Neoplatonism and CONTEMPORARY THOUGHT

Part One

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Teleology Revisited: A Neoplatonic Perspective in Evolutionary Biology

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Aristotle had complained, about Platonists or "friends of the ideas," that they had a perfectly sound understanding of the formal and material causes, but did not know how to invoke the moving causes—the efficient and final causes. Neoplatonism responded to this challenge with an adaptation of the well-known Stoic doctrine of σπερματικοὶ λόγοι, "seminal λόγοι." A characteristic use of the image is in Plotinus, "On Eternity and Time," where he says that eventuation in time is "a λόγος unfolding itself as though from a resting seed."[1]

The familiar exposition of this doctrine is badly attuned to the state of theoretical questions in contemporary biology. It sounds to biologists like *homunculi,* whereas, as I will argue, the "unfolding λόγος" is an account of teleological causation that ought to be acceptable and productive in biological explanations of the emergence of living forms—on each of the frame-scales of time in which individuation takes place.

I want to argue that already in Aristotle a τέλος is a *natural* cause, and teleological explanation not just a valid but a necessary component of complete explanation in biology. But the Neoplatonic development of the self-unfolding λόγοι, rigorously expounded, is even more evidently useful and productive in evolutionary biology.

I. Context

There are many good reasons why explanations that imply teleology are rejected in modern biology, which is to say, in evolutionary biology.

First, teleology is associated with theism and the medieval transposition of the myth of creation into metaphysics. Specifically, there emerged a teleological argument in theology: that the suitability for their ways of life seen in living forms establishes that they were made "on purpose." When structured as a proof for the existence of God, this is called the argument from design. The God that is arrived at, so far as he is a maker, is the supplier of a τέλος—end, term, goal (Latin *finis*)—for each living thing. This position was blind historically to the transient character of species in evolutionary time, assuming that all genera and species are everlasting. It was also the paradigm of supernatural explanation of living forms, a mode of explanation that simply preempts any possible empirical research.

Second, teleology is the inevitable recourse for accounts of evolution for which the emergence of human reflective intelligence was somehow a goal of the origin of species from the beginning. A profound methodological problem arises for any such theoretical construct—call it observer bias. In a cosmological context it is called the anthropic principle: things are as they are so that we could be here. Empirical biology must renounce this kind of presupposition.

Finally, teleology suggests that speciation itself is an expression of purpose: reptiles adapted their forelegs to be wings *so that* they could fly, etc. Here biology in the past century has asked for a *mechanism* to be demonstrated whereby physiological variations among individuals could be selected for in the interest of a new capability. Or rather, I should not say selection in the way I just did, as selection "in the interest of a new capability," because classic Darwinism refuses to let the notion of 'selection' become purposive or intentional. The 'matter' on which selection acts such that changes of 'form' take place is *variation*, and just as 'selection' is treated as mechanically as possible, so also variation is assumed first of all to be stochastic—i.e. random and undirected. These theoretical reflexes of the biologist are not reductionist, but express instead an important methodical restraint. Evolutionary biology understands *very well* what it tries to identify and suspend wherever it rears its head: it calls it *teleology*, but what it really means is the supposition of occult or 'spiritual' causes about which, as an empirical science, it can be at best agnostic.

II. A Platonic Problem

The unit of selection in biological evolution is the species, not the individual. This is the most general way in which to state the consequence for modern biology of the defeat of Lamarkism, which postulates the inheritability of individually developed traits.

But precisely in this role, as the concrete subject of whatever causes operate to evolve new species from prior ones, species exist in *two dimensions*: On one hand, a species is a population of individuals sharing morphological and behavioral characteristics that suit them to share a common niche in an ecosystem, and to be reproductively closed among themselves. This is the species studied in taxonomy—in both synchronic and, via the fossil record, diachronic taxonomy or the elaboration of evolutionary 'trees'.

On the other hand, a species is a gene pool, a DNA structure shared with only minor variations by all individuals in the population. The advent of chromosome mapping and the increasingly remarkable capability of recovering and sequencing DNA from fossils has led to the emergence of an independent and powerful tool for confirming, and sometimes correcting by genetic analysis, evolutionary derivation trees based on morphology and geological stratigraphy.

How is the relation between these two ways in which species are present to be understood? Neoplatonism has done some very valuable thinking about just this question—or rather, on an analogous question, where I shall first have to state briefly and then to defend the analogy.

In broad Platonic terms, the DNA-species is the eternal εἶδος, the population species is the participating individuals. Biology speaks of the genotype and the phenotype in making the same distinction.

In Platonism, the εἶδος or genotype is eternal. It is routinely supposed that a notion of the eternity of species precludes any insight into the evolution of species, because to say that the εἴδη are 'eternal' implies that they are 'fixed' or 'static,' unchanging. But this is simplistic concerning the notion of αἰών and the αἰώνιος, the 'eternal.' The eternal is not the ἀΐδιος, the everlasting. Its resting (μένων ἐν ἑνί, *Timaeus* 37d) is not logical stasis but what biology calls homeostasis, a self-sustaining order or pattern in which a participating lower order of motion (sensible

κίνησις, e.g. metabolism regarded as biochemical pathways) maintains itself. Αἰών is not something extensive about time, but something *intensive*—cohering with the most ancient senses of the term as life or prevailing-life-principle.

The elemental Platonic distinction is between an intelligible and originating dimension of things and the dimension in which things are in sensible motion or the process of coming-to-be and perishing (τὰ ἐν γενέσει). It is not a 'two-worlds' theory, but a distinction intrinsically well suited to illustration from biology, where an organism's DNA is intelligible (we speak of its 'code') and originating (directing protein synthesis), and only the living and developing organism itself actually comes to be and perishes in a metabolic sense. Since the time-frames in which DNA patterns themselves move and evolve are only incidentally related to those of the phenotype and its ontogenesis, they transcend the time of individuals and can quite properly said to be *eternal*—if eternity is understood as sketched above. Since the defining feature of the eternal is not its extension through time, but its relationship to forms or patterns enacted in that extension, there is no obstacle at all to assigning an evolutionary aspect to the plurality of εἴδη in Platonism, which is to say, to eternity itself.

This becomes all the more evident in Neoplatonism, where one of the most easily observed modifications of Platonism is the almost complete displacement of the εἴδη by λόγοι. We need to digress for a moment to lay out a context in which to appreciate the importance of this shift for biology.

III. Causings In Aristotle

For Aristotle, it requires the correct integration of four distinct kinds of explanation to account for the being of a natural entity. This is usually referred to as the doctrine of the Four Causes.[2] Let me present them in the form of a simple chart:

Οὐσία
form, essence, the
"What" it was to be;
the "Formal Cause"

the ἀρχή of motion:
its beginning or effector
the "Efficient Cause"

the τέλος of motion
its end, term, finish
(Latin *finis*);
The "Final Cause"

Matter:
what persists in presence
through change;
the "Material Cause"

Each of these four patterns of explanation is exhaustive. They are equiprimordial. That is to say, each, in its own way, explains everything: there is nothing left out. An organism, for instance, is entirely a material being. Yet it is also an ongoing metabolism, matter in which motion has been instigated—for example, nutrition. It is also a phenotype of a species, an οὐσία subject to identification and classification. And finally, insofar as it is growing, maturing through a life-cycle, and behaving in ways that subserve reproduction, its motion has to be understood teleologically. For Aristotle, it is knowing how to integrate these four αἰτίαι or modes of explication that constitutes knowledge of being.

In an organism or living being (Aristotle's ζῷον), the formal cause is intimately linked with the efficient and final causes to comprise the 'soul' (ψυχή) as he understands it. What it means to be ensouled is, in effect, to have one's own 'onboard' efficient and final causes. Now in general, there is for Aristotle a kind of complicity or coordination between the efficient and the material causes, on one hand, and the formal and final, on the other. Hence in the reductionist material philosophy and physical mechanics of the 17th and subsequent centuries, it is not surprising that the idea of 'cause' is wholly given over to efficient causality. But it is the conjunction of formal and final causes that leads in directions useful for biology. It is reflected in the use of the imperfect past tense in the Aristotelian technical phrase for essence as formal cause, "the 'what' it was to be" (τὸ τί ἦν εἶναι). This names the

adult or reproductively mature individual in relation to its gestation, growth, and development: the butterfly is "what the caterpillar was going to be." The same vision of living as the enactment of changes directed to a formal end is also expressed in the term for 'actuality' that Aristotle prefers in natural science and especially biology, ἐντελεχεία, 'entelechy', which is ordinarily construed to mean 'holding or achieving completion' (ἐντελῆς ἔχειν), but as Aristotle uses it carries the more compounded sense of 'tending into or toward an end' (ἐν τέλος ἔχειν).[3]

Precisely a desire to think the εἶδος of a living being operating as a τέλος of its unfolding development leads to the Neoplatonic displacement of the εἴδη by the λόγοι. While εἶδος is certainly not 'form' (the common translation), which needs to be reserved for μορψή, it is still true that because of the term's association with vision and the visible, it naturally tends to imply a simultaneity-structure rather than a developmental pattern. Λόγος, on the other hand, is naturally associated with time. Already Aristotle *On the Soul* had used λόγος to name such things as the perceptual quality of sound,[4] which taken materially is vibration, but as audible is 'modulated' by a λόγος that the soul re-enacts in hearing. In such contexts, one usually translates λόγος as 'ratio' or 'proportion', having in mind the relationship between frequency (a physical determination) and pitch (a perceptual one). This is almost certainly too mechanistic: it means more generally intelligible pattern, almost 'rationale.' But in particular—as illustrated by its application to sound—λόγος is well suited to name an intelligibility enacted over time, a phase-series or developmental sequence.

With this, we are brought back to Plotinus' "λόγος unfolding itself as though from a resting seed." Only now, we are in position to see that far from being a simple appropriation of the Stoic λόγοι σπερματικοί , the Neoplatonic λόγοι are precursors of how contemporary biology understands the nature and role of DNA genetic sequences. Indeed, the λόγοι are no more 'seeds' than DNA is—or better, are 'seeds' in exactly the same way.

IV. Teleology

We are all familiar with the notion that the DNA 'code' of a living species determines the adult form of engendered individuals. How does it do so? In no way at all is it a precursory version of the adult form that has only to enlarge and perhaps reproportion itself. Nor does it provide anything like a 'mold' or 'template' into which material is poured or by which it is stamped. We know that instead and most directly, it specifies protein synthesis, but does so dynamically, in such a way as to direct the course of cell division in embryogenesis (and in cognate developmental metamorphoses like insect pupation).

Consider the development of a large and complex animal from egg to adult. Simply to track and describe the strategies involved in tissue differentiation—on the way from the single cell of initial fertilization, through two, four, eight, sixteen...through the first foldings that differentiate endo-, meso-, and exoderm...into the elaboration of organ and body structures—remains a frontier in contemporary embryology. Even greater challenges to understanding arise from the fact that it is the λόγος of this developmental sequence—its 'logic'—that mediates between the gene pool and the population-species. In the developing individual, the genotype acts as goal or τέλος of development, through the mediation of the DNA-specified λόγος. The adult form is more elicited than produced. This feature of the logic of embryogenesis is so sharply felt that biologists have coined the term 'teleonomy' to describe it, 'teleology' being regarded as discredited. I propose that we think about what we call the DNA 'code' the way that Neoplatonism thought about the λόγοι whose unfolding constitutes the life-course (the βίος) of living beings (ξῷα), and unabashedly recognize it as teleology.

Neoplatonic λόγος determines or causes as a τέλος: in a completely strict way, the Neoplatonic understanding of natural life is *teleo-logia*, teleology. Lurking beneath the objections to teleological thinking outlined at the outset is an assumption that it involves a mistaken idea about time, illicitly postulates some way in which the future affects the present. Hence it is especially valuable that the most explicit Neoplatonic discussion of how λόγοι mediate between eternal intelligible being and sensible process occurs in Iamblichus' account of time. I will conclude with

the presentation and brief explanation of a few of the relevant texts.[5]

Iamblichus' thought about time survives principally in fragmentary quotes and long paraphrases incorporated into the Aristotle commentaries of Simplicius and Proclus. What follows is synthesized from two such places. I introduce Roman numerals to mark two separate elements of a traditional definition on which Simplicius tells us Iamblichus is commenting:

> The divine Iamblichus in his first commentary on the *Categories* says that Archytas defines time as (i) "a kind of number of movement," and (ii) "the general interval of the nature of the universe." His exegesis of this definition is as follows:
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> (i) the movement referred to here is not one of the many (for then the others would be in want of time), nor is it the communion of the many (for such a communion would not be one), but it is the movement which is one in its being, preexisting all the others as though a monad of motions. This is the first psychical change [πρώτη ψυχικὴ μεταβολή], unfolding [ἐκφυόμενη] the projection of the λόγοι; it is justly primary and the cause of all motions.
>
> (ii) the general interval of the nature of the universe includes all the natures of the universe and penetrates through the whole of them entirely. Identified in this way, time begins from above on the level of the first λόγοι and reaches as far as a certain level where, in accordance with the transition [μετάβασις] and movement of the whole λόγοι, it determines the general interval. For in the same way that, with things in process, this Now along with the Now beforehand and this movement along with the first movement are what makes change manifest, so also, in a much prior and more fundamental way, the interval of the most senior time of all is seen as pre-existing with the essence of the whole λόγοι of the natures and, with sovereign propriety, as filling it to completion.[6]

What makes this position not just unfamiliar but unexpected is its distinction of two different dimensions of time. The higher, or 'psychical' time belongs to the hypostasis Soul in its productive descent from the intelligible to the sensible. The lower is physical time, the dimension in which sensible motions appear. This too is a psychical time, in the sense that it is still within Soul, but now it is Soul embodied in physical (natural) beings, so it is time as ordinarily understood, in which motion has its earlier and later

phases. In developing his theory of two-dimensional time, Iamblichus is expanding a theme latent in Plotinus' definition of time as the "life of soul (ζώη ψυχής) in a movement of transition from one lifetime (βίος) to another." This transitional movement is 'vertical' in a systematic sense: it is the movement of Soul from its contemplative proximity to Νοῦς (one of its two βίοι) downward or outward into its production of nature or sensible being (its other βίος). Iamblichus calls this the "monad of motions." In a related remark, recalling the identification of time as "an image of eternity moving according to number" (*Timaeus* 37d), he points out that time moves only in relation to eternity.[7]

We could summarize this doctrine by saying that true or "senior" time is the life of Soul in its eternal movement from eternity into sensible time, which is to say that time is a perpetual arrival into itself. The position is not that there are two 'times,' but rather that time in its very nature is two-dimensional.

> But now the argument has interpreted these definitions of time as two, whereas it is necessary to bring them together into one. For thus the whole nature of time will be seen.[8]

The reason Iamblichus seizes upon and elaborates this doctrine is for what it allows him to say about the presence of intelligible order in the growth and activities of natural beings: it is *time* that "projects" the λόγοι upon sensible motion, and "unfolds" the interval-patterns through which they are enacted. For Neoplatonism, time is what we could call the 'engine' of participation—the fully worked out answer to the complaint of Aristotle with which we began.

> For the generative time, being, like a time-like monad, the number of self-moving movement, is the interval of the natural λόγοι, not however according to bulk nor with regard to outward movement simply, but it is the interval according to the pre-existing order of movement, in which the earlier and later are arranged beforehand and provide order to actions and movements. For one cannot infer the earlier and later of affairs without the pre-existence of time in itself, to which the order of actions is referred.[9]

In this distinction Iamblichus is exploiting an ambiguity in the term τάξις, which can mean both serial order-in-succession and 'ordinance,' deliberated arrangement or purposive shape. In time, only as sensible is the order of affairs purely serial; the pre-existent order is intelligible and purposive:

> If we posit 'earlier and later' in this order, we do so not according to the transitions of movements or according to the unravelings of life or according to the pathways of cosmic processes, or anything like this; but we characterize it according to the ranking of causes and the continual concatenation of engenderings and the primordial act and power of motions bringing purposes to completion—according to all considerations like this.[10]

As the 'engine of participation,' time is clearly being understood *teleologically*. And because time is the life of soul, *participation* is the essence of life itself.

To translate this analysis into a Neoplatonic proposition in evolutionary biology: DNA is the Platonic εἶδος, understood in an Aristotelian way as harboring the λόγος of living beings. Its role in ontogenesis is best portrayed teleologically.

On the level of phylogenesis, the way to apply a Neoplatonic perspective is also clear. The stability that allows for the genetic identification of a species is a kind of homeostasis in time, an αἰών in the Platonic sense. Evolutionary biology calls it an 'equilibrium'. In evolution, the eternity of species is itself subject to change. The question is whether such change must also be understood teleologically.

We should not forswear the Neoplatonic answer: of course. Since the entire 'career' of Soul, embodying itself in Nature, is an enactment of Νοῦς, the evolution of species is Νοῦς on its way to itself. Whether this is again the 'anthropocentric' fallacy remains to be seen.

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NOTES

1. III 7 [45], 11:23.
2. *Metaphysics* I, 3, restating *Physics* II, 3.

3. Otherwise, the definition of motion in *Phys.* III, 1 as "the ἐντελεχεία of the potential, as potential" would be incoherent.
4. *On the Soul* II, 12.
5. For a more comprehensive explication of these texts, see P. Manchester, "Time, Soul, Number: Late Platonic Light on an Obscurity in Aristotle," in Peter J. Opitz and Gregor Sebba, eds., *The Philosophy of Order: Essays on History, Consciousness, and Politics,* (Festschrift for Eric Voegelin), (Stuttgart: Klett-Cotta, 1981), pp. 110–124.
6. Here and below, I supply my own translations of passages collected in *The Concept of Time in Late Neoplatonism*, edited with an introduction by S. Sambursky and S. Pines (Jerusalem: Israel Academy of Sciences and Humanities, 1971; hereafter Sambursky/Pines). In giving references for the texts I will first list the place in the *Commentaria in Aristotelem Graeca,* then in Sambursky/ Pines, it being understood that I depend on them to have located the texts originally. In the text presented here, (I) is Simplicius: *Physics* 786, 11–18, Sambursky/Pines 32, lines 18–-26; (ii) is Simplicius: *Categories* 352, 2–10, Sambursky/Pines 26, 6–16.
7. Procl., *Tim.* III, 31, 5f; Sambursky/Pines 44, 20f.
8. Simpl.: *Categ.* 352, 10–13, Sambursky/Pines 26, 16–18.
9. Simpl.: *Categ.* 353, 13–20, Sambursky/Pines 26, 18–27.
10. Simpl.: *Phys.* 794, 7–10, Sambursky/Pines 42, 10–16 (Dillon frag. 63).