Function and Structure in Aristotle

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ABSTRACT: Aristotle is sometimes committed to a pattern of inference that moves from complexity of functioning to complexity in the entity's metaphysical structure. This article argues that Aristotle rejects this inference in the case of the basic essence, the ultimate differentia that determines the kind to which the entity belongs. Specifically, the functional difference between active and passive reasoning in humans is not matched in the structure of the basic human essence. The basic essence is an immediate unity in the strong sense that it is wholly without structural parts. Complex rational functioning emerges from a metaphysically simple basic essence.

RÉSUMÉ : Aristote adopte parfois un schèma d'inférence passant de la complexité du fonctionnement d'une entité à celle de sa structure métaphysique. Cet article soutient qu'Aristote rejette cette inférence dans le cas des essences élémentaires, qui constituent l'ultime différence permettant de déterminer le genre auquel l'entité appartient. Plus précisément, la différence fonctionnelle entre les raisonnements actif et passif chez l'humain n'est pas réfléchie dans la structure de son essence élémentaire. L'essence élémentaire est une unité immédiate au sens fort, ce qui veut dire qu'elle est entièrement dépourvue de parties qui en composeraient la structure. Le fonctionnement rationnel complexe provient d'une essence élémentaire qui est métaphysiquement simple.

D. M. Armstrong has labelled one of the rivals to his realism about universals "ostrich nominalism," because, when pressed for an analysis or explanation of a certain kind of phenomenon, these theorists (from Armstrong's point of view) simply stick their heads in the sand. Ostrich nominalists claim, for example, that there is no need to appeal to anything

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besides the object X to explain the truths "X is F" and "X is G," whereas the realist feels compelled to appeal to X and to F-ness and G-ness to explain these truths.

It may seem strange or even perverse to argue that Aristotle is a father of ostrich nominalism, given his ontology, but that is exactly what I am going to argue here. Specifically, I am going to argue that, in the case of some forms, Aristotle embraces a limited sort of ostrich nominalism. What I take the import of my arguments to be is that there is an intuitively appealing inference pattern about explanation that Aristotle gives up in at least one crucial case. The point of the inference pattern is to explain either what an entity is like or what it does by introducing structural complexity: the entity's different features or functions are explained by its having multiple properties or parts.[1] If I am correct in claiming that Aristotle's commitment to the pattern is limited, this will be an important result for our understanding of the explanatory roles played by their basic entities.

To begin to focus on this inference pattern, it will be useful to consider an argument recently advanced by Michael Wedin. Before setting out the argument, let me be more explicit about the question I am pursuing and introduce some terminology that will prove helpful. The question I am interested in is whether Aristotle sees functional complexity as depending on lower-level, structural complexity, or whether a profoundly simple essence can nevertheless account for higher-level complexity. On this latter view, which denies correspondence in complexity, the Aristotelian essence can be understood as a structureless "blob," whereas the correspondence view sees the essence as a "layer cake" with internal complexity of its own.[2]

If we focus on the case of the essence of a living being, the question then is whether the complex of life activities characteristic of that being requires a complex "layer-cake" essence, or whether a "blob" essence with no internal structure is still sufficient to explain the being's functioning. If the latter view is Aristotle's, then he rejects correspondence in complexity at least for some basic essences.

Although the way I develop and discuss the correspondence view is orthogonal to Wedin's concerns, he does offer an argument that captures it nicely. The central idea is that there is something intrinsically implausible about the view that structural simples can explain a complexity of functions:

> The fundamental idea behind Dual Complexity is that the form of a system must be as structurally complex as the (relevant) functions of the system, whose nature and features it explains. Were, for example, the form of *man* structurally simple, then nothing in the form would correspond to the physical structures that underlie and enable sight, touch, hearing, locomotion, etc. It would be mere handwaving to claim that such a form *explains* these articulated functions.[3]

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The first sentence of this passage voices the inference pattern that I want to consider below. The claim is that Aristotle infers structural complexity in a substance's form from the functional complexity of its life activities. As the inference moves from functional complexity to structural complexity, I will refer to this as the "FSI pattern," and the view that attributes it to Aristotle as the "FSI interpretation."

Because my discussion owes a lot to Wedin's explicit formulation of the inference, I need to explain briefly how my concerns are different from his. The correspondence in complexity Wedin is interested in is correspondence between the complex functioning of a concrete particular such as Socrates and Socrates's form. So, "Dual Complexity" states, for example, that the physical complexity required for Socrates to be a perceiver must also be matched in his form on pain of the form being rendered unable to explain the functioning.

My discussion of the FSI pattern will focus on a different issue.[4] It will focus on the question of whether different life functions, thought of as activity types, must belong to different structural parts of a form or essence, thought of as having the kind of universality that allows for repeatability. Wedin's concept of dual complexity, by contrast, involves three terms: the embodied form, the functions, and the physical structures that underlie those functions.

For Wedin, the question about dual complexity is whether the form of man (for example), when embodied, must have structures that correspond to the physical structures underlying the life activities of a human being. It would be possible to accept dual complexity in this case while rejecting it in the case I am primarily interested in. On the resulting view, Aristotle would reject dual complexity for the case of universal form and the activity types it explains, while accepting it for the case of embodied form and the functions that require corresponding physical structures. Something like this kind of nuanced treatment of the FSI inference is explicitly entertained in Book X of the *Republic*, when Socrates suggests that the soul is simple when separate and complex when embodied. Of course, the issue about form in Aristotle is different in important ways from Platonic psychology, but the point here is merely that it is perfectly possible to reject FSI for some questions about form's explanatory power while accepting it in other contexts. What I am borrowing from Wedin is his isolation of a question about the ability of form to explain complex functioning, but the view I attribute to Aristotle leaves the specific question Wedin raises open, because his question is about embodied form, function, and the physical bases of human functioning.

Notice that what fuels the FSI inference is a claim about explanation: if the form were structurally simple, it would be hand-waving to claim that it explains the complex functions. Structural complexity is required to explain the functional complexity. Notice also that we feel a kind of *a priori*

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presumption in favour of FSI: this presumption is expressed in the claim that the denial of FSI turns an explanation into mere hand-waving. For one who is prepared to take seriously the possibility that a structurally simple form can explain complex functioning, however, the *a priori* presumption in favour of FSI seems question-begging. Why must functional complexity be matched in the structure of the form?

As a way to sharpen the focus on FSI, and perhaps buttress the presumption in favour of it, it might be useful to consider briefly an argument against contemporary versions of ostrich nominalism recently put forward by Gonzalo Rodriguez-Pereyra:

> For take any true sentence predicating something of *a*, "*a* is white," for instance. There will then be other truths about *a*, like "*a* is spherical" and "*a* is hot." And now the idea that *a* is the only truthmaker of these truths must be seen as seriously deficient. For how can the same thing make [them] true. . . . There must therefore be some complexity or multiplicity involving *a* that accounts for the truth respectively of "*a* is white," "*a* is spherical," and "*a* is hot."[5]

Part of the reason for my appeal to Rodriguez-Pereyra's way of framing the issue is that his use of the concept of truth-makers broadens the issue beyond the boundaries of the traditional debate between realists and nominalists. Obviously, the issue of the simplicity or complexity of the Aristotelian essence is not exactly the same issue as the issue that divides realists about properties from nominalists, and thus one might worry that incorporating the contemporary terms will only muddy the already opaque waters in the Aristotelian context.

To address this concern, I want to spell out the analogy in more detail, and try to explain more thoroughly why it is illuminating. As I understand the contemporary issue, the question is whether, when faced with accounting for different truths such as "*a* is hot" and "*a* is white," we need to appeal to the properties of being hot and being white, in addition to *a* (the realist position), or whether the truths can be accounted for by appealing only to *a* and linguistic predicates (the nominalist position). Do the different truths need to have different sources in the object, the different properties of being hot and being white, or is the concrete particular *a* the sole source for both of the truths?

In the Aristotelian context, the parallel to the realist position asserts that, in order to account for the truths "the basic essence explains Activity A" and "the basic essence explains Activity B," we need to appeal to different parts of the essence as the metaphysical grounds of the two different truths. On the other hand, the parallel to the nominalist position holds that those different truths can be fully accounted for by appealing to an essence without parts of any kind. For my purposes, it does not matter that the basic essence is not a concrete particular, as in the simplest examples from the

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contemporary debate, because it is still the entity of which multiple different truths are true, and so the question of whether the FSI inference should be applied to it arises just the same. If the answer to that question is affirmative, then complexity within the basic essence will need to be introduced. If it is negative, the simple essence alone will account for the multiplicity of truths.

As a final point about the analogy, let me explain the application of the concept of nominalism in this context. My view is certainly not that Aristotle is motivated by concerns about ontological parsimony and the preservation of Quinean desert landscapes. Rather, the view I shall attribute to Aristotle counts as a kind of nominalism because it denies what the realist maintains—namely, that the different truths about function are matched by real, metaphysical differences in the structure of the form. This denial is not wholly unconnected to issues of parsimony since it posits less complexity and multiplicity in the nature of things, but parsimony for its own sake is not Aristotle's motivation.

To return briefly to Rodriguez-Pereyra's framework, one of its advantages is that framing the argument in terms of truths and truth-makers may help the defender of FSI avoid the charge of begging the question against the blob theorist. Let us take, for example, Aristotle's claim in the *Ethics* that some rational capacities develop independently of each other. The young can achieve mathematical knowledge but not practical wisdom, due to the dependence of the latter on experience (*Nicomachean Ethics*, 1142a13-21). Thus, if we consider the two truths "Reason explains mathematical knowledge" and "Reason explains practical wisdom," the idea that these different truths could have a single, simple truth-maker is at least puzzling, for how can the same simple thing make true two different truths about independently developing outputs of the human essence? It seems, therefore, that there must be some complexity or multiplicity at the level of essence, different truth-makers within the form that render true the different truths about rational activity.

This is a powerful argument. I believe its power is what gives FSI the philosophical plausibility it clearly has. Nevertheless, Aristotle has good reasons for resisting its power, or so I shall now argue.

Before moving on to §1, it will be necessary to set out some of the account of Aristotle's metaphysics of form that I will be operating with below. On the view I will be considering, Aristotle recognizes what I will call "basic essences," at least for living things. These essences are basic in two ways: (i) they are both substances *simpliciter* and the substances of the corresponding living things, and (ii) they explain why the living things that have them belong to the kinds they do.

If we focus on the case of human being, then, the basic essence is presumably related to the rational element of the soul, as this will fundamentally explain why the entity that has it belongs to the kind it does. To simplify matters at this early stage, I am going to introduce the term

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"Logos" to refer to the essence of the human being that is basic in the senses above. It is the fundamental differentia that explains why given bits of matter constitute individual human beings. The question of the next two sections, then, is whether FSI should be applied within Logos, or whether Logos should be seen as a structureless entity that nevertheless explains a multiplicity of rational functions and outputs.

1. A Problem for FSI

Although Aristotle does attribute functional complexity to Logos, he does not draw the function to structure inference in this case. Logos is a functional many-in-one, but a structural simple. Because he rejects FSI in this case, he can see the basic essence as a Special Unity.

Let me pause here briefly to block a potential misunderstanding of my aim. If we focus again on the essence of the human being, I shall not be arguing that this essence is wholly without parts. Such an argument would be hopeless, as it is clear that Aristotle divides the essence into the desiderative, perceptive, and rational parts (*De Anima*, 415a16-8). Moreover, he further divides the rational part into the part that reasons in its own right and the part that obeys reason (*Nicomachean Ethics*, 1098a4-5, 1102a26-1103a10). But, as Christopher Shields has argued in the case of Plato's partitioning of the soul, the mere use of the language of parts does not by itself imply that the partitioned entity has internal, structural parts.[6] It may be, for example, that Aristotle thinks of different functions as different parts without further attributing those functions to different metaphysical structures in the object.

It is the division within the rational part that will be central to the discussion below, for, if FSI is applied to the functional division between reasoning and obeying reason, there will have to be corresponding structures within the rational part itself. As we will see, the ontological status that these structures would have would threaten the substantial unity of the rational part of the human essence. At this point, though, I only want to recognize explicitly that Aristotle sees the essence as in some ways a unity out of many parts. The issue I want to focus on below is whether Aristotle applies the FSI strategy of argument within the rational part itself.

As mentioned, the problem I want to raise for FSI centres on Aristotle's claim that the rational element of the soul has two parts—one that reasons and one that obeys reason. The combination of this claim and FSI's function-to-structure inference pattern introduces complexity into rational form, and this result conflicts with the doctrine of the *Metaphysics* according to which basic essences have a special kind of unity. In my terminology, "Special Unity" will refer to a doctrine with two elements: (a) basic essences cannot consist of actually existing substantial parts; and (b) basic essences are immediately one. My claim is thus that the unqualified attribution of FSI to Aristotle is in tension with Special Unity.

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More formally, my concern is that with unqualified FSI, Aristotle ends up committed to the following inconsistent triad:

(1) Reasoning and obeying reason are very different functions of the rational aspect of the human form.

(2) Different functions belong to different actually existing structural parts of the form.

(3) A basic form is a Special Unity: (a) it is not composed of actual parts, and (b) it is immediately one.

Before defending the inconsistency claim in detail, a few remarks about propositions (1) to (3) are in order. The components of Special Unity in (3) take their textual warrant from the central books of the *Metaphysics*. The doctrine in (a) emerges from *Metaphysics* VII.13 (1039a3-4): "Further, our conclusion can also be made clear from the following points. Substance cannot be composed of substances that are actually present in it."[7]

What is operative in this passage is a view of substance that prohibits it from being a certain kind of many-in-one. As Aristotle puts it, any unity that is composed of actual parts in the prohibited way will never be one thing in actuality (*Metaphysics*, 1039a4-5). Any argument forcing complexity into the basic essence will therefore need also to explain how the resulting complexity does not run afoul of the prohibition on actual parts.

The second component of Special Unity is expressed at *Metaphysics* VIII.6:

> If something has neither intelligible nor perceptible matter, it is thereby essentially one thing, just as it is also essentially a being—a this, a quality, a quantity; this is why neither being nor one is present in definitions. Moreover, the essence of these things is thereby one thing, just as it is also a being. Hence none of these things has any other cause of being one or being a being; for each is some being and some one thing immediately, not by being in the genus of being or of one, and not in such a way that being and one are separable apart from particulars. (*Metaphysics*, 1045a36-b7)

Although the precise meaning of the immediacy doctrine is not readily apparent, two of its aspects are clear from the context. The first is that the immediacy of the basic essence's unity is needed in part so that the basic essence will be able to explain the unity of other, less fundamental unities (*Metaphysics*, 1045a26-28). Because they are immediate unities, they can help answer a question about the explanation of unity without themselves being subject to that same question.[8]

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As *Metaphysics* VIII.6 continues, Aristotle focuses more clearly on the unity of matter/form compounds, such as the bronze and the triangle (*Metaphysics*, 1045b14-15), and potentiality and actuality in general. As I understand this chapter as a whole, this is a return to the puzzle about unity that is raised earlier (*Metaphysics*, 1045a20-22). Thus, both before and after the passage quoted above, Aristotle is raising a puzzle about the unity of matter as potentiality and form as actuality.

The answer he wants to give to the puzzle is the nature of form as actuality. The form is explanatorily basic with respect to the being and unity of the matter/form composite. It explains both what the composite is and why the matter is as it is. In the intervening paragraph, quoted above, Aristotle emphasizes the facts that the basic essence is neither a matter/form compound nor a many-in-one: it is an immaterial, immediate unity. These points illuminate the nature of the actuality that solves the puzzle about matter/form unity. As actuality, it constitutes the unifying *telos* for the material potentiality, and, as an immediate unity, it lacks the kind of compositeness that requires further explanation. Because of the nature of form as actuality, it is unnecessary to appeal to further unifying agents or principles such as participation or communion (*Metaphysics*, 1045b7-12).

In taking immediacy to apply to basic essences, I am joining a number of recent commentators in rejecting the view that the passage quoted above has only highest *genera* in its sights.[9] On this view, Aristotle's reference to the names of the categories in lines 1045b1-2 indicates that he is discussing the unity of the categories themselves.

By contrast, the reading I am favouring sees the reference to the categories as pointing to items in the categories, with the subsequent references to definition and essence picking out such things as the definition of human being and the essence signified by that definition. This reading makes the passage coherent with the chapter's general theme of actuality as the source of unity, and it builds on the already established doctrine that the essences of things such as human being are beings and unities *par excellence* (1003b22-33). My view of Special Unity thus requires that the notion of immediate unity is part of theory of essence generally and not a limited point about *summa genera*.[10]

My argument will be that Aristotle's rejection of FSI is important for understanding what he means by the immediacy of the basic essence's unity. A structural simple has unity that requires no extrinsic cause or explanation. It is just precisely one (*hoper hen*, b1). I will comment more on Special Unity below.

Proposition (2) is simply a statement of FSI. Where there are relevantly different functions that a form is to explain, it would be mere hand-waving to assign those functions to the same structural part.

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Proposition (1) requires more comment. The distinction between reasoning and obeying reason is made in several places:

(T1) For someone is a natural slave if he is capable of belonging to another (that is why he belongs to another)—if, that is to say, he shares in reason enough to perceive it without having it himself. For the other animals obey feelings, not reason. (*Politics*, 1254b22-3)

(T2) The remaining possibility, then, is some sort of life of action of [the part of the soul] that has reason. Now this [part has two parts, which have reason in different ways], one as obeying the reason [in the other part], the other has it as itself having reason and thinking. (*Nicomachean Ethics*, 1098a3-5)

We must see the functions of reasoning and obeying reason as very different and not, for example, one in number, but different in being because the function of obeying reason can occur without the function of reasoning, as it does in natural slaves. The difference in this case is even greater than the difference (mentioned above) between mathematical reasoning and practical wisdom, given that the mathematically wise children can become practically wise, whereas the natural slaves are forever incapable of active reasoning in its own right. Although both are rational capacities, then, where the possession of even the inferior capacity is sufficient to make its possessor human, they are crucially different—at least as different as sight and hearing.

But now the contour of the problem should be evident: FSI forces us to infer structural complexity from functional complexity. Thus, the function of reasoning and obeying reason must belong to different structures within the rational part. And since the one structure can occur without the other, it is hard to see how to deny that the structural parts are parts that exist in actuality. If this is correct, then the aspect of the human form that makes humans humans turns out to be a composite of actually existing structural parts. This result seems also to threaten the immediacy of Logos's unity, since it is not obvious why the unity of a formal structural complex does not require explanation. FSI has thus come into conflict with both elements of Special Unity.

The crucial move here is from the separate occurrence of obeying reason in slaves to the actual existence of two structural parts corresponding to the two functions, and it requires more discussion. One complication is that it is imprecise to say that obeying reason in slaves occurs separately from active reasoning, since the functioning of the obeying part in slaves requires some active part or other—namely, the active part of the master. Thus, the slave is not a case of a "free-floating" obeying part with wholly independent existence.

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The possible import of this complication is that it reveals a sense in which the master's active part and the slave's passive part form a unity. If they form a unity, then perhaps it is incorrect to infer that the functions must belong to different parts that exist in actuality. Let me offer a line of response here, to which I shall return further on.

My idea is that although Aristotle wants to see a kind of unity in the master-slave combination, it is clear that he must also see the combination as involving two lives. The master is not leading the life of the slave, and vice versa. Thus, we need explanatory resources sufficient to account for numerically distinct lives, even though the lives are intertwined in certain ways—intertwined, but not fused. The passive reasoning aspect of the slave's form, then, must exist in a way that fully explains the slave's existence as a living being while stopping short of explaining the master's. To explain the two lives, we need two actually existing formal structures, one of which functions only in the passive way, the other of which functions completely.

At this point, I need to emphasize that the issue I am raising pertains to the basic essence, thought of as an entity that has the kind of universality that allows for repeatability. When we consider the two-lives point, then, if FSI is accepted, the two formal structures that explain the two lives will have to be two different parts that exist together in the universal essence but are separated in order to explain the two different kinds of lives.

As we have seen, Aristotle's claim is that a basic essence cannot consist of substances present in it actually. The passage continues:

> For things that are actually two in this way are never actually one, but if they are potentially two they are actually one. A double line, for instance, is composed of halves that are potentially two things; for the actuality separates them. And so if substance is one, it will not be composed of substances that are actually present in it. (*Metaphysics*, 1039a4-8)

On a plausible understanding of the line example, Aristotle explains the unity of the line by claiming that the halves would be actually two only if they were separated from each other, but they are not. That is, their being separated is a necessary condition on their being two.

If this is the correct interpretation, then this passage by itself does not establish the sufficiency of their being separated for their being actually two. However, when we consider the fact that the separate existences of the formal structures in the master and slave constitute the existence of two human lives with different persistence conditions, it becomes hard to see how Aristotle can nevertheless maintain that in a master-slave combination only one form exists in actuality.

There is a fundamental difference, I think, between the relation that exists between the forms of the master and slave and the relation between

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the ultimate differentia and the genus within a single form. In the latter case, there are not two distinct lives we need to explain—the life of a human and the life of an animal. There is the single life of a human animal, and so it seems plausible to say that the genus is "implicitly contained" in the differentia and does not exist as an actual part. In the master/slave relation, on the other hand, the explanatory demands are different. The slave's human form may depend in various ways on the master's active reason, but it is not contained within it. The master and slave lead two different lives, and their forms must exist separately and actually to explain this satisfactorily. If so, the passage quoted above (1039a4-8) rules out their ever being genuinely one.

To recast this in the terms set out above, Logos is that fundamental form which explains why its possessor is a human being. But, if Logos explains the different functions of reasoning and obeying reason, and FSI is true, Logos will turn out to have actually existing structural parts as the explanatory correlates of the different rational functions. The parts would exist in actuality because, according to FSI, they are numerically distinct structures, they exist separately in the master and slave, and their existences in those contexts is sufficient for two different kinds of lives. This would seem to make Logos, the substance and essence of individual human substances into a composite of parts, in conflict with the Special Unity doctrine of the *Metaphysics*.

2. Can the FSI Interpretation Avoid the Conflict?

Is the apparent conflict between FSI and Special Unity genuine? As I see it, since what Aristotle requires is Special Unity, with its two components, the only way to try to preserve FSI is to argue both that the parts within Logos are not parts that exist in actuality, and that structural parts within Logos do not prevent it from being immediately one. To begin to show that this strategy faces serious problems, let me introduce three doctrines relating to the existence of parts within Logos:

(1) Threshold Functioning (TF): the possession of either functional part is sufficient for being a substance of the relevant sort;

(2) Independent Functioning (IF): at least one of the parts can occur and function independently of the others; and

(3) Correlate Structure (CS): the parts *qua* functional have matching structrual parts in the form (application of FSI).

One way to attempt to preserve Special Unity with FSI is to argue that either TF or IF fails to obtain for basic essences. (It is not open to the defender of FSI to give up CS.) If the part either is not a Threshold part

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or cannot exist or cannot function outside of its usual whole, there is a clear sense in which the parts are not actually existing parts. Denying the actual existence of the structural parts may also preserve the immediacy of the unity. Unfortunately, I think it can be shown that in the case mentioned above, Aristotle is committed to TF and IF.

The case of natural slaves is powerful in this connection because they possess the obeying part sufficiently to count as fully human (*Politics*, 1259b27-8), but they lack the active reasoning part so completely that they are slaves by nature, incapable of freedom and virtue. These points add up to a commitment to Threshold Functioning and Independent Functioning alike.

Let us take TF and IF together. Any account of the cognitive abilities of slaves must save two pieces of data: (i) while Aristotle claims that they wholly lack the active reasoning function (*Politics*, 1260a12), (ii) he nevertheless counts them as members of the human kind, as opposed to seeing them as some *tertium quid* between humans and animals.[11]

It must be their full possession of the capacity to perceive reason that explains the truth of (ii), given the strength of (i). As I see it, what the capacity to perceive and obey reason provides the slave with is the uniquely human reasons-sensitivity that enables its possessors to form beliefs and suppositions, and this explains why slaves pass the threshold for humanity.

Aristotle restricts the class of believers to human beings because belief requires conviction which in turn requires persuasion (*De Anima*, 428a22-4). Thus, I take it that when Aristotle claims that slaves can perceive and obey reason, he is claiming that to some extent they can recognize the force of reasons and form beliefs and desires on that basis. This is borne out in the *Rhetoric* by Aristotle's claim that "even slaves" can accept punishment if they are given a justifying reason first (*Rhetoric*, 1380b16-20). Aristotle insists that only humans are capable of cognitive states that exhibit reasons-sensitivity. What the human slaves lack are the capacities associated with craft knowledge, scientific knowledge, and practical wisdom. As Richard Kraut puts it, "[Aristotle] thinks that slaves lack only the capacity to acquire advanced intellectual skills. But he believes that they do possess the human ability to live on their own, to find means to their quotidian ends, and to go about their lives in ordinary ways."[12]

What this adds up to, I think, is the view that IF is true of the listening and obeying part in slaves. The way in which they perceive reason makes them capable of forming beliefs and views about particular cases, even though they wholly lack the capacity for both practical and scientific knowledge. In slaves, the obeying part functions in the uniquely human way, but completely independently of the other functional component of Logos. Thus, both TF and IF hold true of the obeying part of Logos.

It might be objected, however, that Aristotle considers it a matter of degree of active reasoning, rather than the kind of absence required by IF.

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As we have already seen, though, the obeying part in slaves exists wholly (*holôs*) without the active deliberative part (*Politics*, 1260a12). The adverb "wholly" is important here, as it seems to imply that Aristotle does not mean merely to deny slaves the kind of deliberation associated with moral virtue, but also the kind associated with the achievement of craft-knowledge. As he puts it in *Metaphysics* I, it is possible to succeed in craft entirely without knowledge, in the way that fire succeeds in burning (*Metaphysics*, 981a30-b5).

The notion of IF I am working with here is an attempt to capture Aristotle's claim that what prevents a whole from being a unity in the sense required for substance is the existence of the parts separated, in the way that halves of a line are actually two when they are actually separate (*Metaphysics*, 1039a4-9). In the case of the fully rational person, the obeying part exists together in Logos with the active reasoning part. In the slave, the obeying part exists without the other functional part that resides in Logos. In this way, the obeying part exists in slaves while removed from its usual whole. Here it must be emphasized that Aristotle's denial to slaves of the active reasoning capability is broad in scope.

If this degree of incapacity were not the case, Aristotle would be unable to distinguish natural slaves from the vulgar menial workers. These workers lack virtue not by nature, but because their lives of work preclude it (*Politics*, 1278a20-1).[13] For the vulgar, the obeying part exists with the reasoning part, even if the latter is largely dormant. For the slaves, however, IF holds true.

From the point of view of functioning, then, TF and IF are both true of the listening aspect of reason. It exists in slaves separately from the remainder of Logos, but, when it does, it functions independently in the uniquely human way. For these reasons, Aristotle is able to count slaves as human beings while maintaining the distinction between slaves and the vulgar. So now if FSI applies, there will need to be corresponding, actually existing structures within the rational part in order to explain the independent functioning. If so, then fully rational people will have a rational part that is composed of actual structural parts. The defining, substantial feature of human beings will be partitioned in actuality.

What I have argued so far is that if FSI is applied within Logos, it is hard to see how to deny that Logos has actually existing parts. Recall that Special Unity also requires that the basic essence be immediately (*euthus*) one. The existence of structural parts in the basic essence would seem to threaten this aspect as well. As I mentioned briefly above, Aristotle attributes immediate unity to basic essences for two related reasons: they need to be able to explain the unity of less fundamental unities without requiring a similar explanation themselves, and they need to be unities in a way that avoids a puzzle raised by other accounts, such as the Platonic participation account.

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One striking aspect of the immediacy passage in VIII.6 is that Aristotle connects immediate unity with the lacking of intelligible and perceptible matter (*Metaphysics*, 1045a33-b2, 1045b23). But if we bear in mind the fact that immediacy is supposed to help Aristotle avoid a puzzle that plagues the participation account, it cannot be the case that being immaterial is sufficient for being an immediate unity, since it is no part of the participation account that the basic essences themselves are material. Thus, if immediacy is important for Aristotle's successful avoidance of the puzzle that plagues participation, it must involve a stronger condition than mere immateriality.

My hypothesis is that, in addition to immateriality, immediacy requires the lack of structural parts. If a basic essence can explain the unity of entities with structural parts without itself having structural parts, then there will be no need to appeal to anything else to explain how it is one, since it is not a complex at all.[14] Moreover, it will thus avoid a potential regress to which other views may be vulnerable. For example, if the basic essence of human being is the structural complex (active reason, listening reason), a question about the explanation of the unity of this many-in-one can be raised. If the answer to this question involves adding the element of unity and the relation of participation, a new structural complex with a new unity problem has been created.[15]

On the other hand, if no distinction exists at the level of the metaphysical structure of the basic essence, then a potential regress of unifiers cannot get a foothold. The basic essence can explain why certain structured composites exist as they do without being subject to a unity question about its structural parts.

Here again it might be useful to consider the analogy to ostrich nominalism. Part of what motivates these nominalists is the fear that introducing metaphysical complexity into an object will not really explain its qualitative multiplicity because a vicious regress will ensue. Specifically, the universal needs to be tied to the object by a relation, and this at least seems to require a further relation that ties the first relation to the object and universal. This worry has led Armstrong to drop talk of relations in favour of a non-relational tie between object and universal.[16]

Rather than adopt this strategy, I am arguing, Aristotle denies that the functional complexity of the basic essence requires structural parts that need to be tied together. This is the difference between entities whose unity is immediate and entities whose unity is a genuine explanandum. On this view, then, basic essences have immediate unity not just because they are immaterial, and not just because they are forms. Their unity is structural simplicity.

To recapitulate briefly, Aristotle requires that basic essences have Special Unity: they lack actually existing parts and they have immediate unity. But in the case of Logos, Aristotle is committed to TF and IF. Thus, if Aristotle is committed to FSI all the way down to the basic essence, he will

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end up with a basic essence with actually existing parts, whose unity is not immediate. If, as on the FSI view, complexity of function is always matched by complexity of structure, the partlessness and immediate unity of the basic essence faces a severe threat.

3. Functional Complexity from a Simple Essence

To see how the blob alternative would avoid the conflict with special unity, it will be useful to return briefly to TF and IF. What I take the case of natural slaves to show is that Aristotle does recognize significant independence of parts at the level of rational functioning and output. Slaves are sensitive to reasons in the uniquely human way, and they can produce beliefs and desires on the basis of those reasons even though they are wholly without the rational functions connected to inquiry and genuine epistemic success.

In the case of slaves, certain kinds of functioning and output exist and can be identified as human and rational, despite the isolation of those functions from the remainder of the whole of which they are a part in the standard case. This provides a strong sense in which these aspects of rationality are independent.

But it is still possible to deny that these independent functions belong to actually existing parts by rejecting the claim that difference in function requires difference in structure. If the rational part is seen as a single, uniform structure that nevertheless explains both the obeying and the reasoning functions, there remains a clear sense in which the rational element is without actually existing parts—it is structurally uniform.

Here it is worth noting Aristotle's claim that the rational part exists in slaves, but in a different way (*Politics*, 1260a10-12). If Aristotle held that the different rational functions were correlated with different structures, it would be more accurate for him to describe the rational part in slaves as simply a metaphysically different part, rather than the same rational part being present but differently. On the blob alternative, the rational part is present differently in slaves in the sense that the functions and outputs it explains are limited, perhaps in the way that one and the same battery is present differently in a rudimentary flashlight and a stereo.

Put differently, the immediacy of the unity of the basic human essence affords no possibility of explaining the difference between full and deficient functioning by partitioning. There are no structural joints at which to separate the listening from the active part for the purposes of distributing only the former to natural slaves. The immediate structural simple that is Logos is present in both, but differently.

To return to the language of truths and truth-makers, the alternative holds that the different truths about the functions of reasoning and obeying reason have a single truth-maker at the level of the structure of the human form. This truth-maker is fully present in slaves and the fully ra-

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tional, although in slaves its functioning is limited to perceiving and obeying the active reasoning of others.

To borrow additional picturesque vocabulary from Armstrong, we can "hang different predicates" on the rational structure Logos, such as "is responsible for reasoning" and "is responsible for perceiving reason," but this does not require that these predicates correspond to different structures of the form.[17] The blob view of basic essences allows Aristotle to recognize some kinds of independence at the level of function without dividing the basic essence into parts that cannot be unified in the way appropriate for primary substance.[18]

One way to respond to my argument is to accept that Aristotle requires Special Unity of the basic essence, but to construe Special Unity in a different and weaker way than the blob alternative. It might be, for example, that the two aspects of Logos are united in the relevant way by having a common final cause—perhaps the *eudaimonia* of the individual. On this view, the functions of reasoning and obeying reason belong to different structures, but the structures form a Special Unity because of their end.

While I would agree that having the same final cause is a necessary element of Special Unity, I do not believe that it can be sufficient. As a counter-example to sufficiency, consider Aristotle's remarks about the city in the *Politics*: "The complete community, formed by a number of villages, is a city. Unlike the others, it has the full degree of practically every sort of self-sufficiency; it comes to be for the sake of living, but remains in being for the sake of living well" (*Politics*, 1252b28-30).

In this passage, Aristotle claims that the several villages that make up a city have the same final cause—living well. And although Aristotle commits himself to the priority of the whole to the part, so that the part will not survive as the same thing (except homonymously) if the whole is destroyed, he does not claim that the city will only exist as the city it is if it retains all of its villages and only those villages. That is, we can imagine a city made up of ten villages (V1-V10). Over time, the city may gain or lose villages by conquest and absorption and the like, and even may gain or lose functions and excellences, all without ceasing to be one city and the same city. Moreover, the gain or loss of villages need not change the identity or functioning of the remaining villages. For example, V5 may remain the city's farming village even with the addition of new villages V11 and V12.

The import of this is that a whole whose parts share a common end and obey the homonymy principle still may be a rather loose collection of structurally and functionally distinct entities, as in the city/village case. I do not see how the ultimate differentia that is the basic essence can be a unity in only this weak sense. The basic human essence, for example, cannot abide the migration in and out of different structural parts corresponding to different functions. Whether the metaphysical structure of the basic essence is complex or simple (as on my view), it has that structure

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and the consequent functions eternally. Thus, while I agree that active and passive reason are unified by a common end, this does not fully capture their unity, and must be strengthened, either in the way I suggest or in some other way.

Let me conclude the discussion of the weaker notion of unity by tracing a further line of reasoning, about which I am less confident. If we consider the question of why Aristotle posited forms at all, it seems that part of the reason is that he did not see the kind of unity that implies the homonymy principle as a starting point in the explanatory order. The kind of unity and order exemplified by bodies and cities needs to be explained by reference to formal and final causes. When a complex entity has parts that obey the homonymy principle, the metaphysical ground of this is the presence of the basic form that specifies the entity's *telos*. Thus, if the basic essence itself were a unity only in the sense that its structural parts obey the homonymy principle, Aristotle would be in the position of having to say either that the unity of the basic essence is explained by some other, still more basic entity, or that the relevant kind of unity ordinarily needs explanation, but not in the case of the basic essence. Although some ways of deploying these strategies may be acceptable, the alternative defended here makes the basic essence exemplify a kind of unity stronger than the kind it is called on to explain.

It is important to see that refusing to explain functional differences by reference to structural differences in the form does not necessarily render the functional differences brute and inexplicable. I shall try to draw this out by using an analogy from the domain of perceptual functioning.

If we consider the difference between the colour-blind and the fully sighted from within a broadly Aristotelian framework, it would seem that we would have the choice of explaining the difference either by structural differences in the perceptual aspect of the form, or by differences in the physical organs and material processes associated with perception. The latter option would not leave the difference between full vision and deficient vision unexplained, it would simply locate the explanation in between the level of function/output and the bedrock level of the structure of the form.

In a similar vein, it may be possible to find an explanation for the differences in rational functioning between slaves and the fully rational without reaching "all the way down" to the structure of the form. As has been emphasized recently by Reeve, Aristotle explains differences in the intellectual functioning of living beings partly by physical factors, such as the purity of the being's vital heat and blood.[19] Children, for example, are intellectually deficient in part because the material associated with their intellectual soul is earthier and less clear (*Parts of Animals,* 686b23-6). In general, Aristotle seems to have thought that gradations in the earthiness of an animal's matter are correlated with gradations in its cognitive and intellectual capacities (*Parts of Animals*, 686a25-87a1).[20]

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Although a thorough airing of this issue is beyond the scope of this article, a few remarks about the role of these physical facts in cognition are warranted. When it comes to explaining the occurrence of token states of reason, for example, Socrates's belief that Glaucon is approaching, the role of the material purity will only be that of necessary background condition. This condition is weaker even than supervenience, in the sense that the change in Socrates's belief set will not require a change in the underlying material.

Something like supervenience may be appropriate, however, in the explanation of large-scale changes in a person's rational functioning. When Socrates moves from being a child to being an adult fully capable of the human function, for example, this may require a corresponding change in the underlying material. Or, if a slave, *per impossibile*, were to become fully rational, a material change would be required. My use of the admittedly vague expression "something like supervenience" is primarily designed to indicate resistance to the idea that anything like type-identity between changes in rational functioning and changes in material purity would be required to allow the latter to explain the former. Of course, if a relation stronger than supervenience were involved, such as token-identity between a change in Socrates's material purity and his becoming fully rational, this would only underscore the point that such changes can be explained without appealing to changes in the structure of the soul.

Moreover, and most importantly, if we can preserve the possibility that the functions of reasoning and obeying reason are explained by a single structure, we can avoid the result that the basic essence of the human being is a structural composite of actual parts. By qualifying FSI, we can render the theory of formal explanation consistent with the substantial unity doctrine.[21]

Thus, if the foregoing is correct, then Aristotle embraces a limited degree of ostrich nominalism with respect to the human form, in the sense that he does not require that psychic phenomena of very different types—active reasoning and perceptive reason—belong to and are explained by different structures within the form. Put differently, Aristotle appeals to a simple, uniform truth-maker to ground the different truths "Logos explains reasoning" and "Logos explains perceiving and obeying reason." The complexity of human rational functioning has its source in an aspect of the human form without parts of any kind.

4. Conclusion

At the outset, I claimed that what I am most interested in is the pattern of inference that moves from functional to structural complexity—the FSI. I would like to conclude by describing more fully what I take Aristotle's attitude to that inference to be, especially in the case of the human soul as a whole.

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It is important to note first that my claim that Aristotle rejects FSI is limited to what I have called the basic essence—the substance that explains why an individual belongs to the kind it does. In the case of living things, I have understood the basic essence to be the aspect of the soul corresponding to the ultimate differentia, rather than the entire soul with all of its parts.

The significance of this is that it allows Aristotle to apply FSI to the soul with respect to certain functional differences, but to reject FSI in the special case of the basic essence. In the case of the human soul specifically, my view is that Aristotle accepts FSI for the functional differences between nutrition, perception, and reason, but rejects FSI within the rational part as the ultimate differentia. That is, Aristotle believes that the soul has different structural parts corresponding to the three functions of nutrition, perception, and reason, but takes the rational part to be simple and to exhibit Special Unity.

Although this is a nuanced position towards FSI, it is not unprincipled. The central point is that Aristotle sees the activities of nutrition, perception, and reason as defining different kinds of souls (*De Anima*, 414b20-33), or fundamentally different kinds of lives, whereas the differences that exist between the lives of active and passive reason are differences that occur within the kind of life that belongs to human animals. The differences that mark out plants from animals, and animals from human animals are reflected in the structure of the soul because of their depth and significance. Because the human soul is responsible for activities of all three types, its structure is correspondingly partitioned.

Why, then, does Aristotle allow this kind of partitioning while insisting on simplicity for the basic essence? As I see it, the nutritive and perceptive parts stand in a one-way dependence relation to the ultimate differentia. Those parts of the soul and the parts of the body that carry out their functions are as they are for the sake of the rational part. The rational part serves as the *telos* that unifies the parts in the way required for the specifically human way of living. Thus, there is no danger of turning the soul into a heap or mere collection lacking in organic unity.

Within the rational part, however, a stronger kind of unity obtains. The functions that it explains all belong to a single kind of life, the human life, and so the data that indicate the function to structure inference are less compelling. Moreover, by denying any multiplicity of structure with reason, Aristotle establishes it as an explanation for unity about which no unity question need or can be raised.[22]

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Notes

1 I think it is clear that both Aristotle and Plato are committed to the inference pattern in some cases. Aristotle explains the truth of "Socrates is human" and "Socrates is pale," for example, by claiming that humanity belongs to Socrates as something that is said of him, while pallor belongs to him as something that is in him. (Aristotle introduces the "said of" and "in" relationships at *Categories* 1a20ff. as the two ways in which predicates belong to underlying subjects.) Plato explains the statue's being beautiful and large by reference to its participation or sharing in Beauty Itself and The Large. Aristotle may use the inference in the case of the broadly functional distinction among kinds of souls.

2 For this terminology, see D. M. Armstrong, *Universals: An Opinionated Introduction* (Boulder, CO: Westview Press, 1989), p. 38.

3 See Michael Wedin, *Aristotle's Theory of Substance* (New York: Oxford University Press, 2000), p. 398. Similarly, Code and Moravcsik write: "Rather, [Aristotle's statements about the soul] attempt to characterize what it is that enables some elements of reality to have life in them. In the course of this Aristotle appeals to certain powers and definable structures. This is analogous to characterizing flexible materials in terms of various powers and structures that they need in order to be flexible" (Alan Code and Julius Moravcsik, "Explaining Various Forms of Living," in *Essays on Aristotle's* De Anima, edited by M. Nussbaum and A. Rorty [New York: Oxford University Press, 1992], p. 133).

4 An earlier version of this article proceeded as a kind of criticism of Wedin's use of dual complexity. Written comments from Wedin clarified my position and helped me focus on the issue of substantial unity. This is not to say that Wedin accepts the argument as I now present it.

5 Gonzalo Rodriguez-Pereyra, *Resemblance Nominalism* (New York: Oxford University Press, 2002), pp. 45-46.

6 Christopher Shields, "Simple Souls," in *Essays on Plato's Psychology*, edited by E. Wagner (Lanham, MD: Lexington Books, 2001), pp. 137-56.

7 Unless otherwise noted, translations of Aristotle are those of Terence Irwin and Gail Fine, *Aristotle Selections* (Indianapolis, IN: Hackett Publishing, 1995).

8 In giving the basic essence as a Special Unity a role to play in explaining the unity of the composite, I am aligning myself with what David Charles calls the "explanatory interpretation," as opposed to the "dissolutionist." According to the latter, the unity of the composite is taken as basic and then abstracted from to reach form as unity. I am attracted to many of the aspects of Charles's explanatory view, including especially the idea that the basic essence has an intrinsic *telos* that explains why the form/matter composite is as it is. See David Charles, *Aristotle on Meaning and Essence* (New York: Oxford University Press, 2000), pp. 283-309.

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9 Among the recent commentators are: Edward Halper, *One and Many in Aristotle's* Metaphysics*: The Central Books* (Columbus, OH: Ohio State University Press, 1989), pp. 184-95; Verity Harte, "Aristotle's *Metaphysics* H6: A Dialectic with Platonism," *Phronesis*, 41 (1996): 276-304; and Wedin, *Aristotle's Theory of Substance*, p. 209.

10 Additionally, my view requires that basic essences be wholly without material. I have argued for this in detail in Travis Butler and Eric Rubenstein, "Aristotle on *Nous* of Simples," *Canadian Journal of Philosophy*, 34 (2004): 327-54.

11 As argued by W. W. Fortenbaugh in "Aristotle on Slaves and Women," in *Articles on Aristotle*, edited by J. Barnes, M. Schofield, and R. Sorabji (London: Duckworth Publishing, 1975), Vol. 2. pp. 135-41.

12 Richard Kraut, *Aristotle: Political Philosophy* (New York: Oxford University Press, 2002), p. 285.

13 See T. H. Irwin, *Aristotle's First Principles* (New York: Oxford University Press, 1988), pp. 414-16.

14 Something like this may be what Halper has in mind when he claims that an essence "lacks anything to make it many" (Halper, *One and Many in Aristotles's* Metaphysics, p. 185). Similarly, David Charles claims that the basic essence is an incomposite that lacks a certain kind of internal structure (*Aristotle on Meaning and Essence*, p. 292). However, he later seems to doubt whether a strong simplicity doctrine is required by the theory of essence (ibid., p. 304).

15 My view of the regress here is consonant with Harte's claim that Aristotle sees a problem for the Platonist about the unity of concrete particulars that is parasitic on a problem about the unity of forms ("Aristotle's *Metaphysics* H6," p. 301). I have also been helped on the regress by Halper (*One and Many in Aristotle's* Metaphysics, p. 186).

16 D. M. Armstrong, "Against 'Ostrich Nominalism,'" in *Properties*, edited by D. H. Mellor and A. Oliver (New York: Oxford University Press, 1997), pp. 108-11.

17 Ibid., p. 108.

18 I do not think this view would render the basic essence indefinable, since (i) the basic essence can be thought of as the entity signified by the *definiens* of a genuine definition, and (ii) there may be logical relations among the *definiens* and other bits of formulae such as those that refer to other differentiae and the genus. These logical relations would mirror metaphysical relations that hold among the basic essence and other entities. I think something like this is intended by Halper (*One and Many in Aristotle's* Metaphysics, pp. 196-97). David Charles writes: "Thus, even if non-composite, the essence can be discovered by uncovering the specific differentiating entity which is explanatorily basic; for, one can come to know it by detecting its distinctive causal role" (*Aristotle on Meaning and Essence*, p. 293).

19 C. D. C. Reeve, *Substantial Knowledge: Aristotle's Metaphysics* (Indianapolis, IN: Hackett Publishing, 2000), pp. 161-63.

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20 Here I have been helped by Gad Freudenthal's *Aristotle's Theory of Material Substance* (New York: Oxford University Press, 1993), p. 55.

21 A further benefit may be a more plausible explanation of Aristotle's claim that thinking about simples is contact and cannot be false (*Metaphysics*, 1051b23-1052a2). If a simple essence has structural complexity, it is not clear why it would be impossible to succeed in contacting it in thought while still going on to think falsely about it. On the other hand, if an object lacks all internal complexity, it seems more plausible to identify necessary conditions for thinking of it at all with sufficient conditions for thinking of it inerrantly.

22 Thanks to David Sedley and Michael Wedin for comments on a much earlier version. Special thanks to two anonymous referees for this journal.

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