

Self-organized bodies, between Politics and Biology. A political reading of Aristotle's concepts of *Soul* and *Pneuma*¹

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Abstract. The idea of a self-organized system brings both political and biological discourses together, for they both aim at explaining how a certain compound can achieve self-unity out of plurality. Whereas biological metaphors in politics have been much examined, political metaphors in biology have not. In this paper I intend to show how political metaphors can enlighten biological discourses, taking the work of Aristotle as a case-study. The relationship between the main elements of a living-body could be better understood within a political scheme: the *soul* rules over the body through *pneuma*, its *prime minister*. This scheme entails, thus, to re-examine Aristotle's definition of soul in the light of the key concept of *pneuma*, and to replace the *hylemorphic* explanation with a triadic one. On the one hand, soul is the *entelecheia* of the body as it keeps both the form and the end of the organism, which is its unity. On the other hand, the moving-efficacious principle that performs unity by circulating through the body, and by linking the body to its environment is *pneuma*. Therefore, the political formula: "the king does not govern" could shed light upon the structure of the living body: whereas the soul rules the body, *pneuma* governs it. Although Aristotle does not

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build his biology upon political concepts, metaphors are already there, shaping his explanations, within the *bio-theo-political paradigm of autarchy*.

Keywords: Self-organization; System; Government; Circulation; Autarchy.

1. Semantic displacements within the *bio-theo-political paradigm of autarchy*

The difficulty concerning the concept of life is not due to its *generality*, as it is also the case for the concept of being (Dalleur 2015). The elusiveness of the concept of life is due to its many different meanings according to the different discourses that signify it, such as biology, politics, theology and ethics. Although it is rooted differently in each discourse, one could argue that it is not a purely equivocal word: all these discourses seem to have something in common when speaking of life. Somehow, they all characterise life not by a definite content (*genus* and *diferentia specifica*), but by the use of the reflexive prefix *autos* (self) when depicting vital activities (being theological, political, biological or ethical). Life is defined in contrast to the inert by its capacity to rule over itself (*auto-nomy*), or even more, itself being its own cause (*autos-archê*). At least in Western tradition it seems that life is signified within the *bio-theo-political paradigm of autarchy* (Grassi 2018a; 2018b). Of course, within this paradigm, life is turned into an analogous concept, for now the degree of autarchy (or autonomy) that living beings have is the criterion for its place in the living scale, from cells to God and backwards (Dalleur 2015; Grassi 2018c). However, as every paradigm, this meaning of life is construed historically, and philosophy should examine how it was discursively built.

The building of such general and radical concepts (as the one of life), is not done hierarchically, from one axiomatic discourse to the others below. It is not the case that there is a grounding discourse that is then caught by the others in search for a foundational meaning. The semantical displacements between the different discourses take place not in a single-way direction, but in a two-sided way; in other words, exchanges between discourses do not happen vertically, bur horizontally. For instance, the ethical discourse on

a good-life is taken by the theological to depict God's faithfulness, as much as the theological idea of an impassible God is taken by ethical discourses. Which discourse came first, is a question that lacks importance and cannot be properly answered. The important issue is that, once there is a pivotal axe depicting life (in the case of the paradigm of autarchy, its self-reflexive causality), discourses borrow each other their arguments, descriptions and notions, in an exchangeable and reversal relationship of justification and grounding. And this complex intercourse between discourses is what makes a critical examination almost an impossible task to undertake. The extreme difficulty in this exam resides in the semantical fluidity between the discourses involved, and the impossibility to watch over all of them at the same time. Therefore, one should deconstruct this building stone by stone, verifying how different discourses on life (in my case) make sense only within the paradigm, and how they mutually ground each other.

In this paper, I will examine one of these semantical displacements between the discourses on life, one that happens in between politico-economical and biological. I shall explore how the organic body and the city are intertwined by the idea of *self-organization*, both pictured as self-organized systems. Whereas the biological metaphors in politics have been largely examined (the coining of the concept of *Body Politic* is just the result of this tradition), the political metaphors in biology were not taken too much into account. Therefore, I will focus on the latter and, in order to see how political and economic schemes are behind the understanding of living bodies, I will take Aristotle as my *case study*, since his influence both in biology and in politics makes of his work an unavoidable *locus* to reflect on.

2. The body and the city as self-organized systems

Aristotle's reflections on living beings are at the core of his whole philosophy, and "life" as a peculiar phenomenon is not just present in his "biological" oeuvres, but also in his ethics, politics, psychology, theology, and metaphysics. In a certain way, living beings reveal paradigmatically the unity and complexity of natural substances (Katayama 2008; Miller 2005). When

specifically reflecting upon natural living beings, Aristotle refers to an *organic body* (*soma organiké*) as being different from a *physical body* (*soma physikon*). The concept of an organized body points out to a *holistic* approach, for the idea of organization refers to a complex system of parts that has certain functions for the sake of the system. However, living beings are not just organized bodies (an artefact is also one), but an organic body that organizes itself by itself, that is, that has an *immanent causality* (Oderberg 2013). In short, they are *organic self-constituted bodies* or *self-organized systems*. The question is, thus, how does the living organize itself. This question is haunting Western biology from its very beginning, and one could find different strategies to answer this riddle, from mechanismism to vitalism. In the latter case, where the living body is not just a machine made out of different parts and resembling our own manufactured *automata* (from clocks, to fountains, to robots), the living body was considered as a certain totality that is ruled by itself, an *Organismus*, and its vital principle cannot be simply deduced from physical or chemical principles (Cheung 2006). Although vitalism is a quite broad and not sufficiently defined category, one could argue that Aristotle's perspective is closer to it, if the only alternative is mechanismism.

Now, to understand the dynamics of the living system, one could point out certain analogies and metaphors coming from politics, for both biology and politics face the need to explain how a plurality of elements come together as a whole within an internal logic (that is, not due to an external principle, as if it were the case of artefacts). Politics faces the task of achieving unity by *disposing* the individuals in light of the needs of the whole, giving every-*one* a certain *role* to play in the city, so that *no-one* is no longer *all-one* (*alone*).² Thus, similarly to an organic body, the *polis* is *self-organized* by bringing its constituent elements (the singular people) together: in other words, the city must give every-*one* a certain function, make of every- and single-*one* an *organ* or instrument of the City-State in order to achieve its self-sufficiency (that is, its possibility to live by its own). *Autarchy* (Self-sufficiency) is the very criterion that defines a city as

² The word "alone" comes from this contraction: <http://www.etymonline.com/index.php?term=alone>

such, for only a whole can subsist, whereas a part depend on something broader: there is, thus, a certain link in Aristotle between *subsistence* and *self-sufficiency*. In a holistic logic, parts are not subsistent in themselves, but are defined functionally within the system. Therefore, the whole “comes first”, as it is clear in the case of the organic body:

Thus, also the city-state is prior in nature to the household and to each of us individually. For the whole must necessarily be prior to the part; since when the whole body is destroyed, foot or hand will not exist except in an equivocal sense, like the sense in which one speaks of a hand sculptured in stone as a hand; because a hand in those circumstances will be a hand spoiled, and all things are defined by their function and capacity [...]. It is clear therefore that the state is also prior by nature to the individual; for if each individual when separate is not self-sufficient, he must be related to the whole state as other parts are to their whole... (*Pol.* I, 1253a, 19–30).

However, there is a tension in Aristotle himself regarding this dialectic between part and whole, for the logic of the whole depends on the decision of what to consider as being a whole. If one takes, for instance, the relationship between Politics and Economy, one could argue that the State is *posterior* to households, for it is compound by them. Economy is, thus, anterior to politics, and so is its actions, for a family is a part of the State (Cf. *Econ.*: I, 1, 1343a, 10–14). The riddle of this tension is to be found in the need to understand systems, that is, holistic entities: the art of economy, for instance, aims at assuring the household *subsistence* by the proper administration of the Landlord (*oikonomou*) (*Econ.*: I, 6, 1344b, 22–27). Thus, parts and wholes are a matter of perspective: a house could be seen as a whole or as a part of the city; a human being could be regarded as an individual or as a part of the city; even more, an organ of the body could be seen as an individual or as a part of the living body. If one takes, for instance, the physiology of Bordeu, where the living body is not a “unitary-monarchic” being, but it is made of many “little lives”, he describes the organic body in political terms, as a “confederation of organs” (see: Moravia 1978: 56). In any case, what defines a whole seems to be the very idea of *self-sufficiency* (*autarcheia*),

an idea that is at the core of political-economical and ethical discourses (Wartelle 1968 : 49, n. 3), and could also be applied to organisms: living beings are like *house-keeper* (*oikonomikós*) that conserve and assure their own life (*HA*, IX, 622a 1–10). Although Aristotle is far from the Modern idea of “animal economy”, both concepts of economy and organism seem to be already bound together in Greek medicine and philosophy (Wolfe, Terada 2008; Balan 1975) mainly by the notions of autonomy and auto-regulation.

3. The sovereignty of the Soul

For an organization to take place, the unity of the system (the finality or goal of the organizational process), composed by diverse elements (materiality or material principle), must be achieved by a formal and an efficient cause. Concerning living beings, Aristotle claimed that the soul is the *form* (or essence) of “a certain kind of natural body which has in itself a principle of movement and rest” (*DA*, II, 412b 10–20). The soul is the cause from which motion is derived, not only locomotion, but also growth and change of state (*DA*, II, 415b 9–30). However, it is not the soul that, for instance, nourish the body, nor performs concoction or breath: one could say that the soul sets all these activities in the move, but each of the organs performs these different activities.

Since *form* is a concept related to the notion of “act” (whereas matter relates to “potency”), Aristotle defines soul as “the first actuality of a natural body possessed of organs (*entelecheia he próte sómatos physikoû organikoû*)” (*DA*, II, 412b 5). Although Aristotle used the word *Energeia* more often, he coined the word *entelecheia* to refer to the soul. The understanding of this neologism has been much discussed. Some interpreters consider that philologically *entelecheia* means “to be at the end”, or “to be complete”. Graham argues one should not consider the coining of the word *entelecheia* as a consequence of putting teleology at the centre of Aristotle’s philosophy; for Graham, *entelecheia* is a term that Aristotle used to avoid the connotation of *kinesis* inherent in the concept of *energeia*, “attempting to formulate a concept that would carry its sense of completeness and

perfection without connoting motion or activity” (1989, 80). However, other interpreters translate *entelecheia* as “to have the end in oneself” or “having the end within”. George Blair argues that *entelecheia* is opposed to *dynamis* in terms of lacking and possessing the Form, and, since there is no word in Greek which means “possessing the end”, Aristotle invented one. This interpretation enlightens motion as an incomplete *internalization* of the end: “a thing cannot be at the end as not at the end, but an end (a Form) can be only partially internalized” (Blair 1993, 96). As for the difference between *entelecheia* and *energeia*, Blair also argues that actuality is not a good translation of either of Aristotle’s words for “act”: “rather one means ‘doing something internally’ (*energeia*), and the other means ‘having its end inside it’ (*entelecheia*)” (Blair 1967, 114). However, Chen argues that this distinction between a “kinetic” and a “static” word for act in Aristotle is not accurate: whereas in *energeia* the kinetic meaning is the original, and the static the derived, in *entelecheia* is just the opposite. “the terms *energeia* and *entelecheia* do have a difference; yet this difference does not lie in their meaning, but in their derivation and development. It is in this way that they are related to each other” (Chen 1958, 17).

Entelecheia refers, thus, to the static dimension of the act, by referring to the end of every process. To say that the soul is the *entelecheia* of the body means that life in its *actuality* is *due* to the soul. Soul makes some-*thing* into some-*body*, that is, turns physical matter into organic matter by aiming at the unity of the whole organic system. The soul is not *the end* (*telos*) of the living substance, but holds the end of the organism (that is, unity) in itself (*en-telos-echein*). The soul seems to *enact* the organic feature of the body by *disposing* its parts towards unity, as its final cause, and natural bodies “exist for the sake of the soul (“that for the sake of which” has two meanings – “that for the purpose of which” and “that for the benefit of which”)” (*DA*, II, 415b 9–30). Therefore, the soul, having the end in itself, *move* each part of the body without itself being moved: the soul seems to share with the final cause its immobility – as the static dimension of *entelecheia* could suggest. The meaning of the immobility of the soul is not clear, but seems to be at the heart of Aristotle’s biology. In his paper, Tweendale argues that

in Aristotle the soul does not change, increase nor decreases regarding the actualisation of its capacities, as if it were a “quasi-mathematical” concept (1990: 131). For Tweendale it would have been more reasonable if Aristotle claimed that the soul is the composite of the vital organs, or the central organ (the heart), and a form of life. However, I think that Aristotle’s conception of the soul as *entelecheia* demanded to consider it an *immobile cause*, for, although the operations and capacities of the soul *could* be bound to the body organs, the soul as such is neither its activities nor its capacities, but the cause that teleologically brings unity to the organism. While every living activity is referred ultimately to the soul, the soul itself is only referred to the *telos*-unity by which it governs the organism, and as *entelecheia* it must be immovable. The political metaphor seems to enlighten this riddle, for, like a ruler, the soul can act variously, but will remain the ruling principle of the organism all the way through. Just as the “ruler” is such from the birth of the state to its death, so the soul is such from the very start of the organism till its death. And this cannot be otherwise, since motion is only predicated of physical matter; only physical matter moves. The formal and final cause cannot *move anything* because they are not *something*. However, they do set *everything* in the move as far as movement itself has a certain orientation, a certain goal at which to aim. Organization as a process is, thus, meaningless without teleology, for the End and the Form comes logically before the parts (*PA*, II, 646a 25–646b 30). Just as the sovereign rules without governing (*le roi reigne mais ne gouverne pas*), the soul disposes the body as an organism without having an *office* nor performing a *task*.

In this regard, it is interesting to examine the question of the locality of the soul in the body, that Aristotle first placed in the heart. This strategy is due to two reasons, at least. On the one hand, its location in the centre of the organism have a politico-economical reason: the soul, as the ruling part of the organism, can easily reach every corner of the body. On the other hand, the heart is also the *hearth of the body*, the responsible for its *heating*: its centrality is not only a question of *locus* but also of *function*. There were strong reasons, thus, to affirm that the principle (*arché*) of life was posited in the heart. In Aristotle’s words, the heart is the central source of heating

of the body, and as such, must be well protected, “seeing that it is, as it were, the citadel (*akropolis*) of the body” (*PA* 670a23–25). Nevertheless, one could find some tension in this strategy between a formal cause and an efficient one, for the heating is itself an efficient cause, and also the heart is itself an organ: how, then, could the ruling principle be at the same time everywhere if it is itself located? The political understanding of the “place” of the ruler could shed some light: the soul must be “confined” within the “city of the body”, just as the ruler, in its *citadel*, not only to be defended, but mostly to be concealed, to rule in its immobility and invisibility. Tracy, for instance, argues that there is not any incompatibility between “the entelechy view” of the soul and the “heart view”, but a necessary implication of both: although the soul is present in all the body and organs, it should also be present in one organ *protos kai kyrios*, “in one organ formed to serve as origin and control center (*arché*) of the others” (1983, 330).

Now, another problem arises, for if one is to find the principle of life in heating, and if the *entelecheia* of the organism is the soul, one could easily be driven to the conclusion that the soul is the principle of heat. However, the soul cannot have any task at all, for it is not an organ, nor have any kind of “function” due to its immateriality and formality. Once again, one could picture this situation in political terms: while the ministers and the main officers are placed in the city as they embody or represent the ruler’s mandates, the ruler himself is *dis-embodied*, for he must be immaterialized to be everywhere and rule over everybody. One could find in Pseudo-Aristotle’s *De Mundo* the idea of the Persian King and how he rules over the Kingdom by staying in the palace through all his officials. This political scheme is taken to explain how God rules over the whole world, but it could also illustrate how the Soul reigns over its body (*De Mundo*, 398a, ss.).

4. *Pneuma* as the Soul’s First Minister

But, then, how does the ruler reign without himself moving, without acting? A possible way to explain this paradox is by a double movement strategy: the ruler is himself concealed, but made visible by his emissaries,

his ministers and officers. The question of politics is about this ruling and governing dialectical scheme. One interesting strategy to define the political is by reflecting on the idea of “office” and of the “official” (Bourdieu 2012). To explain how a State is such implies to address the acts of performing this condition of unity within plurality by the formalizing processes of *official* actions. A State officer is the intermediary between the ruler and citizenship; they govern and administrate the social body, as far as the ruler only reigns, that is, gives every office its ultimate goal. The officers are, themselves, a *special organ* of the sovereign, the organ that gives every part its function or role according to the goal and form stated by the ruler: the officers or ministers, then, could be considered as the “first organ” (instrument) by which the ruler reigns without governing.³

The living body, as a self-organized system, is ruled by the soul as its *entelecheia* and governed by a special kind of body, the *pneuma*. The concept of *Pneuma* plays a key role not only in Aristotle, but also in the whole Western philosophy, physiology, cosmology and also in Christian theology (for the Third Person of the Trinity is the *Ageos Pneuma*). The peculiarity of *pneuma* resides, first, in its border or ambiguous nature: on the one hand *pneuma* is a substance in between the sublunary and the heavenly world, belonging to the nature of *ether*, and having thus a divine nature (Freudenthal 1995; Bos 2003). On the other hand, *pneuma* is not Fire nor Air, but an element in between both,⁴ as it is the case with the “innate heat”, to which is strongly related.⁵

³ It is not surprising that Thomas Hobbes calls the sovereign not the head nor the heart of the State, but the “soul of the State” (*Leviathan*, “Introduction”). The ruler gives life to the State as it warrants social peace, which is the last goal of the Body Politic: internal war is just division, that is, the lost of unity. This fear of *stasis* (revolution, internal war, faction) not only shaped Hobbes’ (*Leviathan*, II, ch. XVII), but also Greek political philosophy, as it can be easily seen in Plato (*Laws*, I, 625e-626b) and Aristotle (*Politics*, ch. V). Again, the goal of organisation is to endure unity and avoid dis-aggregation.

⁴ Studying Galen’s physiology, which continued with Aristotle’s main view on respiration, Wilson (1959, 313) argues that this link between air and fire is also present in Modern physiologists.

⁵ There is some continuity between the concept of *innate heat* and the one of *pneuma*, especially regarding their nature of fire. However, whereas the *innate heat* aims at explaining the vital need of heating regarding every vital operation (such as concoction), the concept of *pneuma* explains the *circulatory* system of living beings, as far as it carries the vital heat

The other crucial characteristic of the *pneuma* is its circulatory function: *pneuma* relates the organism with its environment (mainly by breath), but also travels around the whole of the body carrying the vital elements to the different parts of the body, and thus turning the body itself into a system.⁶

In the past years, Bos (2003) has interpreted *pneuma* as “the organic (instrumental) body of the soul”,⁷ an interpretation that entail a radical

to every part of the body. As Freudenthal argues: “One of the specific functions of the conate *pneuma*, then, is to be the substance which, inhering in the blood and carried with it, assures the *continuous and unailing distribution of the vital heat throughout the body*” (1995, 128).

- ⁶ Aristotle was not too clear in his reflections about *pneuma*, and it is yet contested if the little Treatise *De Spiritu* is Aristotelian or not. However, it seems clear that *pneuma* is an element that keeps the organism alive by performing different tasks, as an instrument of the body that can achieve different needs (Gregoric 2015). The element of *pneuma* (later translated into Latin as *spiritus*) still played a major role in Ancient and Medieval times (Bono 1984). But one can also find in Descartes himself that *spiritus* has an axial place in the organism (Descartes 1996). In all cases, the main characteristic of *pneuma* is its presence in the whole of the organism as a *circulating* element.
- ⁷ In his book, Bos challenges the traditional hylomorphistic interpretation of Aristotle and defines Aristotle’s psychology as *cybernetic instrumentalism*: “My hypothesis is therefore this: Aristotle’s main point of criticism of Plato is that he combined the incorporeal soul with a body without doing justice to the fact that the soul itself undergoes a development and therefore has a potentiality, a being-in-potency, which is only actualized in the course of time. And Plato did not postulate an efficient principle besides the formal and material principles. Aristotle noted that this leaves unexplained the entire biotic process which for instance a cat goes through from its earliest youth to old age. Aristotle therefore introduced the wholly new idea that the soul is inseparably connected with a very special body which is capable of carrying out the master plan of which the soul is the blueprint, because this body is directed to that end. So the special soul-body differs essentially from all non-ensouled natural bodies. In his definition of ‘soul’ Aristotle says that the formal cause and the efficient cause in everything generated in the sphere of living nature, though clearly to be distinguished, are inextricably connected and together opposed to the material cause, which they transform into the visible body. It is this special body which as the instrumental body of an anima vegetative can be referred to as ‘productive’ and ‘nutritive’; and if it is the instrumental body of an anima sensitive as ‘sensitive’; and if it is the instrumental body of an anima locomotive as ‘appetitive’. Aristotle explains these different terms with reference to different degrees of ‘purity’ of *pneuma*. This conception is not hylomorphistic in the traditional sense. It is best described as ‘instrumentalism’, specifically ‘cybernetic instrumentalism’” (2003: 99). In his argument, Bos makes an analogy with modern information-processing apparatus, where the soul would be the software, and the instrumental body its hardware, whereas the rest of the body functions and works through this first instrumental body. Is important to note that Bos’ intention is to grasp a certain continuity between Aristotle’s lost dialogues (mainly Eudemus), his biological works and his *De Anima* (2003: chapter 1).

criticism to traditional Aristotelianism, based in the concept of *hylemorphism*, whose origin can be traced back to Alexander of Aphrodisias. For Bos, this kind of scheme where the soul is the form of a disperse and chaotic matter does not account for the originality of Aristotle's proposal, and misses the point of his critic to Plato. But it also entails that there is in Aristotle a kind of Platonism, in the sense that the soul is not dependent on the body, but that uses the body as an instrument through *pneuma*.⁸ Therefore, one could affirm that, while the soul is the *form* and the *entelecheia* of the organism, *pneuma* is the efficient cause of organism as being the *first organ of soul*. One can find, thus, a *triadic structure* of living systems: a *system (sustasis)* is a whole that has different elements gathered by a *third* element, the connecting element between the ruling form and the anarchic material. *Pneuma*, as this third connecting element, is what turns the living body into a *heterogeneous totality* by representing the sovereign principle. *Pneuma* is, thus, the *organic body* of the soul in the sense that it is the principle that organizes the parts of the body by acting upon them as the *prime minister* of the soul, its *sovereign*.⁹ Although some interpreters, such as Bos and Tracy, refers explicitly to this political metaphor, it seems that neither of them examines this semantical displacement in depth. Let me quote at large both interpreters.

Aristotle represented the operating apparatus of the visible body of living creatures as 'the one government' of this body, but at the same time introduced a distinction within this 'government' between the 'Crown' and the 'council of ministers' as the legislative and the executive branches. Someone who asks about 'the heart' of the chocolate factory will be referred to the computer room. Someone who asks about 'the heart' of the computer will be referred to the operating program. Someone who asks about 'the government' of the Netherlands

⁸ "The soul itself, by means of its instrumental body, produces the entire concrete visible body with all its parts, each of which has its own task and function. We could therefore surmise that Aristotle took the special soul-body to be the soul's instrument *par excellence*, and, next, regarded all parts of the visible body as instruments of the substantial unity of soul-principle-and-soul-body" (Bos 2003, 97).

⁹ Once again, it is interesting to see Hobbes' political philosophy: the public ministers are defined as the "organic parts" of the Body Politic (*Leviathan*, II, ch. XXIII).

will be referred to the buildings of the Council of Ministers. Someone who asks about the ruler over the council of ministers will be referred to ‘the Crown’. Thus, someone who asks Aristotle about ‘the soul’ of a living creature will be referred to the instrumental natural body which brings about all the processes in the living creature. But someone who asks him about ‘the proper soul’ will be referred to the incorporeal *entelecheia* which controls the *soma physikon organikon*. For Aristotle, the soul is something like ‘the chairman of the Board of Governors’ of a University, in the sense that a chairman always needs other members of the board and is not complete without them. The university is ruled by the Board of Governors. But in its turn the Board of Governors is led by the chairman” (2003, 121).

Among the various ways one thing is said to ‘be in’ ‘another’ listed at *Physics* 210a 14ss, Aristotle distinguishes the sixth way as thus: ‘As the affairs of the Hellenes are said to ‘be in’ the king and, in general, as something is said to ‘be in’ the primary agent of motion or change (210a 21–22). This may be the meaning Aristotle has in mind with regard to the soul and the heart at *De Motus Animalium* 703a 37: as ‘the affairs of the Hellenes’ are in the whole social organism so the animal soul is in the whole animal organism. But as the affairs of the Hellenes are ‘in the king’ in a special way so the animal soul is present ‘in the heart’ alone in the same special way, i.e., as in the primary source of change and control (Tracy 1983, 337).

On the one hand, albeit in Tracy’s paper the words *kyrios* and *arché* are taken in political sense, as control, his argument doesn’t stress this political analogy. On the other hand, Tracy does not distinguish as Bos the role of *pneuma* and of ministers from the sovereign control of psyche. This lack of distinction makes problematic the word “agency” referred to the soul, but this is also problematic in Aristotle’s text itself. We must remember that in Aristotle this political analogy is not properly developed, and, as any other philosopher, he is not building a coherent and closed system, but he is trying to grasp the essence of living things by means of multiple metaphors and concepts. Again, I intend only to open a possible path to understand the political paradigm of biology by stressing these implicit semantical displacements.

Returning, then, to the political scheme concerning the relationship between the body, the soul and *pneuma*, I claimed that the “border nature” of *pneuma* (as being both material and immaterial, that is, as “subtle matter”), connect the formal-immaterial soul with the materiality of the bodily parts. The soul, then, communicates the end of the organism to the *pneuma*, and the *pneuma* carries this message to the whole of the body, compelling each part to take its role by giving each one of them the principle of its work: *pneuma*, as the third element, is the *efficacious* principle that warrants the proper functioning of the organs and performs the unity of the body that the soul states. But there is one more peculiarity in *pneuma* that brings political metaphors to the front. *Pneuma* is not only an immanent economic principle that circulates within the territories of the organism, but also the principle that links the organism to its environment. This peculiarity is one that I will address in future papers, but I must emphasize this characteristic, since it explains not only the immanent dependence of the parts to the whole, but also the dependence of this whole to a major whole. In other words, *pneuma* is also the circulatory principle that links the organisms to a broader system, that is, to Cosmos.¹⁰ On the one hand, *pneuma* connects the individual with the species, for it is the condition to perform reproduction (Freudenthal, 1995). On the other hand, *pneuma* as the principle that organizes matter, also excludes the elements from the outside that cannot be appropriated: *pneuma* both assimilates the foreign elements and excretes them. *Pneuma*, therefore, is the *first organ* as far as it transforms material elements into organic matter, and as it excludes what cannot be *organized*. *Pneuma*, as the third connecting and circulatory principle, brings the material element “a(s)part”, in a double movement of inclusion-exclusion.

¹⁰ There is a certain continuity between the concept of *pneuma* and the fifth element of *ether* that allows to draw a continuity between theological, cosmological, psychological and metaphysical perspectives in Aristotle, reinterpreting, as well, the coherence of his entire work. As Freudenthal argues, “*the vital heat of Aristotle’s biological treatises is a de-theologized version of the earlier divine thermon*. This insight allows us to make sense of certain features of his biology, notably of his theory of vital heat, which otherwise appear as incomprehensible or gratuitous suppositions” (1995, 98).

Conclusion

The semantical displacements between politics and biology in Western thought are performed within the *paradigm of autarchy*: what defines both political and biological systems is the definition of organisms as being capable of *self-constitution*, *self-regulation*, *self-preservation*, *self-replication*, and so forth. Both living beings and cities are *self-organized systems*, and if the enigma of achieving self-unity out of plurality is what defines them, one can only expect semantical displacements between biology and politics to take place. Although Aristotle does not build explicitly his biology upon political concepts (as it is the case in Hobbes, that builds his political theory upon biological schemes), I tried to show that political metaphors can also shed light upon his biological explanations: soul rules over the body by its first minister, *pneuma*. Whereas biological metaphors in Politics are well-known and studied, one should notice that the reverse is also crucial in Western thought: political metaphors shape our biological discourses in a conceptual level, for living bodies are conceptualized *as if* they were political domains.¹¹

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¹¹ One interesting case in the history of physiology, concerning the use of political and economic schemes, is the work of zoologist Henri Milne-Edwards (1800-1885), who applied the principle of the “division of labour” (taken from Adam Smith) to organisms (see: Guillo, 2003: 214–218).

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