

The Unfinished Business of Matter: Francis Glisson on Life and Individuality

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Philosophy for Anatomists

In 1672, a rather odd volume came out of the presses of Elizabeth Fletcher: the *Tractatus de Natura Substantiae Energetica, sive De Vita Naturae* (Treatise on the energetic nature of substance, or The life of nature).¹ Its author was the anatomist and physician Francis Glisson (1599–1677), who, by the time he had completed this weighty philosophical tome, was more than seventy years old and could vaunt an important career as regius professor of medicine at Cambridge University, fellow of the Royal College of Physicians, and member of the Royal Society.² The *Tractatus* represented the culmination of more than twenty years devoted to philosophical research, from the publication of his work on the anatomy of the liver (*De Anatomia Hepatis*, 1654) to the treatise on “the life of nature.”³ These metaphysical investigations turned out to be productive indeed: Glisson’s main conclusion in the book was that matter was a living substance.

The word “matter” is not mentioned in the title of the work, but the concept is firmly at the center of Glisson’s inquiry. Once we as readers manage to overcome that tangled and prickly bramble that is Glisson’s Latin prose, bristling everywhere with scholastic distinctions and subtleties, we discover that we are confronted with one of the most fascinating summae of Western philosophy exploring the contested borderland between matter, nature, and life. Although the initial reasons that led Glisson to philosophize were closely related to his work as an anatomist investigating the vital functions of the digestive system, the *Tractatus* is unashamedly and rigorously about metaphysics; more specifically, it is about the meaning of substance and the need to lay the groundwork for a new ontology.⁴

For Glisson, substance in the strictest sense means the condition of being absolutely independent and self-supporting. He called this property *subsistentia fundamentalis*, “fundamental subsistence.” A true substance, that is, has the characteristic of being its own foundation (*fulcimentum suiipsius*), capable of sustaining itself without being supported by something else.⁵ “Whether the word substance derives from ‘being under’ [*substare*] or from ‘remaining standing’ [*subsistere*], in both cases it alludes to the fact that a substance is the ultimate created basis or a self-reliant foundation.”⁶ Self-sufficiency is therefore a univocal attribute that can be applied to both uncreated (God) and created reality (all the rest). In this respect, Glisson rejected all theological solutions directed at depriving nature of its autonomous power. In particular, the occasionalistic accounts of the created universe that invoked an *extraordinarius Dei concursus* were becoming popular at the time among divines as well as metaphysicians.⁷

What makes Glisson’s position especially intriguing from a philosophical point of view is that the ontological self-subsistence of substance cannot be fully understood without associating that power with the concept of vital sustenance. A substance is able to maintain itself because it is alive; that is, capable of processing its surrounding reality, of which it remains safely independent. Not only does Glisson’s substance objectify outer reality by representing it as that which is not itself; it also transforms that reality into itself. As we will see, perception and assimilation are the defining characteristics of this substance. It is this power of self-representation that makes Glisson’s substance radically alive (and for this reason, it truly deserves the name that Glisson gave it:

βιουσία, *biousia*, “life-substance”), for, in order to conserve itself and persist as a substance, a substance needs to feed on what it perceives as different from itself. Glisson defines this property of substance as its *natura energetica*.⁸ Subsistence and sustenance, *subsistentia fundamentalis* and *natura energetica*, are therefore the basic attributes of reality. Substance’s self-existence relies on its self-activity, and its self-activity relies on its self-existence. What at first glance may sound like a tautological circle in Glisson’s central argument is in fact the expression of a productive tension between the two principal terms of his reflection: being and activity, permanence and transience, *identitas* and *alteritas*. The power to exist in an independent way is premised on the power to perceive and act in self-defence.

In a series of previous contributions, I have dealt with the most general aspects of Glisson’s theory of substance, especially its power to persist as one entity independently of any other being (*subsistentia fundamentalis* understood as self-existence) and its power to act without being assimilated by another being (*natura energetica* as self-activity).⁹ In this essay, I concentrate on a specific issue in Glisson’s ontology: If matter is both a universal substratum and a living entity, can it still be considered an individual being like God, angels, demons, and rational souls, which, for Glisson, are all substances precisely because they are complete individuals, that is, *personae*? What is the specific *identitas* of that substance that in Glisson’s universe is matter?

Matter Is a Substance

In actual reality, according to Glisson, there are four types of substance understood as specific instantiations of the ontological interplay of *subsistentia fundamentalis* and *natura energetica*: God (both one and triune), the angels, rational souls in human beings, and matter.¹⁰ In keeping with the tenets of Aristotelian ontology, Glisson maintains that a fully actualized substance coincides with a thoroughly developed individual being. God, angels, demons, and rational souls are all examples of individual substances; indeed, they are persons. Should then we consider matter, which for Glisson is a substance to all effects, a person too?¹¹

When Glisson argues that God, angels, demons, and rational souls exist, he describes their ontological features with philosophical and theological accuracy. In this respect, Glisson cannot be viewed as an atheist. Reportedly, his friendship and conversations with the Puritan minister Richard Baxter (1615–91) rested on shared interests in medical and theological matters.¹² Glisson’s reputation as a heterodox thinker, however, is associated with two of his colleagues at Cambridge University, Ralph Cudworth (1617–88) and Henry More (1614–87), for they included Glisson’s *Tractatus* in their surveys of ancient and contemporary atheism. In the *True Intellectual System of the Universe* (1678), Cudworth labeled Glisson’s theory of living matter as “Stratonism,” while More, in his *Ad Virum Clarissimum Epistola Altera* (The second letter to a right honorable man, 1679), called Glisson’s account of substance “Biusianism” (from the βιουσία mentioned above). Within the confined space of Cambridge academe, Glisson was therefore placed, albeit for different reasons, in the same company as Hobbes, Spinoza, and various contemporary followers of Lucretian materialism.¹³ If he was not an atheist, though, should then we present Glisson as a genuine advocate for materialism? To answer this question in a proper fashion, we first need to examine the four entities that, according to Glisson, are on a par with matter when the property of *substantialitas* is addressed.

As already noted, God, angels, demons, rational souls, and matter all share the ontological qualification of being self-sufficient (*subsistentia fundamentalis*). However, the ways in which they

are said to be substances vary, and the variations depends on the specific characteristic of their vital essence (*natura energetica*). God *is* the substance in the proper sense, in that he is absolutely independent of everything (he made everything else). For this reason, Glisson continues, “the statement that something does not depend on anything else suits God alone. All creatures essentially depend on God.”¹⁴ He is absolute power and pure energy. “Only God absorbs the full scope of being into his own nature.”¹⁵ His *natura energetica* is infinite productivity.

Since God has created everything different from himself out of nothing, the first ontological distinction to be made is between uncreated and created substances. Within the domain of creation (*natura substantialis creata*), the principal division is between immaterial and material reality: “The former belongs to spirits, that is, angels, demons, and the rational soul; the latter is the characteristic of bodies.”¹⁶ The division between immaterial and material realities is then linked to the one between perpetual (*res perpetuae*) and perishable beings (*res caducae*). While angels, demons, rational souls, and matter are perpetual, material forms are all perishable: “Beings that are made up entirely of matter exist in a fundamental way thanks to matter, not because of their form, for this is perishable and cannot last longer than the time they are sustained by matter.”¹⁷ Another division among created realities concerns the difference between simple and compounded beings. Simple *subsistentiae*, such as angels and demons, are self-existing and self-active, for their “life” perfectly coincides with their “substance.” Glisson ends his argument in support of the energetic nature of angelic substances with a rhetorical question: “Who can think of a dead angel?”¹⁸ The same question could be asked with respect to the rational souls, which are created, incorporeal, imperishable, simple, and self-existent.¹⁹

Compounded *subsistentiae*, finally, are partly perishable, partly perpetual, as is the case with natural beings and human beings. Natural beings are realities compounded of matter and transient forms: when forms decay, only their matter remains.²⁰ The mortality of natural forms is clearly asserted by Glisson: “while the nature of matter depends on itself [*per se*], the nature of the material form depends on another substance [*per inhaerentiam*]; therefore, once their separation takes place, matter remains, the form ceases entirely to be.”²¹ Human beings, on the other hand, are made up of two “essential parts”: a rational soul and a body. They both remain once they are separated at the death of the human individual.²² Glisson conjectures that, unlike angels and demons, rational souls are the only simple and immaterial entities in the created universe to have been made as embodied and, above all, embodiability (if I am allowed to use this clumsy word), for they need to be united with another nature—that is, a human body—both before and after the death of the individual. The reason, Glisson suggests, might depend on the need for rational souls to be perfected before the final resurrection of the dead.²³

At the beginning of his book, Glisson explains that the discussion of the substance of God, angels, demons, and rational souls is not the principal aim of his research. He mentions them in passing only to highlight the relationships they share with each other (*affinitatis gratia*), for in this way they help frame the general question concerning the substance of matter.²⁴ Glisson’s *Tractatus* is unequivocally about matter, for this is the substance that underpins all bodies in nature. Therefore, to answer the question raised at the beginning of this section, Glisson can be labeled as a vital materialist since the central focus of the *Tractatus* is matter, and matter is the chief substance in a created universe which is also inhabited by incorporeal substances such as angels, demons, and rational souls. The process through which matter lives as one substantial being in the universe includes three stages: primary matter (*materia prima*), secondary matter (*materia secunda*), and

shaped matter (*materia formata*). Primary matter is the everlasting and immutable core of all material changes; secondary matter is the domain of the countless transformations undergone by primary matter in order to develop and conserve itself; shaped matter, finally, is the visible and externalized result of this transformative activity culminating in the production of forms. These, however, are bound to end as soon as either the inner energy of the substance dwindles or the forms themselves, which are combinations of material parts, are assimilated by stronger combinations. Glisson characterizes these three levels in the anatomy and physiology of matter as “inadequate concepts” of one same reality. When the human mind tries to conceptualize the life of matter, it “inadequately” grasps three different aspects of it in different times: the beginning, the processing, and the provisional outcome.²⁵ The distinction of matter into primary matter, secondary matter, and shaped matter replicates at the level of material substance the ontological divisions that define all substances, corporeal and incorporeal. *Materia prima* corresponds to the power of self-existence (*subsistentia fundamentalis*); *materia secunda* corresponds to that of self-activity (*natura energetica*); *materia formata*, finally, to the moment of self-completion (*subsistentia modalis* or *suppositalitas*, which could be translated as “individuality”).²⁶

Glisson’s vindication of matter as a substance and a living being is the leitmotif of the *Tractatus*. The goal is clear, and there is no need to read the work between the lines. First of all, qualified as “primary,” matter is the ultimate substratum of things, existing in reality and acting in fact. For Glisson *materia prima* does not stand for the ambiguous source of ontological deprivation and epistemological obfuscation described by Plato and the Platonists, nor is it the domain of potentiality and passivity, pervaded by an insatiable appetite directed at all the forms it cannot have, which the Aristotelians described through the category of privation.

Above all, matter has the power to cause changes and events. In its ultimate meaning, the causative power of matter “involves the vital concourse of its inner faculties insomuch as it is a living substance capable of perfecting itself.”²⁷ These faculties are identified by Glisson as perception, desire, and motion. Although matter is an imperfect—that is, unfinished—substance, through its perceptive and appetitive motions it aspires to an ever-greater level of individuation and perfection. Incompleteness, therefore, is at the core of matter’s existence and is what differentiates it from the *subsistentiae* of God, angels, demons, and rational souls. The question then becomes whether this state of deferred fulfilment is different from the Platonic specter and the Aristotelian potentiality. In what follows, I will examine the distinguishing features of matter as substance by focusing on what I call its unfinished business.

An Individual Is a Lonely Substance

As argued in the previous section, unlike God, angels, demons, and rational souls, matter seems not to have all the requisites to be considered as an individual; that is, a “complete substance,” or *suppositum*. For this reason, Glisson maintains that primary matter is defined by an incomplete level of individuation (*individuatio prima* and *incompleta*).²⁸ However, this state of unfinished and deferred accomplishments (which, as we will see, correspond to the forms of matter) is essential for matter’s own life, for it allows it to preserve its constitutive characteristics of continuity, suppleness, and indefinitely changeable scope. Being the all-encompassing matrix of corporeal reality, matter is an *individuum* that remains a work in progress: “Bodily matter consists of its general nature, existence and fundamental subsistence, through which, while undergoing all the changes of forms, it perpetually preserves its own incomplete individuation, coeval with its own being.”²⁹

This basic level of individuation in matter arises from an ineradicable endeavor to individuate itself that, in turn, originates in a primal sense of deficiency and inadequacy. Matter's innermost tendency, which therefore is also the primordial drive within created nature as a whole, is an indelible propensity to bridge this gap between incompleteness and completion by turning in on itself and making a form out of its otherwise undifferentiated energy. When matter brings about a form, the formed part congeals into a condition of sequestered life resulting from its inclination to resist sharing its energy with other parts of matter and to reject the possibility of being united to a larger entity. "The goal of being a fully actualized individual substance [*suppositalitas*] is the act through which a substantial nature enjoys itself [*fruitio sui*] as a complete individual substance."³⁰

This unique combination of self-enjoyment and self-seclusion relies on a complex and always precarious interplay of fragmentation and amalgamation involving all the parts that make up the bodily continuum of matter. Partitions of material substance persist as individual bodies (i.e., the forms) because some parts of matter tend to "federate" with each other while excluding all other parts. To describe these "federations" (*confoederationes*), Glisson uses the term *complementum*.³¹ Federations of matter are complementa; that is, sorts of ontological codas to the never-ending work of substantial formation that takes place in matter. From the undifferentiated magma of primary matter, all kinds of fault lines, lineaments, outlines, shapes, and forms bubble up and crystallize every time that a cluster of material parts isolates from the rest and stiffens up into a new federation. Ontological tribalism reigns in Glisson's theory of material substance:

[A] certain fixing of boundaries [*terminatio*] leading to a union or federation arises from a division into parts that are divided from all other parts. This set of boundaries extends as widely as their federation and communion, and no more; that is, their dominions are delimited and completed only when these parts are united together. As a result, a certain enjoyment of this act of self-completion [*complementum*] arises, that is, nature enjoys itself and acquiesces in its own parts being united together, for they are sufficient to make the whole substance complete, as they stand divided from all others. This condition of self-satisfaction achieved by nature [*complacentia naturae*], through which it acquiesces in its becoming a complete being, is the ability to enjoy itself and is the goal aimed at by the state of being an individual [*suppositalitas*] which flows from that nature.³²

Here Glisson gives us some valuable clues to understand the peculiar individuality (*suppositalitas*) of matter. Being grounded in the need by matter to retreat into itself and be closed in on itself, the essential frame of material life is a kind of radically precarious entity based as it were on the guilty pleasure (*fruitio sui*) that derives from being divided from all the rest. Matter's febrile activity of making and unmaking forms comes to a provisional halt every time some of its parts enjoy the process of coalescing together and lose any interest in the rest of the material universe. It seems, therefore, that self-satisfaction and inner complacency are the states that drive matter to agglutinate. As we will see, these types of *fruitio* and *complacentia* in matter are remarkably ambiguous: matter enjoys union, but it also enjoys division. The compromise is a closed union limited to some parts, but not others. If it's true that there is a general disposition in matter to combine into compounds, this combination is not boundless. Parallel to this tendency, there is another disposition—which is as general—to draw a line in the combinatorial yearning of matter.

Glisson insists that this process of self-circumscription in matter is a real activity in a substance (*actus* and *forma positiva*) and not the result of external and mechanical pressures.³³ Matter sets boundaries to itself. How does Glisson explain and demonstrate this behavior in matter? A keyword in this discussion is the Latin “confoederatio” mentioned above. In particular, the recurring phrase *confoederatio sibi soli* can be rendered in English as “a league of its own that is all by itself,” which signifies the power of substance, nature, or matter to join forces together and establish an alliance among its different components. A confoederatio is therefore a superindividual within a universe of countless substantial individuals (*supposita*). The meaning of this union, though, wavers between the positive connotation of “one of a kind” and the negative sense of “all alone.” Glisson argues that when one wishes to explain matter’s tendency to self-individuation, the concept of union is not adequate. For this reason, he adds the notion of federation, in which the impulse to join forces is balanced by the tendency to reject further integration. The word “confoederatio” “evokes the idea of a vitality of nature that is united with itself.”³⁴ The definition of a federated—that is, closed—union is therefore an indication of unshared and segregated self-sufficiency.

Understood in this way, an individual material substance, transient as this may be, is the result of a tendency to protect itself from other material substances. The more we explore the meaning of this concept, however, the murkier the meaning of the fruitio and complacentia associated with the federations of matter becomes. Let’s then shed some more light on this gray area in Glisson’s ontology. In the second section of this essay, I have briefly discussed Glisson’s division of the notion of matter into *materia prima*, *materia secunda*, and *materia formata*. It’s now time to resume this division and to focus on *materia secunda*, where the murkiest aspects of matter seem to dwell. Glisson expects that one might ask what *materia secunda* adds to the concept of *materia prima*. *Materia secunda*—this is the gist of his answer—is “a certain inner facility to yield, a feebleness, and an inability to resist.”³⁵ Traditional and prevailing theories of matter have underscored the latter’s traits of passivity and inertia. Glisson argues that matter’s receptivity is in fact the indication of an active nature. Through this nature, the production of forms rests on an energy cycle of vital exuberance and complementary decay. For Glisson, matter can change (that is, it can shift from *materia prima* to *materia secunda*) because it has the ability to yield. This condition is “the worm of corruption and changeability”:³⁶

This principle, as if it were a worm, gnaws at the root of the current form and with the same action paves the way to the form to come. Its operation is gradual, slowly creeps and does not stop until the old form is subdued and a new one is introduced.³⁷

For Glisson there cannot be any doubt that, “besides the external principle of change, there also is an internal one, that is, a readiness to withdraw [*facilitas cedendi*] and an inability to resist [*impotentia resistendi*].”³⁸ Glisson calls this *impotentia* with respect to internal and external pressures the “worm,” for he holds that the germ of change dwells inside the very fabric of matter. This *vermis* is not an actual entity (*res positiva*), but a deficiency (*causa defectiva*); that is, a certain lack of internal energy which makes matter unable “to defend itself and its form.”³⁹ Here is the crux of the matter: the tendency in matter to form self-enclosed federations (which, as we have already noted, emanate from the fear of being assimilated by larger unions and from the need to protect and conserve themselves) depends on a constitutive impotentia in matter, which is not to be understood as an entity of its own in Manichean terms, but remains effective nonetheless. What is more, it now becomes apparent why matter is destined to be an incomplete individual. The tendency to yield embedded in matter is a constitutive kind of impotentia that derives from

matter's incomplete nature and from its longing for completion. Being an individual substance that is constitutively unfinished, matter is pervaded by an unquenchable aspiration to complete and perfect itself. Why is this desire in matter? Glisson's answer, as we will see in the next section, is both simple and complex: it is because matter is alive, and its life is knowledge.

Life Is Knowledge

In Glisson's metaphysics, form depends on matter, not the other way around (which is another significant departure from the traditional templates of Platonic and Aristotelian metaphysics). As pointed out in the previous section, by "form" Glisson means a particular state of matter (a body) resulting from the latter's unremitting attempt to find always-new means and ways of conserving itself. The primordial indifference toward any possible form and the ease with which it connects and merges with everything that is outside its sphere of influence (*facilitas cedendi*)—indifference and ease which are the distinctive marks of primary matter—testify to a condition of structural incompleteness. By limiting itself with temporary forms, matter's appetite reaches a level of provisional gratification (*fruitio suiipsius* and *complacentia suiipsius*) while remaining free to keep transforming itself. Among the proofs put forward by Glisson to demonstrate that forms are subservient to matter, he crucially highlights the function of perception: matter has the power to recognize (*agnoscit*) form as a product of its own and as something that it needs in order to foster its own conservation.⁴⁰

As noted, through federation after federation matter individuates itself by establishing networks of parts clustering together while rejecting union with other parts. The individuation of matter as a whole remains blurry and unfinished because the federations of parts are constantly changing. In other words, matter unremittingly federates with its own being without ever reaching a stable commonwealth. Matter's production of forms is therefore an expression of both its power and its weakness: of its power because matter's essence is "energetic nature"—that is, incessant activity; of its weakness, because each federation of matter is the result of loneliness and desertion. Activity is unlimited, form is limited. In both cases—union and negation of union—the production of forms (i.e., bodies) derives from matter's ability to perceive. Matter senses the advantages of getting united as a whole, but it also senses the risks that come from becoming too many elements in need of being united. In Glisson's philosophy, life is knowledge because tendencies and motions in matter are always oriented by a certain degree of perception, as is clearly pointed out in the following excerpt:

Matter perceives that it lacks a form through which it would be completed, but it does not perceive what kind of form it needs. For, if matter selected a certain particular form as fitting with itself, then it would stop being indifferent to all forms; but when it is considered under the concept of primary matter, it is determined to no particular form; consequently, it does not know nor think of any specific essence or quality of form that is absent and missing. It only perceives that it lacks some form or an additional nature through which its incomplete nature may be patched up [*sarciatur*]. You will say that this appetite of matter is not continuous, for, as soon as the form is ready, this appetite is satisfied and ceases existing. My answer is that the inadequate concept of prime matter includes no form.⁴¹

This glorification of perception, however, rests on a philosophical reason that is even deeper. Life is knowledge because the reality of matter is self-representational. To say that matter is aware of itself, however, does not mean that matter knows itself or that it knows what it is; it certainly does

not mean that matter thinks or may have the potential to become a thinking thing. Matter's awareness has nothing to do with the consciousness that is characteristic of a mind. Rather, it is a uniform state of apprehension and discernment through which it remains constantly alert to its own life and to everything that could threaten this life. Through perception, matter is "intimately present to itself."⁴² Crucially, Glisson connects this self-representational pattern to matter's *natura energetica*. Understood as an autonomous source of activity (*principium energeticum*), matter exerts its own action through the three principal faculties mentioned at the beginning of this essay: perception, desire, and motion. The way in which Glisson explains the functioning of this energetic module is complex, winding, and at times repetitious, but unequivocal in its conclusion: in order for matter to be alive, one needs to assume a representational structure in matter. Matter perceives, desires, and moves through its primary faculties because it is a real being (which exists and acts) and is capable of representing its vital content to itself:

That matter's essence consists of these three faculties is evident from the fact that it is a being in actuality which exists by itself in actuality and does not inhere in something else. For this reason, it is a representation or idea of itself [*obiectiva ratio sive idea suiipsius*]. For, insofar as it exists in actuality and in reality, it is knowable in actuality and in reality. Therefore, it has its own idea that is coeval to itself, and its idea is the same as its entity, that is, it is in actuality, real, and existing by itself. Consequently, it is not known through the idea of something else or through the negation of another thing understood as nonbeing, but in itself and by itself, as something that is intimately present to itself. For this reason, matter is an adequate representation [*obiectiva ratio*] of itself, and this is especially the case when it is intimately united to the perceptive faculty, for that which exists acts, and that which acts, perceives.⁴³

In other words, existence is self-representation. In Glisson's theory of substance, being requires activity, and activity requires perception. No being can remain in full force and effect (*subsistentia*) without having a power to act (*natura energetica*); in turn, no active power would function in an effective way without the ability to take hold of a situation, becoming cognizant of it and reacting to it. This is the meaning of Glisson's *percipere*. The sensing and discerning of matter is a state of awareness that lacks the ability to define exactly what is sensed. For Glisson, the *idea suiipsius* of matter is the representational framework embedded in matter that allows this to turn an object of representation (*obiectum*) into a perception (*perceptio*) and then into an action (*operatio*). Matter's perception is action oriented toward a form.

In the language of early modern scholastic philosophy, especially in the hugely influential synthesis provided by Francisco Suárez (1548–1617), the *ratio obiectiva* is the object of representation; that is, reality as is known by the intellect. Some historians of philosophy have detected in this Suárezian redefinition of the relationship between intellect and being the inaugural act of early modern subjectivism and the departure from realism in metaphysics.⁴⁴ By and large, Glisson adopts the concept and its Suárezian use, with the important difference, though, that Glisson does not presuppose any external intellect in the specific case of matter. The reason is that matter is the *subiectum* of its own *obiecta*. In this respect, Glisson's *ratio obiectiva* of matter justifies no foray into the territories of idealism or subjectivism. The *obiecta* of matter are no ideas represented by the intellect (be that intellect human or divine), but actual dispositions ingrained in matter as they are perceived by matter itself. Matter is an active *subiectum* both when it represents the forms of nature and when it produces them. Two points are essential here: matter is real, and matter is

intelligible. It is real in that it is a substance capable of producing actual effects in nature, and it is intelligible in that it is capable of representing itself. As already said, though, the fact that matter is capable of representing itself does not imply that it is a conscious agent. Matter as a subiectum is not a *persona*, with a centralized mechanism of self-recognition, but a tissue of infinite perceptions all reacting to each other either by establishing connective links leading to expanding federations or by cutting previous ties so as to retreat into smaller units.

As already pointed out, Glisson's matter has a fundamentally dynamic nature due to its constant evolving from *materia prima* to *materia formata*. An original state of ontological incompleteness coincides in matter with a radical indifference to all possible forms (*materia prima*). Matter, however, is always pervaded by a primordial sense of lacking and wanting that prompts it to look for a possible resolution, if only momentary (*materia secunda*). The path to completion, then, passes through the production of forms. Forms (that is, bodies as federations of material parts) are states of precarious appeasement in the unstable life of matter (*materia formata*). It is precisely the sense of incompleteness within matter that is the motor behind all its transformations: "primary matter is incomplete in its nature" (*materia prima in natura sua incompleta est*), therefore it is driven by the urge to complete itself.⁴⁵

When considered against the background of *materia prima*, *secunda*, and *formata*, the end of matter's *percipere* becomes more understandable. Matter perceives, but does not know and does not think (*scit aut cogitat*). This perception derives from an inextinguishable sense of wanting. As a result, when matter curls into a form, desire is momentarily satisfied, but this appeasement remains a kind of temporary repair (*sarcire*) because the incompleteness of matter is too vast and too powerful.⁴⁶ Imperfection defines matter, but it is an imperfection that vitally postpones the ossifying of its own life. Matter is continuously mended through the fluctuations of desire and by the cyclical production and destruction of forms. Perception is the function that more than any other arouses this continuous activity of transformation (from *materia prima* to *materia formata* passing through *materia secunda*). There would be no motion in matter without appetite, but there would be no appetite in matter without perception. If a form of awareness can be conceded to matter, this can only be a perception of its incomplete nature. The transformative power of material perception is a response to the inner worm of matter. The fact is that, as we will show in the next section, this kind of perception can only be peripheral and centrifugal, therefore particulate.

Matter Is Particulate

The process through which matter secures its individuation that is never completely formed passes through a relentless production of forms. Forms are generated when particles of matter coalesce into federations that grow for a while until they stop annexing more parts. These acts of federation are an expression of matter's suppleness. As already pointed out, there is a side in matter that is submissive and self-effacing. This pliability allows forms to be alternately produced and erased so that matter can conserve itself in the long run. There cannot be form in matter—that is, shape, configuration, constitution, organization, arrangement, and all other properties that require the establishing of boundaries and limits—without a cycle in which material particles are routinely assembled and broken down.

It is therefore not surprising to see that the *Tractatus* ends with an extended analysis of material corpuscularianism.⁴⁷ Matter for Glisson is particulate, but its components are not to be taken as

indivisible atoms. The particles in question are *minima naturalia*, that is, they are the smallest parts of matter into which a body can be divided before these particles lose their specific forms. The notion is Aristotelian, but Glisson erases the hylomorphic basis to turn the *minima naturalia* into a hylozoist concept.⁴⁸ A *minimum* of matter in Glisson's explanation is the least amount of bodily substance to be active and endowed with perception, not the smallest part of matter to be actualized by a form, in the Aristotelian sense. As we have noted while discussing the general characteristics of matter, Glisson's *materia formata* is not to be understood in dualistic terms opposing the material substratum to the informing idea, but as a stage in the universal vital cycle of matter. Likewise, the smallest amount of structured matter is a quantum of *natura energetica*.

One might find it to be rather odd that a theory of active *minima naturalia* is placed at the end of a treatise dedicated to demonstrating that matter is one substance, ubiquitously real and active in every corner of created nature. In fact, the rationale behind this particular ontological choice is to be found in the very premises of Glisson's view of substance. Matter as a substance (that is, as a material substratum that is at once *subsistentia fundamentalis* and *natura energetica*) and matter as a process (cyclically evolving from *materia prima* to *materia formata* through *materia secunda*) are both characterized by a tendency toward variable agglomerations of particles that depend on the constitutive pliability of matter (the inner worm that epitomizes the formative processes of *materia secunda*) as well as by the constant fragmentation that the perceptual activity of matter imposes on every part of the material substratum. Aggregations and disintegrations of bodily compages—some more lasting than others, but all perishable in the end—are the norm in the life of matter because nature clusters around perceptions of want, apprehension, and insecurity. As an expression of primal uneasiness, Glisson's perceptions are motors of molecular change. At any time, they trigger and accompany numberless processes of growth and decay.

There is another reason why Glisson's corpuscles stand out as an original reinterpretation of Aristotle's *minima naturalia*. Glisson's *minima* are a manifestation of matter's feebleness and facility to yield. This is evident when we examine the meaning of the synonym used by Glisson to denote the confoederationes of matter; that is, *communiones*.⁴⁹ The Latin word *communio* signifies association and mutual participation. The use of the term is rather rare in Cicero and among classical Latin authors, but it gained momentum in medieval Latin, and not only for its obvious religious connotations. The specific use made by Glisson—which is political more than natural philosophical—is especially telling when we review the different meanings of the related verb *communire*, in particular the action that signifies “to fortify on all sides, to secure, barricade, intrench.”⁵⁰ *Communio* is a partnership and a coalition that is motivated by the perception of a possible threat and by the desire of finding protection. Understood in this light, “*communio*” is a keyword in Glisson's metaphysics which aptly encapsulates the formative strategies of matter.

For Glisson, a form is a closed society of *minima naturalia* whose motions of perception and desire at a certain point decline to merge with other *minima*. This microscopic behavior reflects the principal divisions that we have seen at work at the macroscopic level of the ontological order. As already argued, the attribute of self-sufficiency based on the *negatio* of external dependence (*sustentari a se* or *negatio sustentationis ab alia creatura*) is not sufficient to make the nature of substance fully actualized. Another kind of *negatio* is needed, that is, the rejection of the act of being united with other parts of the material substance (*negatio unionis cum alia essentia substantiali*), or, positively expressed, the desire “to be by oneself asunder” (*esse per se seorsim*), “to be divided in actuality from all other things” (*esse actu diviso ab omnibus aliis*).⁵¹ This condition,

as already pointed out, is not simply negative, for it is a condition (*actus sive modus positivus*) that denotes the particles' tendency to grow apart, their proclivity to isolate from the rest, and the ability to delimit themselves. This activity shapes from within the innumerable confoederationes and communiones of myriad minima naturalia, all perceiving, desiring, and self-moving.⁵² The interplay of *negatio sustentationis* and *negatio unionis* is another way for Glisson to reiterate the active nature of matter's substance, this time in relation to its particulate state. Self-activity (*natura energetica*) is an essential complement to self-existence (*subsistentia fundamentalis*). At a microscopic level, this means that Glisson's theory of living matter coincides with a model of energetic corpuscularianism. The condition of being divided from the rest (*status divisus*) is required for a substance in order to become an individual substance, a suppositum. The universal substratum of prime matter is particulate in that it mirrors its perceptual functions at the level of vital self-activity.

There is another interesting inference that Glisson draws from the difference between *negatio sustentationis* and *negatio unionis*. To say that a being does not depend on other beings (*negatio sustentationis*) "is about strength, stability and vigor, and it means standing on one's own feet without relying on the support of others." To say that a being is not united to other beings (*negatio unionis*) "is about being alone and forsaking the others; it means uniting with nobody and being divided from everyone else."⁵³ Two then are the major inclinations in the life of a material substance: either toward sustenance or toward union. Sustenance is private and self-absorbed; union is communal and self-diffusive. The story of a bodily material substance is the process that leads from the strength and vigor of *materia prima* to the loneliness and weakness of *materia formata*. Once again, to be a material individual in Glisson's philosophy is a sign of ontological loneliness. If the *negatio* that defines the formation of confoederationes and *uniones* smacks of want and destitution, weakness and fear are the motives that lead *minima naturalia* to form an individual being. This is the uncanny rationale behind Glisson's *principium individuationis*.

In Glisson's theory of matter, a *minimum naturale* is therefore the starting point of a vital federation. It marks the moment in which fearful matter curls itself, takes a shape and begins to organize itself. Glisson depicts the work of matter as an unbroken activity in which forms—that is, bodies—are continuously made and unmade. *Materia prima* is the never-finished sketch of future beings that underpins the always provisional configuration of *materia formata*. Far from being a blank slate, *materia prima* is perpetually being scribbled and scratched over with inchoate outlines of emerging forms reflecting the activity of fearful atomic perceptions. In the end, matter is a functioning whole because its perceptions are tendencies to unite and divide all its parts in different ways, sometimes fostering and sometimes halting the connections between its constitutive minima of energy.

Conclusion: The View from Matter (Idea Suiipsius)

Matter is a substance. As a substance, it is a rather lonely and unresolved individual, which will never be able to become a fully actualized *persona*. Its immense particulate body betrays the unrelenting work of innumerable perceptions that all the time weave the warp and weft of the sketchy texture of matter. The body of matter is unfinished because its essence is incomplete. This incompleteness is made manifest by the forms that are constantly being produced. Matter shapes the world, turning the undifferentiated and indifferent energy of its substance into a phantasmagoria of perishable forms, which in Glisson's universe coincide with the material bodies.

Forms cannot last forever because they are fully exposed to the mercilessly reactive nature of matter: as *natura energetica*, matter perceives, desires, and moves in an unbroken circle of agglomerations, at times shrinking and at times expanding. In the universal trepidation of things that result from this state of affairs, forms betray a desire of stable unions among material particles, but they also are bound to fall apart because of the ever-changing motions of perception and desire. Fear of being overwhelmed by the indifference of the undifferentiated, desire to be protected from broader and stronger conglomerates, and yielding to self-interested fixing of boundaries drive the clumping together of *minima naturalia*, based as they are on tendencies to withdrawal and self-seclusion.

Like Hobbes, Glisson lived through the English Civil War (1642–51), and like Hobbes's thinking, Glisson's philosophizing was deeply affected by that experience (albeit in a different way). We can highlight the main difference between the two authors by distinguishing between fear of dying in Hobbes and fear of being alive in Glisson. When Hobbes investigated the most stringent reason that may compel humans, who are otherwise asocial, to join in society, he found this reason in the fear of violent death, made palpable to one's imagination every time life is annihilated by an external agent.⁵⁴ Glisson, as we have seen in this essay, explained the emergence of matter's natural confoederationes and communiones as an attempt by the material *minima naturalia* to resist their return to *materia prima*. Theirs was a fear of losing the status of provisional individuation and falling back into the eternal return of the same. If life is this undifferentiated magma (i.e., the *energetica natura* of material substance), then—so Glisson argued—the impulse in matter to form bodies is the result of a primal fear of being alive, a fear to move, desire, and explore. Form is the crystallization of being. However, when seen against the background of Glisson's metaphysics of matter, fear of life is an ambiguous concept and should be understood bearing in mind two important aspects of the question. First, the fear that the production of bodies and forms exorcises is the dreadful expectation that *materia formata* may relapse into the original state of indifference and undifferentiation. The energy of prime matter is too intense and consuming for nature to bear in its raw condition. Hence the formative effort. And yet—this is the second way of understanding fear of life in this context—the possibility of falling into primeval chaos remains stubbornly present in nature and is part of its very essence. Fear thus becomes a release of tension, a desire to yield—the *facilitas cedendi* inherent in matter that is also called “the worm of corruption and changeability.” Glisson's concept of *natura energetica* is a double-edged sword: it is the source of activity that introduces boundaries and shapes in matter, but it also is the inner lassitude that prevents being from ossifying itself. Aristotelian teleology is thus turned upside down. If the *telos* is matter and not form, the seed of destruction—“the worm”—is included in the very texture of material substance. Perhaps what from the point of view of the human mind is destruction, seen from the perspective of active matter, is fermentation, a dimension in which substances are routinely broken down and rebuilt in different shapes, constitutions, and fearful communiones. At a time when matter could still be viewed as the universal source of spontaneous generation, Glisson's metaphor of the worm played the same function that in our collective imagination is now fulfilled by all sorts of mushrooms, yeasts, and molds—all wormlike decomposers toward which we owe an ambiguous debt of gratitude.

Matter is immensely powerful (*materia prima*) but also compliant, to the point of becoming acquiescent (*materia secunda*). Indeed, the strength of matter does not lie in the eternity and indestructibility of its substratum, but in the fact that it caves in and lets forms either grow and develop or wither and fade away. Matter is alive because it is tractable and unresisting, the

possibility of change and diversity being an integral part of its essence. Its pliability is what allows matter to take on configurations after configurations. Matter acquiesces in the two principal senses of the verb “to yield,” intransitive and transitive: by yielding to the power of self-existence and by yielding countless forms. Matter is fecund and generates to the extent that it gives itself up to the possibility of becoming different from itself. Its identitas is remorselessly Protean.

We began this essay by saying that in Glisson’s ontology God, angels, demons, and rational souls are personae. Matter is not. It is a substance, and as a substance, it is alive; that is, capable of perceiving, desiring, and moving. But matter is not conscious of its own actions as one sentient subject would be. All its countless forms are individual acts of perception, more or less obscure and more or less durable. As acts of perception, they are acts of self-defense and self-protection. Matter is present to itself (*idea suiipsius*), therefore it perceives itself. Being self-representational (*idea suiipsius*), matter is intelligible. Its life, though, is fundamentally incomplete and undetermined. All its determinations are partial and temporary. They are attempts to flee the chaos of *materia prima*. Matter is not a person because it is constitutively fluid. As an incomplete substance, its individuation is yet to be finished, and it is very likely that it will never be finished. After all, that would be the end of matter. Glisson would say that dead matter, like a dead angel, would be a contradictory entity.⁵⁵

I opened this essay presenting Glisson’s speculative endeavor as a philosophy for anatomists. He wrote his *Tractatus* to elucidate his discoveries in the field of the digestive apparatus and irritability. The program was in fact ambitious, but the broader implications (philosophical, theological, and scientific, not to mention political) were largely ignored by Glisson’s contemporaries. Things are different now, dramatically so, and the time is ripe for appreciating Glisson’s proposal as something more than a background metaphysics for thoughtful anatomists. Reality federates with itself at each instant in ways that are both magnificent and frightening; all kinds of new “worms” and decomposers inhabiting the recesses of *materia prima* have been rehabilitated (starting with invertebrates, fungi, and even plastic-eating bacteria), for they make it possible for the *natura energetica* of matter to continue to work on the unfinished business of its transformative plan. Luckily for us, matter stays busy repairing and recycling itself. All things perceive, desire, and move.

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Guido Giglioni, "The Unfinished Business of Matter: Francis Glisson on Life and Individuality," *Conserving Active Matter* (2022), Bard Graduate Center, <https://exhibitions.bgc.bard.edu/cam/>.

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Notes

¹ On the printer Elizabeth Fletcher (or Flesher, 1642–97), see Compston, “*All Manner of Industry and Ingenuity*,” 109–10. In an ideal history of the modern notion of energy, Glisson would be given the distinguished place he deserves, as he used the Latin term *energeticus* in ways that highlight numerous links with both the past and the future. While Glisson’s *energeticus* is still largely indebted to the principles of scholastic Aristotelianism, it already resonates with the material implications with which energy would become associated in modern science. As we will see in the course of this essay, *natura energetica* is related to the Aristotelian notion of substance understood as the full actualization of a potentiality as well as to the new concept of energy as the category that measures the level of activity needed by matter to perform work.

² Giglioni, “Glisson, Francis.”

³ Giglioni, “Introduction,” iv–v.

⁴ On Glisson’s philosophy, see Giglioni, “Anatomist Atheist?”; Hartbecke, *Metaphysik und Naturphilosophie*; Dattilo, *Il dio sensibile*, 332–49; Schmal, “Vegetative Epistemology.” On the connections between philosophy and anatomy in Glisson’s work, see Giglioni, “What Ever Happened.”

⁵ Glisson, *De Natura Substantiae Energetica*, 14–24.

⁶ *Ibid.*, 128: “Verum substantia distinguenda est. Vel enim sumitur late seu transcendentem, vel stricte et praedicamentaliter. Priore modo omnia rudimenta substantiarum vocantur substantialia, quod ad complementum substantiae faciunt. Posteriori, ea sola quae suo Marte subsistunt substantiae audiunt. Haec posterior significatio proprie dictam substantiam denotat. Sive enim substantia deducitur a substando, sive a subsistendo, utrovis modo insinuat eam esse ultimum creatum fundamentum sive fulcimentum suiipsius.” On the most universal divisions of being, see Glisson, *Disquisitiones Metaphysicae*. All translations from Latin are mine.

⁷ Glisson, *De Natura Substantiae Energetica*, c1r. Cf. “divina virtus concurrens” (25).

⁸ *Ibid.*, 187–94.

⁹ Giglioni, “Anatomist Atheist?”; Giglioni, “Genesis of Francis Glisson’s Philosophy”; Giglioni, “Sentient Nature and the Great Paradox.”

¹⁰ Glisson, *De Natura Substantiae Energetica*, a4v.

¹¹ On person and personhood, especially with respect to nature and natural beings, the literature is growing by the day. See, more recently, Rowlands, *Can Animals Be Persons?*; Campana, “Should (Bleeding) Trees Have Standing?”; Giglioni, “Human Self”; Godani, *Il corpo e il cosmo*.

¹² Henry, “Medicine and Pneumatology.”

¹³ Giglioni, “Barnacled *Conatus*.”

¹⁴ Glisson, *De Natura Substantiae Energetica*, 25: “negatio sustentationis ab omni alio soli Deo appropriatur. Omnes enim creaturae essentialiter dependent a Deo.”

¹⁵ *Ibid.*, 31: “Solus Deus omnem plenitudinem entitatis in suam naturam absorbet.”

¹⁶ *Ibid.*, 77: “Dividitur itaque Natura substantialis creata in immaterialem et materialem. Illa spirituum est, nempe Angelorum, Daemonum et Animae rationalis; haec, corporum.” On the difference between material and spiritual beings, see *ibid.*, a4v–b1r, 96–100, 106.

¹⁷ *Ibid.*, 8: “Composita pure materialia fundamentaliter subsistunt gratia materiae, non ratione formae, quae corruptibilis est, nec diutius esse potest quam a materia sustentatur.”

¹⁸ *Ibid.*, b1r: “Quis enim concipere potest Angelum mortuum? Quare vita angeli est ipsa essentia eius energetica . . . vita spiritualis videtur ipsa substantia rei cuius est.” See also *ibid.*, 33: “ad angeli individuationem incommunicabilem requiri aliquid extra essentiam speciei, nimirum statum divisum ab omnibus aliis.”

¹⁹ *Ibid.*, 19. See also *ibid.*, 43: “Cum ergo is sit animae separatae vigor, ut se seorsim ab omnibus aliis tueri queat, non dubium est quin sit individuum completum.”

²⁰ *Ibid.*, 8: “Dantur autem subsistentiae simplices et compositae. Illae, qua simplices, immutabiles et perpetuae sunt, ut subsistentiae angelorum; hae, quae compositae, sunt corruptibiles, saltem per viam separationis.”

²¹ *Ibid.*, 19: “natura materiae per se est, natura autem formae materialis est per inhaerentiam in materia; quare, facta separatione, illa permanet, haec plane desinit esse.”

²² *Ibid.*, 8: “fieri potest ut partes separatae maneant; ut anima rationalis et corpus humano homine defuncto.” Glisson seems to assume that individual human bodies remain after the death of human beings so as to be reunited with their souls when they resurrect: “partes separatae perpetuo manent: ut anima rationalis et corpus humanum si separentur, homo interit; sed partes in quantum habent in se fundamentalem rationem essendi per se, neutra corrumpitur, sed ambae perpetuo manent” (19).

²³ *Ibid.*, 32: “naturas fortasse angelorum ita esse comparatas, ut ineptae sint uniri cum ulla alia natura; de qua tamen re nihil pronuncio; et ex spiritibus forsitan solam animam rationalem ita conformatam esse ut cum alia natura uniatur . . .

ut fortasse in nonnullis naturis ex unione resultet perfectio aliqua quae separatis deerat, unde sequitur melioratio conditionis.”

²⁴ Ibid., a4v: “Loco historiae praesentiae, plantas et animalia, in quibus vita materialis potissimum relucet, quin et, affinitatis gratia, ipsos spiritus, angelos, demones, animam rationalem, huic contemplationi subiicio.”

²⁵ For Glisson’s theory of inadequate concepts, see Glisson, *Tractatus de Inadaequatis Rerum Conceptibus*. See also Rampelt, *Distinctions of Reason*, 76–78.

²⁶ Glisson, *De Natura Substantiae Energetica*, 84–123. The usual way of translating *materia prima* in the philosophical literature in English is “prime matter.” Here I prefer to render this technical expression as “primary matter” to stress the difference and connection between *materia prima* and *materia secunda*.

²⁷ Ibid., 134–35: “ultima causalitas materiae vitalis huius concursus, quatenus est substantia viva et sui perfectiva, involvit.”

²⁸ Ibid., 79, 82.

²⁹ Ibid., 79: “Nam profecto materia corporis includit naturam materialem in genere, existentiam eiusdem et subsistentiam fundamentalem, qua ea, omnes formarum mutationes subiens, suam individuationem incompletam sibi coevam perpetuo conservat.”

³⁰ Ibid., 50: “Finis suppositivitas est naturae substantialis fruitio sui ut suppositi completi.”

³¹ Goclenius, *Lexicon Philosophicum*, s.v. “Complementum”: “id quo aliquid perficitur.”

³² Glisson, *De Natura Substantiae Energetica*, 50: “Siquidem a divisione, in partibus, ab aliis omnibus, divisio, oritur terminatio quaedam unionis seu confoederationis earundem inter se, scilicet huc usque suam confoederationem et communionem extendi, et non ultra; hoc est, in hisce solis unitis suas finiri ditiones et compleri. Resultat ergo fruitio quaedam huius complementi in se: hoc est, natura sibi complacet et acquiescit in partibus suis unitis, ut sufficientibus ad integram substantiam complendam, prout sic divisae ab omnibus aliis stant. Quae complacencia naturae, qua nimirum ea in sua integritate acquiescit, est fruitio sui et finis suppositivitas a se dimanantis.”

³³ Ibid., 55.

³⁴ Ibid., 50: “insinuatur vitalitas naturae unitae.”

³⁵ Ibid., 116: “interna quaedam facilitas cedendi sive debilitas et impotentia resistendi.”

³⁶ Ibid., 114: “conditio quaedam ad mutationem praerequisita. Quam propterea, si lubeat, vocare possumus causam, principium, seu vermem corruptionis et mutabilitatis.”

³⁷ Ibid., 114–15: “Hoc enim principium, quasi vermis, praesentis formae radicem corrodit, eademque opera aditum formae subsecuturam sternit. Eius quoque processus gradualis est, et sensim repit, nec desistit donec vetus forma expugnetur et nova introducatur.”

³⁸ Ibid., 116: “patet, praeter externum principium mutationis, dari quoque internum, nempe facilitatem cedendi, sive impotentia resistendi.”

³⁹ Ibid., 115: “Ut vero paucis declarem in qua re hic vermis seu principium mutationis consistat, existimo non consistere in re positiva, qua tali, sed vel in causa defectiva, vel saltem in accidentali, ut in impotentia quadam materiae se et formam suam defendendi, et appetitu seipsum propagandi.”

⁴⁰ Ibid., 130: “Materia enim operatur per suam formam, quam in ipsa operatione sustentat formaeque naturam pro sua agnoscit; et quicquid formae favet materiae naturale est.”

⁴¹ Ibid., 92–93: “Percipit quidem sibi deesse formam qua compleatur, sed non percipit quali opus habeat. Si enim discerneret certam particularem formam ut sibi congruam, non esset indifferens ad omnes; materia autem sub conceptu primae ad nullam certam formam determinatur, et consequenter nec quidditatem specificam nec qualitatem formae absentis et desideratae scit aut cogitat: tantum percipit aliquam formam sive additionalem naturam sibi deesse, qua sua natura incompleta sarciatur. Dices hunc materiae appetitum non esse perpetuum, quia, simulac adest forma, hic appetitus satiatur et esse desinit. Respondeo inadaequatum materiae primae conceptum nullam includere formam.”

⁴² Ibid., 90.

⁴³ Ibid.: “Quod materia has in sua ratione contineat ex eo liquet, quod sit ens actu actuque per se subsistens, nec sit per inhaerentiam in alio, ut modo monstravimus. Quare est obiectiva ratio sive idea suiipsius. In quantum enim actu et positive est, est actu et positive cognoscibilis. Habet ergo ideam propriam sibi coevam, qualisque est eius entitas, talis est etiam eius idea; nempe est actualis, positiva et rei per se subsistentis. Non ergo cognoscitur per ideam alienam aut per negationem alterius, ut non ens, sed in se et per seipsam, ut intime sibi praesentem. Ipsa enim est sufficiens obiectiva ratio suiipsius, praesertim ubi intime unitur facultati perceptivae. Quod vero subsistit, a fortiore operatur; quodque operatur, percipit.”

⁴⁴ Among the first to suggest this interpretation was Étienne Gilson. *Being and Some Philosophers*, 96–107. See also Courtine, *Suarez et le système de la métaphysique*. On the notion of ratio obiectiva in general between the Middle Ages and the early modern period, see Lagerlund, “Mental Representation in Medieval Philosophy.”

⁴⁵ Glisson, *De Natura Substantiae Energetica*, 91.

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⁴⁶ Ibid., 92–93.

⁴⁷ Ibid., 506–34.

⁴⁸ Aristotle discussed minima in *Physics* 1.4, 187b14–21. On the tradition of minima naturalia see Lüthy, Murdoch, and Newman, *Medieval and Renaissance Tradition*; Giglioli, “Francis Glisson’s Notion of *Confoederatio Naturae*.”

⁴⁹ Glisson, *De Natura Substantiae Energetica*, 50, 54–55.

⁵⁰ Lewis and Short, *Latin Dictionary*, 384. Etymologically, the entry “*Communis*” refers to “*moenia*” (city walls) and “*immunis*” (free from public service). For a clear survey of the early modern philosophical, legal, and theological meanings of “*communio*,” see Goclenius, *Lexicon Philosophicum*, 408–10.

⁵¹ Glisson, *De Natura Substantiae Energetica*, 26.

⁵² Ibid., 28.

⁵³ Ibid., 53. This section of the chapter is titled “*Negatio unionis a negatione sustentationis distinguitur*”: “*Haec negatio [unionis] ab illa priore [sustentationis] manifeste distinguitur. Illa enim roboris, stabilitatis et vigoris est, suis inniti cruribus, non indigere alienis; haec solitudinis et desertionis est, nulli uniri, ab omnibus aliis dividi.*”

⁵⁴ The theme of the fear of death is central in Hobbes’s political philosophy, and the literature on it is vast. See, among others, Herbert, “*Fear of Death*,” and Ahrensdoerfer, “*Fear of Death*.”

⁵⁵ See note 18, above.