

# A Concausal Approach to the Mind-Body Problem

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**ABSTRACT:** This paper tests Leonardo Polo's *concausality* against the challenges of epiphenomenalism, overdetermination, and reductionism that the contemporary mind-body problem presents. An analysis of Jaegwon Kim's criticism of John Searle's Biological Naturalism exemplifies the aporias of the mind-body relation generated by dualism and physicalism. In contrast with these ontologies, Aristotle's notion of matter as potentiality requires a plurality of causal senses and is a viable alternative to both dualism and monism. Polo's reprisal of Aristotle's substance as *concausality* provides a revision of our senses of causation and an ontological framework that makes coherent our experience of consciousness and our understanding of physical reality.

**KEYWORDS:** Biological Naturalism, Matter, Mind-Body Problem, Reductionism.



The contemporary theories of the mind are mostly both a consequence and a response to Descartes' ontology. For Descartes, a substance has "one principal property which constitutes its nature and essence, and to which all its other properties are referred."<sup>1</sup> In the case of the material substance, extension is its essence. Moreover, the "natures of mind and body are not only different but, in some way, opposite."<sup>2</sup> Descartes' explanation reads as follows: "the concept of body includes nothing at all, which belongs to the mind, and the concept of mind includes nothing at all which belongs to the body."<sup>3</sup> Against this Cartesian backdrop, the current philosophy of mind is one of belligerent anti-dualism.

In contrast with the strict physicalist orthodoxy in the philosophy of mind, and perhaps ostracized because of it, Searle's solution is, nonetheless, a common-sense desideratum: to acknowledge the physical aspects involved in the mind while avoiding a reduction of mental states to physical states. His theory, Biological Naturalism (BN), intuitively tries to fit together how the world works –according to our current scientific theories–, and our everyday experience of consciousness. For Searle, consciousness is "a natural biological phenomenon."<sup>4</sup> Searle's proposal rejects the Cartesian categories and advances significant reformulations of the notions of causality and identity. For him, the mind-body problem does not require a solution because it is not really a problem. If anything, it requires a change of mind, so we do not turn the mind-body relation into a problem.

However, upon examination, many grow disillusioned with BN's proposal.<sup>5</sup> There is a tacit consensus about BN, both in the

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<sup>1</sup> René Descartes, *Objections and Replies*, On Meditation Six, 8A. 25.

<sup>2</sup> *Ibid.*, Synopsis, 7.13.

<sup>3</sup> Descartes, *Objections and Replies*, On Meditation Six, 6.225.

<sup>4</sup> John R. Searle, *The Rediscovery of the Mind* (MIT Press, 1992), 93.

<sup>5</sup> Jaegwon Kim's appraisal of Searle's BN (Jaegwon Kim, "Mental Causation in Searle's 'Biological Naturalism,'" *Philosophy and Phenomenological Research* 55, no. 1 (1995): 189–194) as either inconsistent has been further corroborated by Kevin Corcoran (K. Corcoran, "The Trouble With Searle's Biological Naturalism," *Erkenntnis* 55, no. 3 (December 1, 2001): 307–24, and also by Martine Nida-Rümelin, "Causal Reduction, Ontological Reduction, and First-Person Ontology," in *Speech Acts, Mind, and Social Reality, Studies in Linguistics and Philosophy* (Springer, Dordrecht, 2002), 205–21. Other assessments of BN either reject it

published literature and in the philosophers' hallway conversations, that almost pre-empts the need for serious consideration. For even if Searle's optimism that he has arrived at the correct solution to the mind-body controversy prevents him from abandoning his own theory in the certainty that the facts back him up, the arguments that get him there are not clear. To many, BN pulls the rabbit out of the hat with no one seeing the trick, not even when replayed in slow motion. Searle responds to these accusations stating that it is not philosophy but instead science, which will provide the details of how the brain causes the mind. However, the real question is whether BN is equipped with adequate ontological tools to replace the Cartesian worldview.

This paper sketches the basics of a proposal for the mind-body problem following Searle's view that consciousness is biologically grounded while drawing from a non-dualistic Aristotelian ontology.<sup>6</sup> Aristotle's interest in biology led him to examine life, the different operations of living beings, and the faculties for those operations: nutrition, reproduction, perception, imagination, desire, and *nous* (intellect). To Aristotle, life was defined by the possession of *psyche*. The *psyche*, as understood by the Stagirite, is not merely a passive disposition, a tendency to behave in particular ways under certain conditions, according to the properties of the individual components. Rather, it is an active principle that guides both the development of a living thing, according to a specific organization and direction (i.e., baby elephants grow into adult elephants and not butterflies), and the type of operations in which it can engage, including cognition.

Therefore, in Aristotle, cognitive capacities like perception and understanding come together with biological functions like nutrition and reproduction.<sup>7</sup> Although Aristotle noticed essential

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altogether, or offer repairs that turn BN in a form of a physicalism or property dualism.

<sup>6</sup> Recent studies appeal to hylomorphism as a fertile ground to avoid the mind-body problem. See for example: William Jaworski, *Structure and the Metaphysics of Mind: How Hylomorphism Solves the Mind-Body Problem* (Oxford University Press UK, 2016), David S. Oderberg, "Hylemorphic Dualism," *Social Philosophy and Policy* 22, no. 2 (2005): 70–99, Robert Pasnau, "Mind and Hylomorphism," in *The Oxford Handbook to Medieval Philosophy*, ed. John Marenbon (Oxford University Press, 2012).

<sup>7</sup> Nutrition, for example, is the "first and most common capacity of the soul, in

differences among them, he also saw their continuity as manifestations of life. Aristotle then would have endorsed the irreducibility of mental states without excluding the possibility that the mind is just another biological phenomenon in the world (and thus physical).<sup>8</sup> As Alan Code notes: "In one respect, Searle's view is like Aristotle's. Both treat the psychological as part of the physical."<sup>9</sup>

However, as illuminating as Aristotle's view may be in addressing the question of consciousness and its physical basis, the philosopher of Stagira was not our contemporary and did not have to go through the motions of Modern science. Aristotle's view on physics, so frequently deemed obsolete, casts a long shadow of suspicion on the applicability of his philosophy to contemporary issues.<sup>10</sup>

Leonardo Polo, a philosopher who has sought to rescue the best proposals of many thinkers in the history of philosophy and to show the legitimate place of often misleading claims, provides us with metaphysical insights that can repair, if not replace, not only the Cartesian dualistic apparatus and Aristotle's damaged image but also BN's desire to overcome dualism once and for all. Notwithstanding, we do not find in L. Polo a direct engagement with the philosophers who dealt with the mind-body problem. To this extent, this paper cannot present Polo's direct light on these conversations but an application of his view on concausality to the mental-physical dichotomy. The paper will explore how

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virtue of which life belongs to all living things" (*De Anima* ii 4, 415a 24-25).

<sup>8</sup> This paper is concerned with any type of consciousness or mental life that has a biological instantiation, that is from amoebas to human beings, and not specifically with intellectual consciousness or with the immortality of the soul.

<sup>9</sup> Alan D. Code, "Aristotle, Searle, and the Mind-Body Problem," in *John Searle and His Critics*, ed. Ernest Lepore and Robert Van Gulick (Cambridge: Blackwell, 1991), 105.

<sup>10</sup> Miles Burnyeat observed that Aristotle's philosophy of mind was flawed given its incompatibility with current physical theories. Others have not hesitated to interpret Aristotle as a functionalist theory (Hilary Putnam, Martha Nusbaum), although this claim has been refuted (see Alan Code and Julius Moravcsik, "Explaining Various Forms of Living," in *Essays on Aristotle's De Anima* (Oxford University Press, 1995).

concausality expands the senses of causality and complements recent hylomorphic proposals in the philosophy of mind.<sup>11</sup>

## 1. JAEGWON KIM'S OBJECTIONS TO BIOLOGICAL NATURALISM

Probably the best well-known attack on John Searle's Biological Naturalism (BN) is Jaegwon Kim's.<sup>12</sup> Examining Kim's objections can give us an excellent view of the aporias that a Cartesian ontology casts on the mind-body problem.

As Kim notes, BN endorses these three principles of non-reductive materialism: the irreducibility of the mental, the mind-body supervenience,<sup>13</sup> and the causal efficacy of the mental.<sup>14</sup> Indeed, Searle admits the *ontological* irreducibility of the mental: "We cannot do an eliminative reduction of consciousness, showing that it is just an illusion. Nor can we reduce consciousness to its neurobiological basis because such a third-person reduction would leave out the first-person ontology."<sup>15</sup> However, at the same time, Searle suggests causal supervenience<sup>16</sup> as a way of explaining the *causal* reducibility of mental states: "Conscious states are thus *causally reducible* to neurobiological processes. They have absolutely no life of their own, independent of their

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<sup>11</sup> Polo's rendering of Aristotle's notions of matter as temporal priority and form as entailing potentiality will be set aside in this discussion. While incorporating Polo's insights would undoubtedly bring our understanding of the mind and the physical reality into sharper focus, it would unreasonably extend the reach and conclusions of this paper. However, it should be noted that Polo's reformulations of Aristotelianism are broader than what is conveyed in the present discussion.

<sup>12</sup> Kim, "Mental Causation in Searle's 'Biological Naturalism.'"

<sup>13</sup> Supervenience for consciousness means that "the microphysical nature of a thing (a brain) wholly determines its mental nature. Thus an entity cannot change in respect to mental properties without changing in respect to its microphysical properties." (Corcoran, "The Trouble With Searle's Biological Naturalism," *Erkenntnis* 55, no. 3 (December 1, 2001): 309.)

<sup>14</sup> Kim, "Mental Causation in Searle's 'Biological Naturalism,'" 33.

<sup>15</sup> John R. Searle, *Mind: A Brief Introduction* (Oxford University Press, 2004), 113–14.

<sup>16</sup> The nature of this causal supervenience amounts to the following: "The existence of consciousness can be explained by the causal interactions between elements of the brain at the micro level, but consciousness cannot itself be deduced or calculated from the sheer physical structure of the neurons without some additional account of the causal relations between them." John R. Searle, *The Rediscovery of the Mind* (MIT Press, 1992), 112.

neurobiological basis. Causally speaking, they are not something “over and above neurobiological processes.”<sup>17</sup> Moreover, according to Searle, his views do not impede the causal role of the mental: “Because conscious states are real features of the real world, they function causally.”<sup>18</sup>

To Kim, Searle seems to be playing with us by first saying that the mind is not “something ‘over and above’ neurobiological processes” and then saying that “we cannot reduce consciousness to its neurobiological basis.” In other words, Searle’s ideas about the first-person ontology of the mental “are incompatible with other things he says about the status of consciousness,”<sup>19</sup> more specifically about the causal reduction of the mental.

Furthermore, Kim questions that these non-reductionist desiderata can be compatible with the principles of causal exclusion of non-physical causes<sup>20</sup> and with causal overdetermination (an effect may not have more than one cause). To put it succinctly, Searle’s BN has too many causes producing one single effect and posits mental causes that do not abide by the causal exclusion principle. More specifically, Kim notes that Searle identifies three possible types of *explanation* in his non-reductive physicalism: left to right from macro to macro, or micro to micro, or bottom-up from micro to macro.<sup>21</sup> For example, a mental property M – Searle’s desire to go skiing – is caused by an instantiation of a particular biological property, B.



<sup>17</sup> *Ibid.*

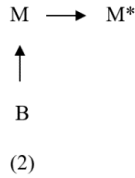
<sup>18</sup> Searle, *Mind*, 114.

<sup>19</sup> Nida-Rümelin, “Causal Reduction, Ontological Reduction, and First-Person Ontology,” 212.

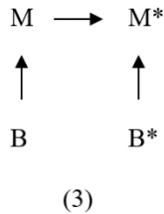
<sup>20</sup> As Kim defines it, the causal closure principle states the thesis that “every physical property-instantiation that has a cause at t has a complete physical cause at t.” Jaegwon Kim, *Supervenience and Mind: Selected Philosophical Essays* (Cambridge University Press, 1993), 280.

<sup>21</sup> Searle, *The Rediscovery of the Mind*, 87. See also Kim, “Mental Causation in Searle’s ‘Biological Naturalism,’” 193.

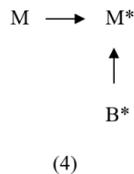
M can cause the instantiation of other mental properties (mental-mental causation). For example, his desire to go skiing (M) causes another numerically distinct desire (M\*), that is, his desire or intention to check the snow conditions in Squaw Valley.



The problem is that M\* is also caused by lower-level neurophysiological phenomena B\*

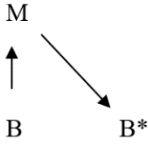


So, M\* has “two distinct sufficient causes,” one a mental phenomenon M and the other a biological phenomenon B\*. Thus M\* is causally overdetermined. From here, it follows that “all cases of mental-to-mental causation involve overdetermination of the effect.” The overdetermination follows from having two sets of sufficient and independent causes, that is, M and B\* causing M\*:



Moreover, Kim notes that M should also cause physical properties (top-down, downward, mental-to-physical causation), namely, the physical realization of the desire to check snow conditions B\* (i.e., typing in the computer). Consequently, there is a fourth type of causation, top-down, from the mental to the physical, diagonally from macro to micro. Namely,





(5)

Unfortunately, it does not seem possible to hold both. 1. The causal closure principle where all causal ancestry of a physical event remains within the physical domain,<sup>22</sup> and where micro-macro property relations follow a pattern of causation (or at least of causal supervenience according to Searle), and that nonetheless, 2. We also have downward causation. To avoid this problem, since, according to Searle, brain processes cause mental states that are also part of the physical world, BN should simplify things in the following manner:

**Brain State B (S)                      →                      Brain State B\* (S\*)**

Consequently, obtaining an ontological reduction of consciousness would reveal BN as a form of reductive physicalism. Kim states that BN has the unfortunate consequence of “killing the patient in the process of curing him: in its attempt to explain mental causation, it all but banishes the very mentality it was out to save.”<sup>23</sup> However, it is quite clear that Searle would not accept an ontological reduction of the mental. Therefore, if the reductionist option is not palatable to Searle, Kim suggests that he should make up his mind and admit property dualism. Consequently, BN will have to explain what every dualism must figure out, namely, how the mental and the physical relate to each other.

Kim only sees a way out of this conundrum by making the mental epiphenomenal: the mind does not have a causal role. Following the physicalist principle of the causal closure of the world, Kim assumes that the mind should not have causal powers if it is to have a minimal supervenient ontology with properties

<sup>22</sup> Kim, *Supervenience and Mind*, 280.

<sup>23</sup> Kim, 194.

that physical reality lacks. Although he avoids eliminating the mental due to its specific epiphenomenal properties, the mind ultimately has no relevance in the physical world as it is not causal. Kim's epiphenomenalism is nothing but an honest effort at coming to terms with Descartes' failed attempts at having the mental and the physical interact causally.

## 2. BIOLOGICAL NATURALISM AND SYSTEM CAUSATION

However, Searle seems to be aware of the constraints set both by the causal closure principle and non-reductionism, but he still defends the basic premises of BN. The reason for his position is that whereas Searle would wholeheartedly endorse graphic (1) as he states: "Conscious states are entirely caused by lower-level neurobiological processes in the brain,"<sup>24</sup> graphics two through four depicted above quickly depart from the spirit of BN. There are two significant misunderstandings of Searle's proposal in Kim's objection. One is that instead of the previous formulations, Searle would propose (2)\*:

$$S \left( \frac{M}{B} \right) \text{ causes } S^* \left( \frac{M^*}{B^*} \right)$$

(2)\*

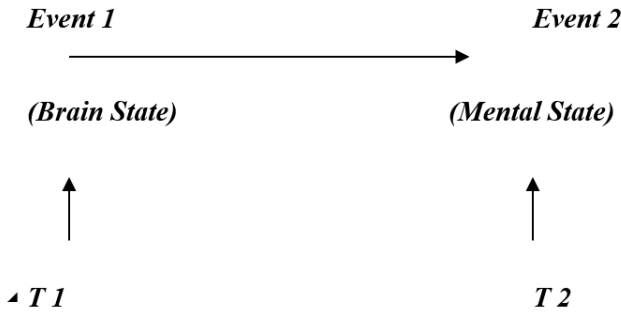
The reason is that, according to Searle, the causal powers do not belong to M or the physiological basis B\*. The causation belongs to the system (S), that is, the brain, and this system can be considered under M and M\* (phenomenological level) or B and B\* (neurophysiological level). It is not just that M causes M\*, or M causes B\*, but  $S \left( \frac{M}{B} \right)$  causes  $S^* \left( \frac{M^*}{B^*} \right)$ . S and S\* are states of a system that has both a phenomenological and physiological description. Therefore, overdetermination and property dualism dissipate by presenting causation as belonging *to the system*, not just to brain states or mental states.

BN genuinely attempts to avoid epiphenomenalism and overdetermination by granting to mental states the *causality of the system*. Although Kim acknowledges in writing that Searle is talking about *three types of explanation*, and not *three causal relations*

<sup>24</sup> Searle, *Mind*, 114.

happening at the same time (micro-micro, macro-macro, bottom-up), Kim treats these relations as causal. Moreover, there is a second misunderstanding of Searle’s position. Kim states that Searle also should endorse top-down causation from the mental to the physical *as if* the mental, devoid of a physical instantiation itself, was single-handedly causing the physical or the mental. Then again, does Searle’s causal ontology of the mental require downward causation in the way depicted by these arrows? BN states that there is *only the causation of the system*, and therefore, properly speaking, and contrary to Kim’s assumption, BN does not have top-down causation as the mental solely causing either the next physical state or the next mental state, but *as a system* of physical and mental states causing the next overall state. It is in this sense that top-down causation has a place in Searle’s BN.

Moreover, Searle presents a further reformulation to solve the problems of mental causation. Besides Cartesian dualism, a Humean brand of causation seems to underlie the mind-body problem. According to Searle, Hume’s understanding of causation is as follows:



According to Hume, cause and effect are two separate events with succession in time between the cause and the effect. As separate events, they have a separate existence. In other words, the ontology of something is delimited by what counts as an event, and this is determined by time. Applied to the mind-body problem, this will entail that regardless of whether the physical causes the mental or the mental has any causal power over the physical, since the physical and the mental happen as different events, and these events demarcate their ontology, the physical and the

mental will have separate existence and ontology (and we could add separate causations).

Searle's criticism of this Humean causation states that the relation of causation between brain states and mental states is one of simultaneity of the cause and the effect, where the effect does not happen as a successive event but simultaneously with the cause. More importantly, it seems that for Searle, this simultaneity indicates that the mental and the physical are not different events, but they are constitutive of one single event. This simultaneity of the physical and the mental in a single event supposedly eliminates the duplicity of ontologies. Hence, we overcome dualism by having one event that ensues one single ontology. The rationale is that 1. Having a single event does not lead to a multiplication of causalities based on ontologies, 2. The ontology of the mental and the physical are preserved as low- and high-level features of a system. Searle's move then is to make of the mental and the physical a single event with one single ontology that, nonetheless, has low- and high-level features.

The tension that this proposal creates is apparent. On one side, Searle objects to Hume's causation, where distinct events ensue distinct ontologies. On the other side, he tries to circumvent the difficulties of Humean causation while abiding by Hume's metaphysics. BN does not overcome Hume's causation where events demarcate ontology; he follows it by finding a loop: simultaneous causation.

The question at stake now is how explanatorily successful this simultaneous causation is. Unfortunately, Searle's criticism of Hume's causality is not subversive enough to overcome Hume's tacit dualism. Why, if we were to have cause and effect at separate times as Hume's model presents, we would have separate entities with separate causal powers and conversely, if the mental and the physical are simultaneous in a relation of causation of the mental by the physical, we obtain only one system of causality with two features, mental and physical? Why can the brain cause the mental, maintaining a relation of cause and effect, yet the causal powers belong to the whole cause-effect dyad, instead of solely to the brain as the cause? What is it about the simultaneity that allows for that? Removing the horizontal relation of event A at T1 followed by event A\* at T2, and establishing a vertical causality where B causes M simultaneously, may get rid of the

time-lapse and obtain synchrony, but it does not change at all the fact that there is a relation of cause and effect between the brain and the mind. Regardless of causation being simultaneous or successive, entailing events or properties, there is a relation of asymmetry between cause and effect: the effect has a relation of dependence from the cause. This dependence does not need to be temporal but one of ontological priority. Even if brain states cause mental states with a relation of causal simultaneity, there is nonetheless a relation of dependence of the effect, the mental, from the cause, the brain state. Then, the question will be, are mental states caused by the brain, or are they sharing in a system of causality?

### 3. ONTOLOGICAL ASSUMPTIONS IN BIOLOGICAL NATURALISM AND EPIPHENOMENALISM

Searle's and Kim's views stem from holding on to two different intuitions that neither seems willing to give up. For Kim, it is the certainty that science does not allow for causes that are not physical. For Searle, it is the experience of the causal efficacy of mental states (while subscribing to a scientific worldview).

It seems clear that one crucial difference between Searle's and his critics' approach is that for Searle, it is possible to have one causality (the system's) while preserving mental and physical features. For his objectors, however, if the causation of the mental and the physical are identical, then the entities are identical as well. Hence, since Searle preserves mental and physical features, we have two separate sets of causes and two distinct ontologies. Conversely, if mental states and physical states have separate ontologies (may that be substances, properties, or 'levels'), then they have a separate causality. The irony is that while Kim wields this dualist ontology of "distinct ontology ↔ distinct causality" against BN, he seems unwilling to apply the same principle to this own theory. He endorses one causality, the one of the physical, but he keeps mental features that should have their own separate causality (since, even if epiphenomenally explained by the physical, they are still mental). Depriving the mental of some form of causality should reduce its ontology to the physical. Therefore, preserving some form of ontology for the mental and no causal input seems *ad hoc*.

Kim, then, implicitly follows a dualist ontology. The divide for Kim is not *prima facie* between extended versus non-extended but between causal power versus causal irrelevance. However, upon inspection, what is causal or not causal rests on what is material or non-material. For this reason, a non-reductive physicalism that relies on a tacit understanding of matter as extension will lack a coherent account for the ontology of the mental.

This debate between Kim and Searle could go on in endless circles of objections and replies. Searle draws our attention to two critical intuitions about our mental life: 1. That is somehow biologically grounded, 2. That nonetheless, its causal role is not reducible to physical interactions. Kim reminds us of the difficulties that derive from embracing either alternative. The pendulum is none other than the circularity of the two sides of the same coin: dualism and monism. Is there any way out to this catch 22?

#### 4. THE REAL PROBLEMS OF BIOLOGICAL NATURALISM

There are at least two possible ways to play devil's advocate against BN and in support of Kim's view. First, Searle defends the idea that causation belongs to the system and not to the physical or mental properties exclusively. Consequently, he should admit epiphenomenalism because the mental properties would not have causal powers per se (the system does), or he should give up the idea that there are mental properties at all and admit reductive physicalism. Conversely, if he admits that mental and physical properties are not epiphenomenal and have causal powers, he is a property dualist. Then, he needs to explain how the physical and the mental, while having opposing attributes, get to interact. How can Searle rely on the system having one single causation while keeping physical and mental features in his solution to the mind-body problem and avoiding reductive physicalism, epiphenomenalism, and property dualism?

Second, Kim himself refines his objection to BN to acknowledge that Searle would not allow for the mental as a stand-alone, sufficient cause to produce the mental. We can rephrase Kim's point as follows. Although each system state comprises mental and physical properties, ultimately, it is caused either by the former overall system state, which includes both the mental and the physical, or by the biological basis of each

state. Therefore, we would still obtain overdetermination: the one that ensues from the system state (1) causing system state (2) and the brain basis (2) causing their mental states (2).

We can rephrase Kim's concerns without focusing on causal overdetermination as he does and take instead the premises laid out by BN *prima facie*. The questions to BN here address an ambiguity about causation that needs to be made explicit.

1. On one side, Searle talks, synchronically, about brain states causing mental states in simultaneous causation, that is, as the neuronal processes that give rise to someone's desire to go skiing.
2. He also talks about the causation of the system diachronically, from left to right, from macro to macro, and micro to micro. A desire to go skiing causes a desire to check snow conditions, where we do not have a stand-alone mental state M or brain state B causing either a stand-alone mental state M\* or a brain state B\* but a system state  $S \left( \begin{smallmatrix} M \\ B \end{smallmatrix} \right)$  causing  $S^* \left( \begin{smallmatrix} M^* \\ B^* \end{smallmatrix} \right)$ .

We can now see the ambiguity from the standpoint of the *mental state* or of the *brain state*.

1. From the mental state: If BN defends that mental states have causal powers (the causal powers of the system) and that biological processes cause mental states, the problem is not just that mental states (M\*) are an effect of system processes (which include the mental and the physical) *and* an effect of its underlying brain processes (B\*) (a reformulation of Kim's overdetermination concern). It seems that mental states are also an *effect* of the brain state and a *cause* of the following overall state. Consequently, the question would be: does Searle mean that mental states are simultaneously an effect and a cause? It seems that this would not be a problem if they are so with different senses. If that is the case, the disambiguation of those senses is in order. On the other hand, if mental states are effects and causes simultaneously in the same way, there will be a need to explain how something can be both a cause and an effect simultaneously in one single causal relation. In other words, is the sense of causality that Searle states for the relation between brain states producing mental states

the same as the sense of the causality that the system exerts on the following system states?

Moreover, mental states are both 1. Sharing in the causality of the system in causing diachronically ( $S \left(\frac{M}{B}\right) \rightarrow S^*\left(\frac{M^*}{B^*}\right)$ ) and 2. Being caused synchronically by brain processes  $S$  ( $B \rightarrow M$ ). The question arises: what is the model of causation between the physical and the mental? One of shared causation where the mental and the physical are on equal footing ( $\frac{M}{B}$ ) or one of dependence of mental states on brain states ( $B \rightarrow M$ )?

2. From the standpoint of brain states: is the causation that relates one brain event token with its supervenient mental even token, and the causality that moves the system through time (that is, the brain as a system) the same? How do brain states cause mental states and propagate their causality to the whole system, including mental states, diachronically and synchronically,<sup>25</sup> namely, as the neuronal activity causing the mental state and as that state causing the next mental/physical state? In other words, is the physical basis of the causation of mental states also the basis for the causation of the next overall state? How does the ontological causation of mental states by brain states (that my feeling of thirst is caused and realized by brain states) intervene in the diachronic causality of the system (that the feeling of thirst and its neuronal basis causes an intention to reach for water)? It would seem that in BN, we obtain an overburden cause,  $B$ , that is busy causing and realizing the synchronic and simultaneous mental state while causing, in conjunction with its realized mental state, the next overall system state. This multitasking cause may not violate any philosophical principle but calls for an investigation of how divergent causations compenetrates. It also prompts a philosophical reflection on how physical matter is at play since a Cartesian one does not seem adequate for such a feat.

In summary, we have that ( $B \rightarrow M$ ) (brain states cause mental states), but ( $B \rightarrow M$ ) also causes successive mental/physical

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<sup>25</sup> The so-called top-down causation, which is not such for BN but only system causation, works diachronically whereas the bottom-up causation works synchronically.



events B\*/M\*. Similarly, M, being caused by B, is an effect of B, and at the same time, it is a cause that, like B, also causes successive mental/physical events B\*/M\*. BN should explain how the brain, by causing mental states, also grants causation to the whole system diachronically and how the mind, while being caused by the brain, receives causal powers that belong to it both as an effect and as part of a system.

In summary, Searle wants to overcome Cartesian metaphysics by proposing that the mental is not separate from the physical and that the mind can be causal. However, despite his efforts to reject the Cartesian ontology, he does not offer an alternative one.<sup>26</sup> Searle is yet to delineate further a replacement for a Cartesian ontology of the world, which Kim's epiphenomenalism and his objections to BN are still fostering. The following section proposes that Aristotle's understanding of matter as potentiality may lead us in that direction.

## 5. ARISTOTLE'S HYLOMORPHISM VERSUS DESCARTES' SUBSTANCE DUALISM

Descartes opposed the Aristotelian tradition in which he was brought up. Unsatisfied with Aristotle's philosophy of nature, especially his theory of natural movement, he wanted the science of the time to replace it. A genius metaphysical move was to present matter as a substance, with extension as its defining essence. Granting to matter the status of a substance, that is, making it "a thing which exists in such a way as to depend on no other thing for its existence,"<sup>27</sup> and as consisting in extension, matter was rendered as an appropriate study subject for mathematics and physics, expunged from any spurious metaphysical speculation.

Descartes was undermining the Scholastic metaphysics rooted in an Aristotelian ontology in which matter did not have existence by itself; it was not a substance. Moreover, matter was not

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<sup>26</sup> As Corcoran notices: "Indeed Searle's commitment to non-reductivism and causal closure not only belies his rejection of the tradition, but it also creates a problem that his biological naturalism lacks the resources to solve plausibly." Corcoran, "The Trouble with Searle's Biological Naturalism," 321.

<sup>27</sup> Descartes, *Principles of Philosophy*, 8A.24.

defined primarily as extension –although this would be the first property of material substances–, but as pure potentiality, that is, pure capacity to be.<sup>28</sup> Aristotle understood matter as a *principle* of material things that accounted for their capacity to change.<sup>29</sup> Potentiality, then, the sheer capacity to be, was a constitutive principle of reality and primarily characterized matter.<sup>30</sup>

Consequently, in Aristotelian metaphysics, matter is never understood as something standing in itself;<sup>31</sup> it does not exist by itself as a separate substance.<sup>32</sup> The reality of matter is only possible if it joins with something already actual because pure potentiality cannot have existence. It is always parasitic of something with some degree of actualization, that is, determination and existence. For Aristotle, material things do not exist without these two principles of potentiality (matter) and determination (form).<sup>33</sup> Therefore, matter and form are not two substances in need of coordination but co-principles of things, not mutually exclusive but complementary, in need of each other to have real existence.<sup>34</sup> For this reason, the experience and conceptualization

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<sup>28</sup> For an overview of how mechanism replaced the Aristotelian world view see Gordon Leff, *The Dissolution of the Medieval Outlook: An Essay on Intellectual and Spiritual Change in the Fourteenth Century* (Harper & Row, 1976).

<sup>29</sup> Aristotle responded to Parmenides by noting that change was “the act of what exists potentially insofar as it exists potentially” (*Physics* III.1.201a 10).

<sup>30</sup> Aristotle defined prime matter as “the primary substratum of each thing, from which it comes to be, and which persists in the result, not accidentally.” *Physics* I.9.192a32-33. See also *Metaphysics* Z.1, 1046a12.

<sup>31</sup> Unpredictably for Descartes, Heisenberg turned to the Aristotelian idea of matter as potentiality in order to make room for the objectivity of the indetermination relations and its mathematical expression in probability. See W. Heisenberg, *Physics and Philosophy*, Harper, New York, 1962 (1<sup>st</sup> 1958), 160. However, energy exists under some determination which makes it a kind of secondary matter instead of pure potentiality.

<sup>32</sup> See Aristotle, *Metaphysics* 1041b, 25-31.

<sup>33</sup> A principle is that from which something derives in any form of dependence. The notion of cause is restricted to dependence in being. All causes were principles then, but not all principles were causes.

<sup>34</sup> Aristotle’s hylomorphism has experienced a revival in the recent literature of the analytical philosophy metaphysics. See for example: Kathrin Koslicki, “Aristotle’s Mereology And The Status Of Form,” *Journal of Philosophy* 103, no. 12 (2006): 715-736, Anna Marmodoro, “Aristotle’s Hylomorphism Without Reconditioning,” *Philosophical Inquiry* 37, no. 1-2 (2013): 5-22, Robert Koons, “Staunch Vs. Faint-Hearted Hylomorphism: Toward an Aristotelian Account of

that we may have of matter are never of prime matter, but of what Aristotle called secondary matter, a matter that has its potentiality somehow restricted by some degree of actuality and, therefore, exhibits some degree of determination, organization, and configuration.<sup>35</sup>

This ontology translates to the mind-body relations because the soul, something that for Descartes is extraneous to matter to the point of constituting a separate substance with totally opposing attributes, is for Aristotle what grants actualization to matter. Aristotle then did not have to figure out how what has extension and what is non-extended relate to each other but how what was purely potential could have any existence at all and be organized as a secondary matter. In other words, Aristotle did not have to relate the physical with something mental, or the brain (or better said, the body) with the mind, because a brain is only a brain if it is the organ of a body that has prime matter actualized by a specific type of organization. The body is a secondary matter, that is, prime matter with some degree of actualization.

Therefore, for Aristotle, the relation between the mental and the physical was not a problem. It was a necessary consequence of his ontological presuppositions. Aristotle stepped out of the mind-body dichotomy by saying: “the proximate matter and the form are one and the same thing, the one potentially, and the other actually [...] the potential and the actual are somehow one” because “one element is matter and another is form, and one is potentially and the other is actually.”<sup>36</sup> Once one realizes this, he says, “the question will no longer be thought a difficulty.”<sup>37</sup> Only if the brain is already a mind, actualized by a *psyche*, it is a brain at all. The living thing (with its different motor and cognitive ca-

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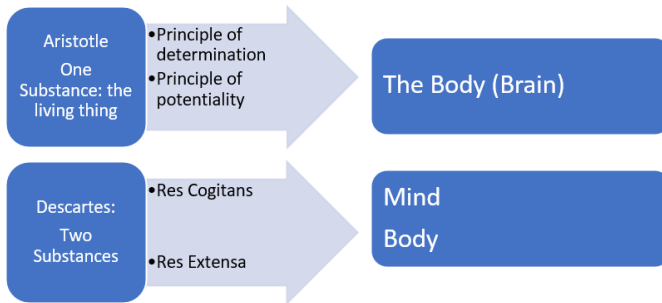
Composition,” *Res Philosophica* 91, no. 2 (2014): 151–177 and Theodore Scaltsas, “Substantial Holism,” *Philosophical Inquiry* 39, no. 1 (2015): 146–163.

<sup>35</sup> This mutual necessitation of matter and form is formulated by Aristotle in *Physics* 11.9 and *Parts of Animals* I.1.14 when he discusses the relationship between material and final causes. As noted by Herbert Granger, this is a hypothetical necessity not equivalent to supervenience since form “determines the important features of the material world, through the very *dependence* it has upon the material world.” In Herbert Granger, “Aristotle and the Concept of Supervenience,” *The Southern Journal of Philosophy* 31, no. 2 (1993): 166.

<sup>36</sup> Aristotle, *Metaphysics* 1045b17–21.

<sup>37</sup> Aristotle, *Metaphysics* 1045a20–25

pacities) is extended, not its prime matter or its organizing principle.



The body then is not merely physical stuff in terms of extended matter, or even quantified matter, because it is only a body if it is organized matter in the first place. Although organization and determination admit a quantitative description, they are not in themselves quantitative but qualitative and, more importantly, causal with efficient and organizational causality. Moreover, to this *constitutive* sense of matter and *psyche*, Aristotle contemplated an *episodic* sense of the mental. Discrete mental states (operations, habits) ensue further actualizations of the faculties of the *psyche*, rooted in the constitutive sense of the causal adequacy between matter and form.

## 6. CONCAUSALITY AND THE MIND-BODY PROBLEM

As represented by Kim and Searle, the mind-body problem impasse showed us that the question at stake is whether the relation between physiological states and mental states should be considered one of causation, and if so, what kind of causation it is. Moreover, there seems to be a whole ontological conundrum that requires disentangling. What counts as separate events, separate entities, and separate causations, and what is the relation between causes and effects when it comes to the mental and the physical?

Leonardo Polo's retrieval of Aristotle's ontology provides nuances that render the Stagirite's tetracausality relevant and compatible with our current understanding of the physical world. Following Aristotle, Leonardo Polo makes a claim about causa-

tion that we very well could use to get out of the metaphysical aporia of the mind-body problem, especially when it comes to the presuppositions involving causation, substancehood, properties, and events: "Aristotle says at the end of book VII of the *Metaphysics* that ultimately the substance is causing. (...). My proposal lies in replacing the notion of 'substance' with the one of 'cause.' It is not required for a 'cause' to be a 'thing' in order to be a 'cause'; conversely, there is a concurrence of causes as the old dictum states: causes are reciprocal insofar as they are causes to each other (*ad invicem*). What matters is the plurality of causes: causes are not such in isolation, and there are various causal senses."<sup>38</sup>

Polo's retrieval of Aristotle crucially highlights Aristotle's causal plurality and makes explicit one of Aristotle's presuppositions, namely, that a substance, a thing, while it may exhibit unity in causation, is constituted by a confluence of causal principles that Polo calls *concausality*: a concurrence of causes where none of the causes by itself is a 'thing.'<sup>39</sup>

Consequently, exhibiting a causal power does not individuate that causal power as a substance. Polo effectively disconnects here the notions of substancehood and causality in at least these two important ways:

1. Substances become individuated as '*concauses*,' not as 'essences' or 'things.' Substance dualism, like Descartes endorsed, understands the physical substance as characterized by one essential property, extension, and the mental substance by its opposing essential property. However, in con-

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<sup>38</sup> "Aristoteles dice al final del libro siete de la *Metafísica*, que en definitiva la sustancia es causa. Mi propuesta consiste en sustituir la noción de cosa por la de causa. No hace falta ser cosas para ser causa; en cambio, es imprescindible la concurrencia de las causas, según el antiguo dicho: las causas lo son entre sí (*ad invicem*). Lo que comporta pluralidad: las causas no lo son por separado y existen varios sentidos causales." Leonardo Polo Barrera, "Inactualidad y Potencialidad de Lo Físico," *Contrastes: Revista Interdisciplinaria de Filosofía* 1 (1996): 246-47.

<sup>39</sup> For an analysis of Polo's *concausality* in living beings, see his *Curso de teoría del conocimiento*: Vol. 4, 2<sup>nd</sup> Edition (Pamplona: 2004). For a study on this see Urbano Ferrer Santos "La vida desde la concausalidad", *El conocimiento de lo físico según L. Polo*, García González, J.A. (ed.), Cuadernos de Pensamiento Español, Eunsa, 2011, 47-57.

current causality, a substance is not characterized mainly by a defining and individuating feature or essence since that reveals a conflation of the logical order (how we define things) with the ontological order (how things exist). Instead, substances consist in a specific concurrence of causal principles. Certain confluences of causal powers are constitutive of substances. Substances are concurrent causes that work in tandem, as opposed to a view that identifies substances either as a collection of properties or as the substrate that bears those properties. We may attempt to grasp and refer to a specific concatenation of causes (i.e., to a *concausality*) by attributing an essential property to it, but that would be a mere substitute for an individuating source of causal power we can grasp only to a certain extent.

2. Being a cause does not entail being a whole substance. Therefore, it is possible to have a confluence of causal powers that are reciprocal to each other without having two different things (regardless of whether we understand “things” in this context as separate substances or as properties). While Hume and Kim may be right in saying that two things that have an independent existence must have different causal powers, the converse is not true: a causal power, as Polo presents, does not need to be a thing, it could be, nonetheless, a *constitutive principle* of a thing.

The application of *concausality* to the mind-body problem then is that in a *concausal* model, we have: 1) one entity, the brain (or better said a living body or living thing), with one system of efficient causation; 2) two causal principles, matter and form (and not two types of properties) that constitute a living organism and that are causal *ad invicem*. These are constitutive principles.<sup>40</sup>

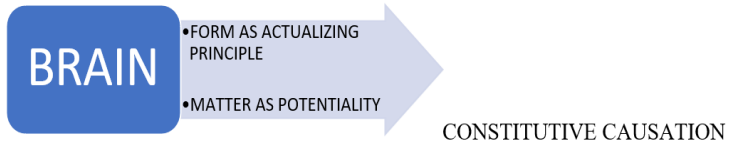
As noted earlier, BN is presenting implicitly two senses of causation, synchronic and diachronic. If we translate these two co-implicated theses of *concausality* into the apparatus of BN, we could disambiguate these different senses of causation by equating the

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<sup>40</sup> We should keep in mind that this discussion pertains to organic life, not to the use of the higher faculties.

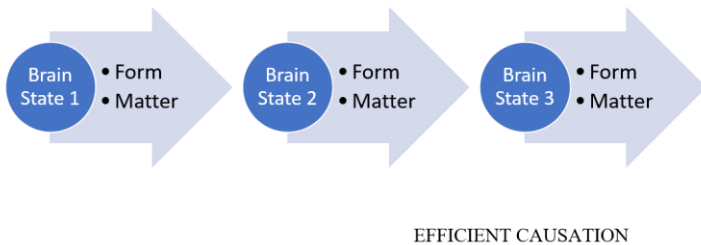
synchronic sense with constitutive causation and the diachronic sense with efficient causation through time.

1. In synchronic causation, we can distinguish a constitutive sense that replaces the ontology that underlies substance dualism and its physicalist counterpart (reductive materialism) with hylomorphism and *concausality*:



There is, however, another synchronic sense, where a proportionate capacity causes discrete mental states (operations and habits).

2. Diachronic causation. Material and formal principles do not have different causal powers in terms of efficiency, but they are constitutive principles, causes, of the embodied mind. However, in living beings, movement, change through time, entails efficient causation because the constitutive formal principle of the living thing is the source of efficient causation. The causation that the brain has as a biological reality, diachronically, is efficient causation.



Consequently, regarding the causation of the system diachronically, we have only one set of causes, and that is *efficient causation*. In a way that resembles Searle's remarks, the efficient causation belongs to the system, that is, to the living entity, and form and matter share in the efficient causality of the system, but they contribute with their causal functions that are not efficient *per se*, providing potentiality and determination. Without those, there is no efficiency. Moreover, the efficient causality of the mental state

coincides with the causality of the system as a whole since it is the causality of a living system.

### 7. CONCAUSALITY AND DUALISM

At this point, we may wonder if the Cartesian dualism of matter and mind is not being replaced here by a dualism of matter and form. The reply to this potential difficulty is, at least, at four-fold:

1. At the level of the constitution of substances, we do not obtain the mental and the physical as two separate components, but the agreement of the causality of matter and form (and efficiency, as stated above).
2. Aristotle's ontology makes it impossible to equate formal cause with the mind and the body with matter, *simpliciter*. The reason is that our physical reality is not pure potentiality, but it already has multiple levels of organization. Therefore, the physical reality that we experience is not interchangeable with matter in the Aristotelian sense: physical reality has already built formal and efficient causality into it.
3. Additionally, causal constitutive principles are not properties. Being a property entails being a 'property of,' namely, it assumes that something inheres some properties. Moreover, properties typically have an ontological dependence on the thing they are properties of. However, the hylomorphic framework names a constitution prior to any dependence on properties from the constituted thing. Constitution ontologically antecedes properties. In this way, determination and potentiality are not two properties of a previously constituted thing, but they are *the constitutive principles of a thing*; namely, their causation is *constitutive*.
4. Furthermore, as formal, the psyche has causal priority over the causality of prime matter and is constitutive of the entity, of the substance, as a whole.



Aristotle may be exempt from a Cartesian dualism at the level of constitution of substances.<sup>41</sup> Nevertheless, when it comes to accounting for mental states as occurrent events that we experience on an ongoing basis (states of mind that exhibit rationality, first-person perspective, intentionality, and qualia, which are a non-constitutive sense of the mental), he would seem to fit the bill for property dualism, which acknowledges a bare substrate, the substance, that exhibits two types of properties, mental and physical. Is hylomorphism of any help when we address not the causality and preconditions that make something a living body or a brain but mental states themselves?

Concausality accounts for the episodic sense of the mind that mental states are. In a context not related to the mind-body problem that can also apply to this case, Leonardo Polo used the example of Baron Münchhausen, who allegedly pulled himself and his horse out of a swamp by his own hair. Having the brain, understood in a deprived Cartesian way, as causing the mind, seems faulty of the same overconfidence. Most importantly, it constitutes a violation of the principle of sufficient reason. This principle should be taken not in its cartoonish rationalist version that stipulates that everything must have a reason or cause but in its more fine-grained formulation that states that every effect must have a proportionate cause. In a Cartesian physical world, it seems that no summation of an extension will ever give us an absence of extension. No amount of atomic interactions will give us mental life. Any mind-body theory that relies on a Cartesian conception of matter will have difficulties explaining how at the lower level, we do not have the required causal power for the phenomenon that we want to explain, namely, the mind, and that magically, the lower level elements produce the higher-level feature of the mental. Somehow the effect would not have ever been proportionate to the cause; namely, the effect would exceed the causal power of the cause. This philosophical quandary is worse than the causal overdetermination pointed by Kim.

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<sup>41</sup> H. Granger notices: "Therefore, Aristotle's dualism is non-Cartesian because his dual entities differ in type and because the soul is existentially dependent upon the body." In Herbert Granger, "Aristotle and the Functionalist Debate," *Apeiron* 23, no. 1 (1990): 40.

For this reason, certain theories defend some form of proto-consciousness present in the fabric of physical reality that could account for the full-fledged appearance of consciousness that we observe in more evolved natural realities, and particularly in human beings. While capturing the problematics of the principle of sufficient reason, the ontology behind this proto-consciousness is still dualist. It requires primitive elements that fully possess the ontology of the mental to coexist with the ocean of mindless elementary particles in order to obtain consciousness at the macro level. The divide between the mental and the physical is still acute in these views. Moreover, proto-consciousness forgets that the principle of sufficient reason does not require the real presence of the effect in the cause, but only the virtual power in the cause to produce the effect (we do not need to have a black eye to give someone else one).

Opposite to this, a notion of the physical that already contains a causal principle for mentality as its constitutive is a proportionate cause of discrete and occurrent mental events that are supervenient on different brain states. A brain, which is already an embodied mind, can cause discrete operations, namely, mental states that are 1. Proportionate to their cause, and that 2. From the constitutive point of view, they are realized in material conditions. *Concausality*, in this regard, can refute the reductive physicalist's rejection of a mental ontology while making non-reductive physicalism coherent.

The view presented confirms Searle's idea of granting to the mental an ontology that is not reducible to the physical while admitting to the causation of the mental by the physical. To avoid otherworldly explanations, we do not need to reduce the ontology of the mental to the ontology of the physical. Only a proportionate physical causal power is required. Moreover, while science may provide the details of how this happens, philosophy has the task to ascertain the seemingly futile task, however deceptively dangerous if overlooked, of identifying a proportionate causal power. In order to do that, we need an understanding of matter that is more than extension.

## 8. CONCAUSALITY AND OVERDETERMINATION

How can this proposal help avoid the problems of overdetermination? At first sight, Polo's *concausality* would also be bound to overdetermination as objected by Kim because we would have both mental and physical causes. However, *concausality* does not lead to overdetermination if we differentiate how various causes may contribute to a single result:

1. *Concausality* highlights Aristotle's ontology of matter and form by pointing that potentiality and determination do not have an independent existence as things on their own. They are not two separate entities or two different parts of a thing (*concausality* thesis 2: "being a cause does not individuate something as substance"). Instead, they are principles –not parts– that, *concurrently*, cause the existence of a physically extended entity (*concausality* thesis 1. Substances are individuated as sources of concurrent causality). Aristotle's understanding of matter (potentiality) as a causal principle not only does not obliterate other causal senses as overdetermined, but it implicates them as to how matter can be causal.<sup>42</sup> Matter can have causal efficiency in physical entities as conjoined with a formal principle.

2. *Concurrent causation* (i.e., concausal) is a constitutive and synchronic causation where both matter (in the sense of prime matter) and determination (form) are causes but with different causal inputs. Moreover, matter and form are causes *ad invicem*, in respect to each other, because matter as pure potentiality does not exist unless it possesses some determination, form (namely, matter as potentiality requires a sense of causation that is formal). Consequently, this concurrent causation is not a merging of mereological parts.<sup>43</sup> Whereas mereological parts preserve their ontology when they are not part of the whole, the concurrent causes of a substance are real only in relation to each other. The

<sup>42</sup> Moreover, Polo states: "En el fondo, la consideración de las causas como concausales es un despliegue de la noción de potencia" Leonardo Polo, *El conocimiento del universo físico*, 1ª ed. (Eunsa, 2015), p. 408.

<sup>43</sup> Although Koslicki has defended this mereological hylomorphism in Aristotle, Scaltsas has presented strong objections. Marmodoro also defends that matter and form are *not parts* of a substance," in "Aristotle's Hylomorphism Without Reconditioning," *Philosophical Inquiry* 37, no. 1–2 (2013): 15.

reason is that, as Polo notices, the “causes are reciprocal insofar as they are causes to each other (*ad invicem*).”

However, that potentiality and determination are *ad invicem* causes does not imply that potentiality causes determination or that determination causes potentiality. Potentiality (prime matter) and actuality (form) are not efficient causes. Therefore, the relation between matter and determination is not one of efficient causation but of *principiation*. Without determination, potentiality has no reality; without potentiality, a determination cannot develop through time and receive existence. Because matter and form are causes as principles (and not properties, level features, or entities),<sup>44</sup> in their primary causality, they do not have an effect that is external to their positing themselves as causes. Their effect is their very own existence as causes, contributing, in their specific way, to the causality of other concurrent causes and to the existence of the thing, making possible its efficient causality.

In summary, *concausality* does not lead to overdetermination because 1) we do not have two sets of causes, potentiality and determination (matter and form), both in terms of *efficient causation*; 2) We do not have two sets of causes as causal powers in terms of *two separate things*, entities, substances or properties. Since being a cause does not entail being a substance, we do not have two separate things. *Concausality* allows for a thing to have more than one cause, granted that these are causes in different ways (since there is more than efficient causation) and that these causes are not solely sufficient.

## 9. CONCAUSALITY AND EPIPHENOMENALISM

At this point, it would seem that even if *concausality* manages to avoid overdetermination, it will not escape the fate of epiphenomenalism. The reason is apparent: in Aristotle’s proposal, there are more causes than efficient causes. However, for contemporary physicalism, being a cause and being an efficient

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<sup>44</sup> Granger notices that the form cannot be a property because it provides the unification of the material parts, it is the agent, in this case, the form as an agent, that provides such unification. In Granger, “Aristotle and the Functionalist Debate,” 44.

cause is the same thing. Therefore, a sense of causation that is not efficient does not count as causation at all. Aristotle's tetra-causality would collapse under the physicalist analysis only to leave standing a sense of efficient causation. Even a non-reductive physicalism, as BN, defends that being a cause is *making something else happen*, which pertains only to the efficient cause.

In contrast, for Aristotle, 'to make something else happen' belongs to all causation. There are, however, different ways of 'making something happen.' Explaining why this is the case would require a different paper and probably a thorough critical review of the history of philosophy. For the purposes of this discussion, and in the light of the amendment to the notion of matter as per Aristotle's ontology, we may briefly consider the following: The idea of efficient causation as 'making something else happen' is slightly ambiguous unless we determine the backdrop against which something counts as 'happening.' In a physicalist scenario, what counts as 'something happening' is assessed against the backdrop of efficient causation, which then gives us an understanding of causality that is either circular or a fiat. What counts as efficient causation is to make something happen, but only efficient causation truly happens. Of course, ultimately, the circularity must resolve in fiat because what other sense could there be for causation?

Upon closer inspection, what counts as causal, as efficient, and 'as making something happen' since all these senses are quasi-equivalent in a physicalist paradigm, is relative to an understanding of matter as extension. Behind the *fiat* or circularity of efficient causation as the only form of causation, there is the belief that for causation, we need some form of contact. Although physical causation requires contact, how contact is understood will depend on what view of matter we have at hand. If matter is simply extension, then efficient causation will be reduced to an interaction between quantitative dimensions, and consequently, we are implicitly committing to a dualist ontology that separates substances as extended and non-extended. The mental, characterized in a dualist way as being non-extended, will be excluded from "making something else happen" (the epiphenomenalist solution) or, if granted causal power, will be forever incomprehensible (Descartes' interaction problem). Therein the physicalist quandary about mental causation. On the other hand, if we

hope for a non-reductive physicalism, and grant dimensions to the mental, then the mind becomes another physical object, and we obtain a monism once again.

An alternative to this view on causation cannot consist in opening the door to all things crazy to be taken as candidates for causal input: from ghosts to *élan vital*, all while overriding the laws of thermodynamics. Nor it should require, in a more reasonable scenario where a particular interpretation of quantum mechanics factors in, a commitment to a view on causation where the action at a distance of entangled particles does not involve any hidden variables, making the spooky action at a distance a real feature of the world. The ontological proposal in this paper does not make any pledges to any particular interpretation of quantum mechanics, nor does it defend causation without contact. On the contrary, admitting more senses of causation than the efficient does not amount to introducing otherworldly forces encountering the physical unless we want to perpetuate dualism. In other words, this is not a defense that material causation does not require contact or that the mind should be extended into something material and produce contact if it is to have causality. The point is not to object to a view of efficient causation defined by contact but to a type of efficient causation that folds into a Cartesian matter. Similar to how matter has extension as its main attribute, but it is not defined as extension, physical causation requires contact, but it is not defined by it. There are more elements at stake in the production of physical interactions than an alteration of quantitative proportions of some kind (unless we are relying on a mathematized Cartesian view of matter). The proposal is to adjust our conception of physical reality to acknowledge that efficient causation cannot be equated with the measurement of movement or change simpliciter, which is always quantitative.

We can agree that the most natural way of observing whether “something makes something happen” in the physical world is a quantitative analysis of energy transfer. However, energy cannot be replaced with a quantitative description of it precisely because a description must leave behind the real causality of the world. In other words, a quantitative description cannot replace efficient causation as the source of change because a description is a pale representation of the causal power that exists in the real

world independent from our modeling of reality. Swapping the description of the reality for the causal nature of reality itself seems as misleading as the proverbial drunk looking for his car keys under the lamppost where there is light. We can record the changes that come with efficient causation by tracking quantitative aspects of reality, but this does not mean that the changes originate there.

Consequently, framing the mind-body troubles in the language of a mathematized physics that thrives in a fossilized Cartesian ontology may not be faithful to contemporary physics. Although characterizing matter as extension may be an idea extraneous to a contemporary view of the physical world, and Descartes's mechanistic physics is far from our current understanding of matter as energy, a reduction of physical reality to quantitative terms seems equally inadequate. Physics may sometimes fail to claim its ground against the mathematical tools it uses, but a philosophy mindful of the imports of physical science should be wary of this difficulty. If matter is not primarily extension, any other more sophisticated version of it, i.e., a quantitative description of energy, also fails to capture the real causal input that matter as energy has, and so does an understanding of efficient causation that folds into material causation. The collapse of tetra-causality into the measurement of an extension eliminates the ontology of what is not easily quantifiable, of what does not have quantity as its primary attribute, as it happens in the case of real causes or with the mental.

In contrast to this view, we have that:

1. Aristotle understands efficient causation as the source, origin of 'what happens.' For Aristotle, the materiality of a thing by itself does not amount to causal efficiency; it only names potentiality. Therefore, a different instance, causal efficiency, is the source (origin) of change in causation, the source of the happening. We have then more than the two initial senses of causation, material and formal. What makes something else happen (efficiency) does not necessarily coincide with the condition of possibility for something to happen (namely, lacking precisely the determination that the change brings about). Moreover, as already noticed, for Aristotle, the materiality of a thing is non-existent without some current degree of actuality (formal causality) and further actualizations (final cause). Consequently, for a

thing to change, it needs capacity for change (potentiality of material causation), a way in which it changes (determination of formal causation), a new way of existing (final cause), and something, internal or external, that makes that happen (efficient causation).

2. Efficient causation as a source for change does not expunge the mental from being causally efficient, precisely because efficient causation does not collapse into material causation, which allows for more sources other than matter to be the origin of change.<sup>45</sup> Given that efficient causation amounts to being a source of movement instead of a variable on the dimensive quantities of matter, the mind can be an origin of movement (when the mind requires material instantiation, as it happens in physical entities) and operation.<sup>46</sup> As a matter of fact, in biological realities, formal, final, and efficient causality coincide.

3. Consequently, although something mental could be the source of movement, the mental as an efficient cause does not demand a lack of physical realization. Efficient causality requires both formal and material causality in physical things. Therefore, causal efficiency does not belong exclusively to matter or form but to the whole biological entity.<sup>47</sup> In other words, the mind is causal in an efficient manner because it is embodied, or more

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<sup>45</sup> Granger states about Aristotle that "(h)is psychology bears witness to the efficient causality of form, when it portrays the soul, which Aristotle identifies with the form of the organism, as what unites in its nature formal, final, and efficient causality" in Granger, "Aristotle and the Concept of Supervenience," 167. See Aristotle's *DA* 415138-28 and *PA* 641a27-28.

<sup>46</sup> Although this consideration is outside the scope of this paper, the mind would be a source of activity regardless of the mental being completely immaterial or containing elements of materiality. While efficiency requires materiality in physical substances, the Stagirite would not have had any problem in assigning efficient causation to something immaterial because all that efficient causation names is the source of movement (and that is what we see Aristotle does in the case of the Agent Intellect).

<sup>47</sup> It is precisely this *concausal* sense of matter and form that distinguishes hylomorphism from functionalism and supervenience, as the first fails to notice the causal role of matter, and the second, the priority causal ontology of form over matter.



properly speaking, it is an enmattered mind.<sup>48</sup> Because biological realities require the concurrent causality of matter, form, and efficiency, now it should be clear why this proposal is *concausal* and not just hylomorphic, and why it appeals not only to Aristotle but to Polo's understanding of Aristotle's tetracausality.<sup>49</sup> Therefore, explaining the mind-problem according to a hylomorphic model is not sufficient because, in the case of beings that have consciousness, and more generally in all living beings, matter and form are just part of the story. Many other substances in the Aristotelian universe are hylomorphic with no consideration of life or consciousness. However, for living entities, the source of movement as living (the efficient cause), is intrinsic to them. It comes from within, as rooted in and patterned by their formal principle and made possible and efficient by the potentiality of matter.

In conclusion and closing the open question about whether *concausality* can avoid epiphenomenalism that took us on this excursus on types of causes, the fact that form and matter do not have efficient causal powers does not set the stage for epiphenomenalism because they are built-in conditions for the efficient causation of the living thing/brain to take place. They have a causal role that is not efficient but that participates in the efficiency of the whole substance.

However, an objection to how this *concausality* circumvents epiphenomenalism through broadening our understanding of causality arises. If BN pulls the rabbit out of the hat without showing us the trick, *concausality*, as applied to the mind-body problem, shows us the trick by creating a further illusion: the illusion of a multiplicity of causes. This positing of other causes constitutes a gross violation of Ockham's razor. Sticking to efficient causation may be preferable by many who appreciate simplicity, thereby exhibiting good philosophical taste. Moreover, we can always claim that our contemporary understanding of efficient causation already includes all those other causal senses,

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<sup>48</sup> While the mental has formal causality but not efficient or material causality in Polo, it must be noted that insofar as the formal principle is that of an embodied entity, formal causality becomes entangled with other formal senses.

<sup>49</sup> In this regard, Polo states that the hylomorphic compound is not individual because it cannot exist without all the four causes (see Leonardo Polo, *La Esencia Del Hombre* (Eunsa, 2011, 117.)

thus building potentiality and determination (material and formal causes) into efficient causation. In other words, an objector could allege that ultimately, the brain is the total cause and that differentiating a formal and material component is just a formal distinction, not real (that is epistemological, not ontological). This objection would make the *concausal* proposal a naïve and almost pointless reformulation of BN.

The response to this difficulty is that the so-called and misattributed Ockham's principle does not tell us, just by itself, when the razor is shaving too much or too little. Admitting only efficient causation may seem like a good choice to many, but then the aporias of epiphenomenalism, dualism, or eliminativism shall follow. One philosopher's favorite alternative could be another philosopher's delusion, and we may have to pick our poison or admit to a causal differentiation.

The problem with solely singling out efficient causality as "what makes something else happen" is that "happening" by itself will never tell us what, how, concerning what, something is happening. We may claim these elements just mentioned are just ways of describing a situation instead of real causal factors in the world. However, when we build the plurality of causes into the efficient cause as a mere epistemological distinction, we do so because we rely on a Cartesian understanding of physical reality as constituted by extension. If matter has its own act as extended, it is already actualized. It does not require a differentiation between potential versus actual (matter and form) because everything, as extended and dimensive, is actual. In other words, physical reality as extension only requires a model of causation that accounts for quantitative differentiation. All we need then is an external cause, the efficient cause, to bring about variation within quantity. However, the real illusion consists in identifying physical reality with some form of quantitative description because quantity has quality built into it that, although quantitatively instantiated, cannot be reduced to it. Any instantiation of quantity is possible if it has built-in differentiation, which by itself is not something quantitative, although, of course, given the intertwined nature of matter and form, it can admit a quantitative description.

Conversely, if matter is just potentiality, this very deprived, destitute, dispossessed sense of the physical will need the nur-

turing and fostering of other causes to make it forward. If we were to acknowledge only efficient causation, we would be pointing only at the source or origin that makes something happen, but we will not be saying anything about the intrinsic conditions that make that change possible and in what form it happens. The material cause offers the concreteness of quantity, space and time, and potentiality. The formal cause determines how and what; the final cause, the outcome; and the efficient cause, the origin. Our notion of physical reality and efficient causation appears imbued with formal, final, and material causality, without which efficient causation is itself inefficient or just plainly trivial. For Aristotle, all these causal senses make something else happen, and, in this respect, they do not rest in an epistemological but ontological distinction.

#### 10. AN ONTOLOGICAL FRAMEWORK FOR BIOLOGICAL NATURALISM

After examining how *concausality* can circumvent the difficulties of substance and property dualism, reductionism, overdetermination, and epiphenomenalism, there is one more point that we need to explore. This paper reviewed Searle's BN for the following reasons: 1. BN's ambiguities condense well all the possible bifurcations that the mind-body problem may follow, 2. BN tries to save our most cherished common-sense intuitions and scientific research, 3. It is a biologically rooted account, well in tune with Aristotle's bypassing of the mind-body dichotomy by focusing on living organisms. The question now is if the *concausal* proposal can lead Searle's BN towards a truly non-reductionist naturalism. Could it help Searle avoid the problems of how mental and physical properties relate to each other, epiphenomenally, causally, or in some other way? Is *concausality* compatible with Searle's belief that the physical causes ontologically the mental and that such causation also grants causal powers to the mental?

At first sight, Polo's proposal of *concausality* applied to the mind-brain conundrum seems to diverge from BN's premises widely enough to offer Searle any ontological help:

1. BN only acknowledges one sense of causation, efficient causation, which Searle loosely understands as 'what makes some-

thing else happen.' On the other hand, Polo's *concausality*, following Aristotle, reckons more causes than the efficient.

2. Moreover, according to Searle, the causal powers of consciousness are the same as those of the neuronal substrate while not being identical things. Causation belongs to one single system, and that system is not monist. It has different features physical and mental, which are causal and required for the system to function causally. In *concausality*, different senses of material and formal causation (that do not correlate univocally with the physical and the mental) are not features but principles, namely, ontological realities more primordial than substances and properties.

3. Furthermore, for BN, consciousness is an effect caused by the brain. Nevertheless, in being caused by the brain, it shares in the causal powers of brain processes. In a *concausal* model, answering if the brain causes the mind does not have a straightforward answer unless we define what we understand by "brain" and "mind" and disambiguate whether we are talking in the synchronic (constitutive and episodic) sense or diachronic.

In a *concausal* model, the brain does not cause the mind at the constitutive level. The reason is that we do not have a brain/mind dichotomy at that level of constitution. In fact, what is at stake is the constitution of a brain as a brain. Therefore, the question at the constitutive level is, "what makes a brain be a brain in the first place?" The picture, as presented by Aristotle and already mentioned, is that the brain is only such if it is already a 'mind'; it is matter that happens to have the organization and capacities it has because such an organization is its formal principle, and this biological organization allows for mental brain activity. Because this causality of matter and form is not efficient causality, the brain does not cause the mind (taken here as 'form,' a principle of organization and causality), nor does the mind causes the brain (although this question is not at stake here): 1. First, the brain is already a 'mind' in the constitutive sense, and the 'mind' exists actualizing a potential substrate (its materiality); 2. Secondly, the causality of the form and matter is not efficient towards each other (matter and form are not an effect of each other). In this regard, the causal powers of constitutive principles do not have effects that are ontologically distinct from them, they do not produce a different entity, but the fruits of their causal powers can be called formal effects.

Moreover, the brain does not cause the mind in a Cartesian/Physicalist model either. The reasons have been offered already: a deprived sense of matter cannot account for the emergence of mentality. Consequently, when Searle affirms that brain states cause mental states as the physical causing the mental, he must be implying that whatever causes mentality must have the causal power to do so. Then the question is what kind of matter may exhibit such a causal power because a Cartesian one surely does not. Consequently, without replacing its understanding of matter, BN, like Kim, inadvertently will fall back into the dualist categories that it is trying to overcome, where matter as extension repels anything else that may attempt to relate to it as non-extended.

Can the brain, however, in an episodic sense, cause the mind? By 'mind,' here we refer to the occurrent mental events caused by the efficiency of the brain (constituted by matter and form). Occurrent mental states, causally sourced from the concurrent efficiency of the *concausality* of matter and form, stem from an already existing substance. They are also effects, distinct from their cause, but also proportionate to it. In this sense, mental events are *caused by* and organically *realized in* the brain. They can be *causally* reduced if the brain is more than a chunk of matter whose main attribute is extension. In other words, a *causal*, but not *ontological*, reduction of mental states to the brain is possible because that which the mind is being reduced to already contains in the first place the causal conditions that cause the mental (but not the full-blown ontology of mental states). Whereas a dualistic/physicalist ontology does not provide those, a *concausal* account does. In this regard, we could read Searle's proposal as admitting this thesis since the causation belongs to the system, not to brain states or mental states solely. Then, properly speaking, there is a causation of mental states by brain states because the brain already has an organizational and efficient principle that allows for mentality in the first disambiguated sense taken here. The brain then does not cause the mind in a constitutive sense. However, it has the causal power to produce consciousness in an episodic sense. Although caused by the brain, mental states are not reducible to it because the ontology of an operation is not reducible to the ontology of constitution.

Therefore, from the relation between neurophysiological states and mental states, there is no top-down causation from mental states to brain states or bottom-up causation from the neurobiology to mental states. The reason being that at any given point, a brain state that exhibits qualia, intentionality, content, or consciousness has as its cause the *concausality* of material, formal and efficient principles, which work inside-out,<sup>50</sup> not just top-down or bottom-up. We could say then that the causation of episodic mental states is, at any given point, inside-out, sourced from the reciprocal causality of matter and form and placed in motion by efficiency. Moreover, if we still wonder where this ontology comes from, given that, at the physiological level, we do not see the features that comprise the ontology of the mental, we should remind ourselves that we do not need to have a black eye to have one. The requirement, though, is to have the ontological capacity to do so, and that is what a Cartesian view on matter cannot offer.

Ultimately, the unbridgeable differences between BN and *concausality* that we laid out initially could reconcile through some repairs to the theory and some salvable theses.

1. Property dualism. What Searle calls lower and higher features of the system may be understood not in terms of levels of description, different entities, events, or parts (although the system may admit different types of descriptions), but as causes *ad invicem*. The constitutive sense can save Searle from property dualism because these causes *ad invicem* are not features but constitutive principles that share in the causal efficiency of the brain as a system. In this sense, we do not have two sets of properties, mental and physical, that derive from a bare substance but matter and form as causal principles constituting a substance. Furthermore, the distinction between constitution and operation explains how mental states are caused by and realized in brain states. The hylomorphic compound causes mental states as operations. Mental states further actualize the potentiality of the hylomorphic compound as 1.

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<sup>50</sup> I borrow Michael Dodds expression from his paper Michael J. Dodds, "Top down, Bottom up or inside out? Retrieving Aristotelian Causality in Contemporary Science," in *Science, Philosophy and Theology*, vol. 7 (South Bend, 1997).

The potentiality of matter; 2. The potentiality of the faculties belonging to the formal principle.

2. Overdetermination. Not all concausal senses are efficient. The causal relations between the embodied mind, its operations, and its progression through time are not overdetermined in an efficient sense. In this regard, the brain does not cause the mind, nor the mind needs to interact with the physical in a constitutive sense. However, does the overdetermination happen in occurrent mental events where the ontology of the first-person perspective differs from the ontology of extension? As we analyzed above, only if we rely on a deprived sense of matter like a Cartesian one.

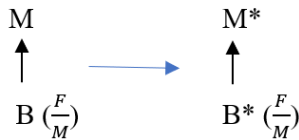
Kim's enhanced objection consisted of having one system state cause the next system state while the supervenient basis is also doing the causing. The overdetermination would result from having two different efficient causations, left to right and bottom-up. In a *concausal* account, this is explained by having at work different causes causing different things. In the synchronic and constitutive sense, matter is not efficient per se, but the whole system is. At the level of synchronic episodic mental states, the efficient causal power of the hylomorphic compound determines the whole organism into a specific system state, but not as its next stage. The diachronic progression is the efficient causation of the whole system with the following system state as its final cause, whereas the synchronic causation provides the physical realization of the mental state as a state of the system.

3. Epiphenomenalism. In physical organisms, the mind is causal with a formal causality both in the constitutive sense of the actual principle of living entities and in the episodic sense of mental states caused by the hylomorphic compound. However, this formal causation is not futile. Constitutively, as an embodied mind, the formal principle of a living thing is also its efficient cause that informs efficiency in the whole composite. Matter and form allow for a causal constitution that roots all efficient causation.

Consequently, discrete mental states *share* in the efficient causality of the living organism because, as episodic events, they are an extended function of the constitutive sense. From a diachronic

viewpoint, as part of state systems, mental states share in the causal the efficiency of the living organism that moves the system forward towards future system states. Therefore, mental states have causal powers –the ones of the system–, since matter and form must share in the causality of the system in terms of efficient causality.

In summary, BN affirmed that mental states share in the causality of the system, and since they are part of the physical world, they act causally. At the same time, they are caused by brain processes. The question was how they could be simultaneously in a “sharing” relation with the system ( $\frac{M}{B}$ ), and a “causal” relation where brain processes cause mental states ( $B \rightarrow M$ ). The “sharing” relation is a constitutive *concausal* relation of matter and form, of the mind as embodied. It makes possible episodic mental states afforded by the system’s constitutive causality and the causal efficiency diachronically. Therefore,



The constitutive sense ( $\frac{F}{M}$ ) explains ontologically, not scientifically, how the brain can cause M instead of saying that it just does. It also makes possible ( $B \rightarrow M$ ), that is, mental states that have formal causality (by being a high-level feature) that nonetheless shares in the efficient causality of the system. The ‘causal’ relation between brain processes and mental states is the causation of occurrent, synchronic mental states that require the concausality of matter and form as a proportionate causal power.<sup>51</sup>

<sup>51</sup> Because the synchronic sense refers to the layers of concausality present in a biological entity, it must not be confused with the sense of simultaneity with which Polo characterizes the mental operation. There is undoubtedly simultaneity in concausality, but it is not the simultaneity proper of cognitive acts.



## 11. CONCLUSION

The mind-body problem hinges on what conception of physical reality and causation we have at hand. One of the many difficulties in defining matter is making physical reality consistent with our current scientific paradigms, which are open to further development. However, having a science-friendly but philosophical understanding of what is physical could ground a non-reductive physicalism that needs to be biological to avoid reductionism.

Therefore, one first suggestion to approach consciousness is an understanding of physical reality that is biological. A naturalism that does not take mathematized physics as the paragon for reality can make room for the specificity of biological realities. Aristotle saw this already when he observed biological entities and realized that Plato's forms, interestingly also subjected to mathematical proportions, could not account for physical movement and even less for the movement of living beings.

An attempt at a biological consideration has been precisely John Searle's Biological Naturalism, where mental states are a biological reality, yet they cannot be ontologically reduced to neurophysiological states, only realized in them. BN runs into trouble because, in its efforts to discard Cartesian categories, it has overlooked the Cartesian conception of matter. However, Searle's BN is worth saving because the heart of his theory is in the right place. Now, what kind of ontology can adequately support BN's theses?

This paper proposed an understanding of material reality that led the way out of the Cartesian categories, as BN attempts, opening different senses of causation. We can say that in a Cartesian scenario where matter is essentially extension and the mental is diametrically opposed to it, paradoxically, and ultimately, there will be no room for the mind. Eliminative materialism concludes this after all, and perhaps that is the path to follow if we were to remain in a Cartesian view of physical reality. However, the brain is not just another chunk of matter, even less a Cartesian chunk of matter. It is just an application of the Cartesian categories that makes it look either as if the mind should be reduced to something physical in terms of pure extension or as if the mental magically arise out of the machinery of mindless neuronal activity.

If we realize that a non-reductive physicalism for the mind, like BN's, is implicitly proposing more than one single sense of causation and a different understanding of matter, we can inquire how more senses of causation other than efficient are possible. The proposal of *concausality*, taken from L. Polo's philosophy and contained in Aristotle's tetra-causality, highlights how each sense of causality contributes to disentangling the mind-body problem. Material causality because, with an understanding of matter as pure potentiality instead of primarily extension, we can reverse the poles of the mind-body from repulsion to attraction: the mental and the physical do not repel each other; they require each other. Formal causality, because without understanding that causal senses other than efficient are possible, we do not get rid of overdetermination. Efficient causation because, as a *source* of causality, points at the whole living being as its origin, not just at its matter or its form, and makes possible the efficiency of the mind in a physical world.

Lastly, it should be clear now that stating that the brain causes the mind *simpliciter*, without disambiguating senses, can be misleading because it perpetuates the Cartesian scenario. The mind-body relation gets into trouble when it does not distinguish between the synchronic ontology of constitution and the synchronic ontology of operations or between the first act and the second act. Moreover, when we mistakenly apply the diachronic sense to the constitutive sense (first constitutive act), we build efficient causation, proper of the whole organism, into the formal and material constitutive causalities, which do not have an efficient causality, making the whole mind-body problem utterly intractable.

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