate foundation of the physical world must be these discrete entities or unities. Thus liquidity is equivalent to divisibility, so matter is not a true continuum as abstract space is, but can be divided to infinity:

> Rather, we would think of space as full of matter which is inherently fluid, capable of every sort of division and indeed actually divided and

[48] LEIBNIZ, *New Essays,* 145.
[49] LEIBNIZ, *Conversation of Philarete and Ariste*, 1711, Loemker, p. 623.

> subdivided to infinity … That is what brings it about that matter has everywhere some degree of rigidity as well as of fluidity, and that no body is either hard or fluid in the ultimate degree – we find in it no invincibly hard atoms and no mass which is entirely unresistant to division. The order of nature, and in particular the law of continuity, equally pull down both alternatives.[50]

The argument Leibniz used for explaining elasticity is this: a body must be made of smaller parts and the elasticity is due to the movement, caused by tension, of these parts in a subtle fluid which permeates them. This fluid, by its turn, is composed of still smaller parts that themselves float in a fluid. This process goes on to infinity.[51] Thus the elasticity (or fluidity) that the Platonists of Cambridge used to support the idea of continuous extension (because it can be stretched in many forms without losing its unity), was transformed by Leibniz into an argument for the discrete nature of matter and of the universe as whole.

But Leibniz rejected the idea of plastic natures for another reason. As Wilson points out, Leibniz believed that the idea of plastic natures was not the idea of an internal agent but of an external one. In fact, there is a dualism when More defended the idea that plastic nature always acted on inert matter.[52] But this is not the only way of seeing these matters. As we saw in our exposition of Proclus, the duality of acting principle and acted-upon matter can be seen as both parts of the soul. For this reason Lady Anne Conway and perhaps Cudworth were even closer to Proclus than More was. The soul is then considered as

[50] LEIBNIZ, *New Essays,* 60.

[51] Daniel Garber quotes two passages of Leibniz in this respect: "Elasticity ought always to derive from a more subtle and penetrating fluid, whose movement is disturbed by tension or by the change of the elastic body" And: "And since this fluid itself ought to be composed, in turn, of small solid bodies, themselves elastic, one well sees that this replication of solids and fluids goes to infinity." In JOLLEY, N., *Cambridge Companion to Leibniz,* p. 323.

[52] WILSON, C., *Leibniz's Metaphysics: a Historical and Comparative Study,* p. 175.

having the dual ontological level that makes a perfect continuous link between the unity of Intellect and multiplicity of matter. We have presented the arguments that the Platonists of Cambridge used to sustain it. But also Paracelsus and Van Helmont, following the idea of world Soul, postulated the existence of a certain spiritual and spatial medium for the possibility of transference of accidents from one subject to another. By means of this conception, all types of bodily extension are somehow united by a connecting field, "the Light of Nature", that conveys images inside the World Soul. None of this exists in Leibniz, as he always denied both the existence of the World Soul and the transference of accidents. He interpreted this notion of "Light of Nature" not as a real entity, but only as the access to the contents that we have in our own mind:

> But the light of nature, as it is called, involves distinct knowledge; and quite often a 'consideration of the nature of things' is nothing but the knowledge of the nature of our mind and of these innate ideas, and there is no need to look for them outside oneself.[53]

The corresponding immanent imagination, the plastic faculty that acts as demiurge and provides the extended form for the body, is also naturally ruled out.

For Leibniz, the monads are non-dimensional and immaterial beings and consequently they cannot interact with anything extended. Beside, because the soul is this immaterial unity, it is outside space and any extension is only a phenomenal appearance of an aggregate of monads. In fact, Leibniz thought that he could replace the extended plastic natures by his own conception of an infinity of discrete monads. Thus in a writing of 1705, entitled "*Considerations on Principles of Life,*

[53] LEIBNIZ, *New Essays,* p. 84.

and on Plastic Natures" he agreed with Cudworth that the laws of mechanics alone could not form an animal. But he said:

> Thus I have no need to resort with Cudworth to certain immaterial plastic natures, although I remember that Julius Scaliger and other peripatetics, and also certain partisans of the Helmontian doctrine of *Archei*, have believed that the soul manufactures its own body. I may say of it *non mi bisogna, e non mi basta*, for the very reason that pre-formation and organisms *ad infinitum* will furnish me the material plastic natures suited to the requirements of the case; whereas the immaterial plastic principles are as little necessary as they are little capable of satisfying the case.[54]

Therefore, Leibniz said that the soul is always accompanied by an organic body. This is similar to the plastic natures, with the difference that it is formed by an infinity of discrete elements, other monads.

Leibniz had another reason for rejecting the plastic natures. According to him, the science of mechanics proves that the interaction between the soul or plastic natures and matter was impossible. Bodies can only interact with bodies. He reported that Descartes has well established the law of nature that the same quantity of force is always preserved. Consequently, the soul could not increase or diminish the force of bodies. Leibniz thought that he had proved that even the total direction of the forces of bodies could not be changed by the soul (contrary to what Descartes believed). Thus these two levels do not interact. The souls, he said, must follow their own law of final causes, following a progressive series of perceptions according to good and evil

[54] LEIBNIZ, *Considerations on the Principles of Life, and on Plastic Natures*, 1705, Wiener, p. 197. The expression means: "I don't need these notions and they are not enough for me".

and the bodies or extended things must follow their own laws, the efficient causes or the mechanic laws of motion. The two levels are synchronised by the pre-established harmony.[55] Thus, by constructing a metaphysics partly based on the results of the still-young science of Mechanics, and partly based on Plotinus' doctrine of the soul (dimensionless soul) he ended by creating a very sharp dualism very similar to the Cartesian one, where the substance of matter cannot interact with the substance of mind.

Leibniz remained a strict supporter of mechanism and rejected non-mechanical causes, as can be seen in his letter to Clarke. He rejected the explanation provided by the theory of gravitation of Newton on the grounds that it did not fit into the theoretical framework of the new science of mechanics. The movement of bodies, he says, must be linear otherwise it would be miraculous:

> If God wanted to cause a body to move free in the *aether* round about a certain fixed centre, without any other creature acting upon it, I say it could not be done without a miracle, since it cannot be explained by the nature of bodies. For a free body naturally recedes from a curve in the tangent. And therefore, I maintain that the attraction of bodies, properly so called, is a miraculous thing, since it cannot be explained by nature of bodies.[56]

[55] LEIBNIZ, *Considerations on the Principles of Life, and on Plastic Natures*, p. 193: "The system has moreover the advantage of preserving in all its rigor and generality the great principle of physics, that a body never receives change in its motion except by another body in motion which impels it."

[56] LEIBNIZ, Third letter to Clarke, part 17, Loemker, p. 684. Against the view of Leibniz it is necessary to recall that in the XIX century, Faraday, in his research of electromagnetism, discovered that the movements of bodies can be naturally circular.

Leibniz insisted that extension is divisible presumably as any bit of common sense can verify. However, the Platonists of Cambridge (and perhaps Spinoza too) maintained that the extension to which they referred is a kind of basic and primeval spiritual extension. This spiritual extension represents the proper omnipresence of God and follows the Platonic tradition. As Koyré pointed out, Newton's concepts of absolute space and absolute time are the same as those of Henry More and possibly are derived from him.[57] And, as Halls claimed, Henry More was a decisive influence "in assisting Newton to repudiate Cartesian mechanism."[58] Thus Newton rejected the main axiom of Descartes' science that one body can only act on another by direct contact. In fact, gravitational attraction was a good example of non-mechanical action. In convergence with More, Newton wrote in the last edition of *Principia* about the universal, subtle and elastic spirit that is the main cause of coherence, gravity, optics and electricity, as well as of animal sensation.[59]

In this paper we have seen that in the Neoplatonic tradition there was a branch that defended the substantiality of extension. Proclus is important in this tradition because he tried to explain how the soul, being a principle Limited and Unlimited, could be the objective basis of this extension. His theory also attempted to explain the immanence of mathematics in nature, quite different from the nominalism of Aristotle and Leibniz. His later followers were the Platonists of Cambridge.

[57] HALL, p. 219. The reference is: Koyré, A., *From the Closed World to the Infinite Universe*, Baltimore, 1957, p. 160.
[58] HALL, p. 255.
[59] HALL, p. 240. The reference is Newton, I, *Philosophiae naturalis Principia mathematica,* Cambridge, 1713, p. 484.

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