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Sobre la explicación teleológica en Aristóteles

Resumen: En un conocido pasaje al comienzo de EN I. 7 Aristóteles concluye que la *eudaimonia* debe ser ese bien supremo (*to ariston*) hacia el cual apuntan todas nuestras acciones. A pesar de que, según él, esta conclusión es generalmente acordada (en otras palabras, explicada por las opiniones de muchos y sabios), sin embargo se requiere una explicación más explícita. En los primeros trabajos sobre *De Motu Animalium* de Aristóteles Martha Nussbaum expresa su desconcierto sobre este pasaje y hace una sugerencia fascinante y provocativa, a saber, que el uso de la argumentación de funciones en Aristóteles difiere aquí de su despliegue habitual en sus trabajos biológicos y zoológicos.

Palabras clave: Aristóteles – filosofía natural – teleología – Nussbaum

Aristotle on Teleological Explanation

Abstract: In a well-known passage at the beginning of NE I. 7 Aristotle concludes that *eudaimonia* must be that supreme good (*to ariston*) toward which all our actions aim. Although, he admits, this conclusion is generally agreed upon —it is, in other words, accounted for by the opinions of the many and the wise1— nevertheless a more explicit account is required. In her early work on Aristotle's *De Motu Animalium*, Martha Nussbaum expresses puzzlement about this passage and makes a fascinating and provocative suggestion, namely, that Aristotle's use of function argumentation here differs from its usual deployment throughout his biological and zoological works.

Keywords: Aristotle – Natural Philosophy – Teleology – Nussbaum

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In a well-known passage at the beginning of *NE* I. 7 Aristotle concludes that *eudaimonia* must be that supreme good (*to ariston*) toward which all our actions aim. Although, he admits, this conclusion is generally agreed upon —it is, in other words, accounted for by the opinions of the many and the wise[1]— nevertheless a more explicit account is required:

> This might perhaps be given, if we could first ascertain the function of man. For just as a flute-player, a sculptor, or any artist, and, in general for all things that have a function or activity, the good and the 'well' is thought to reside in the function, so it would seem to be for man, if he has a function. Have the carpenter, then, and the tanner certain functions or activities, and has man none? Is he naturally functionless? Or as eye, hand, foot, and in general each of the parts evidently has a function, may one lay it down that man similarly has a function apart from all these? What then can this be? Life seems to be common even to plants, but we are seeking what is peculiar to man. Let us exclude, therefore, the life of nutrition and growth. Next there would be a life of perception, but it also seems to be common even to the horse, the ox, and every animal. There remains, then, an active life of the element that has a rational principle (*NE* I. 7 1097b25).

As we see here, Aristotle asserts that the good of something resides in its distinctive work or function (*idion ergon*), as opposed to some work or activity which might be shared in common with other kinds of beings[2]. Thus, in attempting to

[1] On Aristotle's ethical methodology see John J. Cleary, «*Phainomena* in Aristotle's Methodology», *International Philosophical Quarterly* (1994): 61-94, Owen McLeod, «Aristotle's Method», *History of Philosophy Quarterly* 12 (1995): 1-18, Richard Kraut, «How to Justify Ethical Propositions: Aristotle's Method», in *The Blackwell Companion to Aristotle's Nicomachean Ethics*, ed. Richard Kraut; (Oxford: Wiley Blackwell, 2008), pp. 76-95, and Georgios Anagnostopoulos, «Aristotle's Methods», in *A Companion to Aristotle*, ed. Georgios Anagnostopoulos (Oxford: Blackwell, 2009), pp. 101-23.

[2] An interesting question here is how Aristotle's use of function argumentation builds upon but also differs from Plato's earlier account. For a good comparison see Andre Ariew, «Platonic and Aristotelian Roots of Teleological Arguments», in *Functions: New Essays in the Philosophy of Psychology and Biology*, ed. Andre Ariew, Robert Cummins, and Mark Perlman (Oxford: Oxford University Press,

discover man's *ergon*, Aristotle first entertains the possibility that this work might consist in nutrition and growth, but rejects this possibility because these activities are shared even with plants, whereas «we are now seeking for something peculiar (*idion*)» (1098a1). Perception is likewise rejected because it is common to all animals. Finally, as Aristotle notes, «what remains is the active life of that [part of man] which has *logos*» (1098a4)[3].

The Uniqueness of the Function Argument?

In her early work on Aristotle's *De Motu Animalium*, Martha Nussbaum expresses puzzlement about this passage and makes a fascinating and provocative suggestion, namely, that Aristotle's use of function argumentation here differs from its usual deployment throughout his biological and zoological works[4]. As she argues in one of her interpretive essays on the *De Motu Animalium*, «Aristotelian function-ascribing arguments usually concern themselves with the analysis of a com-

2002), pp. 7-32, Dominic Scott, *Levels of Argument: A Comparative Study of Plato's Republic and Aristotle's Nicomachean Ethics* (Oxford: Oxford University Press, 2015); and A. W. Price, *Virtue and Reason in Plato and Aristotle* (Oxford: Oxford University Press, 2015).

[3] There is a rich body of literature on the function argument. Some of the better studies include: Deborah Achtenberg, «The Role of the *Ergon* Argument in Aristotle's Nicomachean Ethics», in *Essays in Ancient Greek Philosophy*, vol. 4, *Aristotle's Ethics*, ed. J. Anton and Anthony Preus (Albany: SUNY Press, 1991), pp. 59-73; Georgios Anagnostopoulos, «Ancient Perfectionism and its Modern Critics», in *Human Flourishing*, ed. Ellen Frankel Paul, Fred D. Miller, and Jeffrey Paul (Cambridge: Cambridge University Press, 1999), pp. 197-233; Rachel Barney, «Aristotle's Argument for a Human Function», *Oxford Studies in Ancient Philosophy* 34 (2008): 293-322; Christine Korsgaard, «Aristotle's Function Argument», in *The Constitution of Agency* (Oxford: Oxford University Press, 2008), pp. 129-50; Richard Kraut, «The Peculiar Function of Human Beings», *Canadian Journal of Philosophy* 9 (1979): 467-78; Alfonso Gomez-Lobo, «The *Ergon* Inference», *Phronesis* 34 (1989): 170-84; Gavin Lawrence, «The Function of the Function Argument», *Ancient Philosophy* 21 (2001): 445-75; Michael Wedin, Aristotle on the Good for Man», *Mind* 90 (1981): pp. 243-62; Jennifer Whiting, «Aristotle's Function Argument: A Defense», *Ancient Philosophy* 8 (1988): 33-48; and Bernard Williams, «Aristotle on the Good: A Formal Sketch», *Philosophical Quarterly* (49) (1962): 289-96.

[4] Martha C. Nussbaum, *Aristotle's De Motu Animalium* (Princeton: Princeton University Press, 1986), pp. 93-107.

plex-containing system —an animal, plant, or machine— into simpler systems and components. On this account, the point of ascribing a function to X is to show what vital activity of the whole organism is realized in that organ or system» (*DM* 100). A teleological account, at least for living beings, is thus determined by an analysis of how a specific organ, system, or characteristic behavior contributes to the overall functioning of a particular organism. In the biological works, she concludes, functions are never ascribed to creatures as wholes, since this would serve no analytical purpose. Hence the unusual character of Aristotle's argument in *NE* I. 7 which asks whether man as a *whole* performs a function (*DM* 98-9).

At the root of Nussbaum's puzzlement with this passage is her compatibilist reading of Aristotelian natural philosophy. By «compatibilism» Nussbaum means the attempt to show how formal and teleological explanations are compatible with the mechanistic and reductionistic explanations prevalent in the modern natural sciences[5]. For example, while one can say that

[5] Besides Nussbaum see Charles Taylor, «The Explanation of Purposive Behavior» in *Explanation in the Behavioral Sciences*, ed. Robert Borger and Frank Ciofi (Cambridge: Cambridge University Press, 1970), pp. 49-97; G. H. von Wright, *Explanation and Understanding* (Routledge Kegan and Paul, 1971); Richard Sorabji, *Necessity, Cause, and Blame: Perspectives on Aristotle's Theory* (Ithaca: Cornell University Press, 1980), Hilary Putnam, «Philosophy and our Mental Life» in *Philosophical Papers, Volume 2: Mind, Language, and Reality* (Cambridge: Cambridge University Press, 1981); John M. Cooper, «Aristotle on Natural Teleology», in *Language and Logos: Studies in Ancient Greek Philosophy*, ed. Malcolm Schofield and Martha C. Nussbaum (Cambridge: Cambridge University Press, 1982), pp. 197-222; reprinted in Cooper, *Knowledge, Nature, and the Good: Essays on Ancient Philosophy*, pp. 107-30; Michael Bradie and Fred D. Miller, «Teleology and Natural Necessity in Aristotle», *History of Philosophy Quarterly* (1984): 133-46; Ernst Mayr, «The Idea of Teleology», *Journal of the History of Ideas* 53 (1992): 117-35; Alan Gotthelf, «Aristotle's Conception of Final Causality», in *Philosophical Issues in Aristotle's Biology*, ed. Gotthelf and James G. Lennox (Cambridge: Cambridge University Press, 1985), pp. 204-42; «Understanding Aristotle's Teleology», in *Final Causality in Nature and Human Affairs*, ed. Richard F. Hassing (Washington, DC: Catholic University of America Press, 1997), pp. 71-85; James Lennox, *Aristotle's Philosophy of Biology: Studies in the Origins of Life Science* (Cambridge: Cambridge University Press, 2001), Marjorie Grene and David Depew, *The Philosophy of Biology: An Episodic History* (Cambridge: Cambridge University Press, 2004), pp. 1-35, 290-322; Monte R. Johnson, *Aristotle on Teleology* (Oxford: Clarendon Press, 2005), and William J. Fitzpatrick, *Teleology and the Norms of Nature* (London: Routledge, 2011).

a spider builds its web in order to secure nourishment, one can also explain its orderly activity via its neuro-physiological makeup and genetic inheritance, thus showing how actual physical structure is the ground of teleological or goal-directed behavior[6]. In this approach form is not understood as a principle distinct from matter, but as a certain «organization-to-function» of a purely material being (*DM* 74).

The Question of Universal Teleology

Given this understanding of the relationship between *eidos* and *ergon*, it is easy to see why Nussbaum would have difficulty fitting the *ergon* argument into her general interpretation of Aristotle. Although she disagrees with W. F. R. Hardie's view that the argument implies that man is an artefact, that is, an instrument designed for some use or purpose[7], she does admit that it seems to ask us to examine man's place within the cosmos in order to ascertain his function within it. But in Nussbaum's view, «such an approach would be a violation of Aristotle's constraints on teleology, and an exception in the *corpus*» (*DM* 101). And yet what is left for her to conclude? For one thing, she observes that no appeal to man's place in some global teleology, no appeal, in other words, to a «god's eye» view, is evident in the *ergon* argument or in the conclusions drawn from it. For Nussbaum, the argument is strictly concerned with an analysis of the capacities of human beings, examining and distinguishing those which are and are not shared by other living things.

Thus, for Nussbaum, neither in this argument nor even in *NE* X is there any suggestion of divine providence or universal purpose. Even when we are invited in *NE* X 7-8, she adds, to strive for divinity and to identify ourselves with the divine in ourselves, «it is never with the end of serving the gods or a divine plan; nor does Aristotle anywhere indicate that the question, 'why are there human beings?' would be of the slightest

[6] Lear, *Aristotle: The Desire to Understand*, p. 36.

[7] See W. F. R. Hardie, *Aristotle's Ethical Theory* (Oxford: Oxford University Press, 1968), p. 23-4.

interest to him» (*DM* 102)[8]. Nussbaum thus concludes that the *ergon* argument of *NE* I. 7 shares with other forms of argument in the biological works only their interest in the distinctive or characteristic – not their goal of analysis. It simply asks what this particular thing i.e., human beings, does that nothing else does; how it is differentiated from other members of the same genus. There is no question of how it is ordered in some grander or cosmic teleology (*DM* 95-97).

But to say this, she admits, only gets us the beginning of the most difficult questions raised by this argument, and moreover, only the cusp of what is at issue in her «tragic» or «anthropocentric» view of Aristotelian practical rationality[9]. What we really need to know, she states, are the answers to the following trio of questions: first, why is Aristotle interested in providing an account of human nature at the outset of a moral inquiry? Secondly, why, within such an analysis, does he place such singular stress on the distinctive or characteristic capacities of human beings; and finally, why, among the distinctive activities or capacities man possesses is the activity of practical reason given such significance? For Nussbaum, the first question is the most crucial, for by such an inquiry Aristotle seems to be attempting to derive ethical norms from factual observations concerning human nature. Moreover, such an attempt would indicate that there are *a priori* principles of nature which form an immutable basis for an ethical science, a view antithetical to her interpretation of Aristotelian practical

[8] In response to this and other similar views Charles Kahn has defended the notion of the prime mover as a direct teleological cause not just of the motion of the outermost sphere but of all natural motion in the cosmos, both living and inanimate. See Kahn, «The Place of the Prime Mover in Aristotle's Teleology», in *Aristotle on Nature and Living Things*, ed. Alan Gotthelf (Pittsburgh: Mathesis Publications, 1985), pp. 183-205. On the prime mover see as well Stephen Menn, «Aristotle and Plato on God as Nous and as the Good», *Review of Metaphysics* 45 (1992): 543-73, «Aristotle's Theology», in *The Oxford Companion to Aristotle*, ed. Christopher Shields (Oxford: Oxford University Press, 2012), pp. 422-64, and Lindsay Judson, «Heavenly Motion and the Unmoved Mover», in *Self-Motion: From Aristotle to Newton*, ed. Mary Louis Gill and James G. Lennox (Princeton: Princeton University Press, 1994), pp. 155-71.

[9] See Nussbaum, *The Fragility of Goodness: Luck and Ethics in Greek Tragedy and Philosophy* (Cambridge: Cambridge University Press, 1986), p. 5.

rationality (*DM* 103)[10]. In attempting to respond to this difficulty, she claims that we must first try to understand (a) what Aristotle believes to be the function of reflection concerning human nature in one's deliberations about the good life, and (b) what status he accords these reflections in his scientific inquiry.

Conceptual Community

As Nussbaum notes, Aristotle's answer to the first question, is not «some crude form of the naturalistic fallacy» (*DM* 103; *FG* 246), but a powerful observation about the importance of «conceptual community» to the ethical life. According to this account, Aristotle recognizes that whenever we deliberate about the good for our lives, we are not simply concerned with our own personal satisfaction and desires – for Aristotle, we are social creatures who require the company and the approval of others for a fulfilling life. We therefore deliberate with a view to justification: a good life must be one that we can justify as good to our fellow human beings. The possibility of winning approval and reaching agreement is fundamental to our life and projects, since self-respect in a community of men is, for us, a basic good (*DM* 103-4; *FG* 246-7). As she notes,

[10] In this regard Nussbaum quotes the 20th century Neo-Thomist Jacques Maritain: «In Maritain's striking analogy, we are all pianos, which will produce the proper sounds only if tuned to an external and objective standard of pitch . . . If a piano does not produce the right sounds, 'it must be tuned, or discarded as worthless.' The aim of ethical science then would be, then, to attain to knowledge of the first heavenly principles and the system of prescriptions following from them – ultimately to complete this system so that it offers a coherent system of rules governing every possible human situation». See Nussbaum, *DM*, pp. 168-69. For a richer understanding of Thomistic natural law see Daniel Nelson, *The Priority of Prudence: Virtue and Natural Law in Thomas Aquinas and the Implications for Modern Ethics* (State College: Penn State Press, 1992), Pamela Hall, *Narrative and the Natural Law: An Interpretation of Thomistic Ethics* (South Bend: University of Notre Dame Press, 1994), Daniel Westberg, *Right Practical Reason: Aristotle, Action, and Prudence in Aquinas* (Oxford: Clarendon Press, 1994), Kevin Flannery, *Acts Amid Precepts: The Aristotelian Logical Structure of Thomas Aquinas' Ethical Theory* (Washington DC: CUA Press, 2001), Jean Porter, *Nature as Reason: A Thomistic Theory of the Natural Law* (Grand Rapids: Eerdmans Press, 2004), and Robert Sokolowski, «What is Natural Law?» *The Thomist* 68 (2004): 507-29.

> We retain throughout our lives an interest in defending and explaining our actions to our fellow beings – defending them not as good *simpliciter*, but as good actions for the sort of being both we and they are, components of or means to a good human life. If men did not require each other's approval, if we had no interest in justification, life would be either Olympian or bestial, but hardly life as we know it (*DM* 219).

We therefore must ask ourselves not simply, what is a good life for me? But «what is a good human life» – i.e., what life can I hope to commend as good to my fellow-citizens? For Nussbaum, this perspective is necessary in that it offsets the human tendency in philosophy (and life) to «become estranged from the beliefs that ground our daily lives», motivated by the «Platonic desire to grasp and control the contingency of human life» (*FG* 259)[11]. Using by now a familiar contrast, she warns that «to opt out of very basic communal ethical judgments will lead to a way of life that more normal humans may judge bestial or inhuman[12]». And just as Plato's metaphysical framework was not value-neutral, she attributes to the Aristotelian perspective an explicitly positive valuation of human life, to the effect that «we need [Aristotelian] philosophy to show us the way back to the ordinary and to make it an object of interest and pleasure, rather than contempt and evasion» (*FG* 260)[13].

[11] In this regard, Charles Griswold has offered a powerful response to Nussbaum's critique of Plato: «Nussbaum's thesis that the impulse driving the Platonic ascent to the Forms is a fear of contingency and a desire for mastery through technical reason. That ascent might instead have its source in openness to and wonder at, among other things, the beauty in this world of these particular individuals. The goal of Plato's writings about the ascent may be not to negate life but rather to open our eyes to the transcendence within finitude that makes our lives rich as well as distinctively human. Is not the beauty of the contingent individual saved rather than lost by the theory that there is something of the eternal and divine present in it? Is not that very union of particular and universal –a fragile and perhaps miraculous co-presence– awesome, and provocative of friendship and the love of wisdom simultaneously?» See Charles Griswold, «Cool Hand Socrates», *The American Scholar* 57 (1988): 314-20.

[12] On this point Nussbaum cites Nietzsche's aphorism: «To live alone must be a beast or a god, says Aristotle. Leaving out the third case: one must be both – a philosopher». See Nietzsche, *Twilight of the Idols*, in *The Portable Nietzsche*, ed. and trans. Walter Kaufman (New York: Viking Penguin, 1982), p. 467.

[13] While Nussbaum acknowledges that Plato's strategies and system of valuation are not necessarily dependent upon his metaphysics, she cites with tacit approval

Internal Realism

The exigencies of life in the *polis*, then, are what ultimately bring the question of man's function to the forefront of the moral life. Because we require the friendship and approval of others we seek a shared conception of human existence upon which to base an understanding of the human good. Without such a shared conception we could not justify our life to others, nor could we rely on their approval or cooperation. We would lose, finally, our self-respect in the community. For Nussbaum, then, there is in this argument no appeal to what she calls «self-evidence», no appeal to the properties of a given essence that we are exhorted, in consequence, to actualize or live to the full. There is only an exhortation to arrive at a shared conception of human existence – whatever that shared conception might be (*DM* 104)[14]. In this way the *ergon* argument exemplifies Aristotle's method of philosophizing *within* the appearances (*phainomena*), a method he continues to employ throughout his ethical and political works[15]. Far from attempt-

Aristotle's rejection of the Forms in the *Posterior Analytics* and the *NE*, made, as she comments, with an uncharacteristic «burst of exuberant malice»: «So good-bye to the Platonic Forms. They are *teretismata*, and have nothing to do with our speech». *Teretismata*, Nussbaum points out, are «meaningless sounds you make when you are singing to yourself, we might render them as 'dum-de-dum-dums'». For Nussbaum, the image conveyed here is of «a completely self-absorbed individual saying to himself what neither anyone else, nor ultimately, he can understand. When the Platonist speaks of The Good or The White, he is not referring to anything, much less communicating anything to us. He is just crooning away in a corner» (*FG* 256).

[14] In this regard Nussbaum appears to be drawing upon the work of Henry Sidgwick: «In this state of mind I had to read Aristotle again; and a light seemed to dawn upon me as to the meaning and drift of his procedure – especially in Books II, III, and IV of the *thics* . . . What he gave us there was the Common Sense Morality of Greece, reduced to consistency by careful comparison: given not as something external to him but as what «we» – he and others, think, ascertained by reflection». See Sidgwick, *The Methods of Ethics*, (1901), Preface to sixth edition, p. xxi. See also pp. 215, 456. On Sidgwick see Terence Irwin, «Eminent Victorians and Greek Ethics: Sidgwick, Green, and Aristotle», in *Essays on Henry Sidgwick*, ed. Bart Schultz (Cambridge: Cambridge University Press, 1992), pp. 279-311, Nicholas P. White, «The Attractive and the Imperative: Sidgwick's View of Greek Ethics», in *Essays on Henry Sidgwick*, pp. 311-33, and Bart Schultz, *Henry Sidgwick, Eye of the Universe: An Intellectual Biography* (Cambridge: Cambridge University Press, 2004), p. 261.

[15] Curiously, Burnyeat argues that this is true not only of Aristotle's ethical and political works, but also of his more theoretical works as well. As Burnyeat notes, «Aristotle does something that a 20th century philosopher like Moore could never

ing to put us in touch with the *a priori*, the argument urges us to clarify or refine our shared conceptions of human nature before we try to reach agreement on what a human being should do. Such clarification in turn will help us better pinpoint the target at which our actions aim[16]. In this regard, Nussbaum's reading of the *NE*'*s ergon* argument, offers a good example of what she will elsewhere call «internal realism»: the natures of things are simply not available to us, so the best we can do is examine the appearances (*phainomena*) – which are appearances merely for us in the strictest sense – and dialectically pursue and «save» those appearances which are most generally agreed upon and deeply held by us. Such shared conceptions, the contention goes, are the firmest bedrock upon which to build an ethical theory[17].

Although Nussbaum's distinction (borrowed from Hilary Putnam) between «internal» and «external» realism leaves the reader to do much more interpretation than might be advisable in a discussion of such a crucial point of Aristotelian method, nevertheless, a careful reading of her account leaves little doubt as to her understanding of the distinction. We may consider for instance her explanation of the status of our beliefs or talk about the eternal or immortal, beliefs which are discussed

have dared. He establishes science on the basis of the opinions of the 'majority' and of the 'wise.'» See Burnyeat, «Good Repute», p. 11.

[16] See as well her earlier commentary on the *De Motu*, p. 105. In a note, Nussbaum cites Rawls, *A Theory of Justice* (Cambridge, MA: Harvard University Press, 1971), pp. 20-21 and 48-53. In response to various criticisms following the publication of the *FG*, Nussbaum has attempted to refine her position and to more carefully distinguish the ethical methodologies of Rawls and Aristotle. In particular see Nussbaum, *The Therapy of Desire*, pp. 22-23 and *Frontiers of Justice: Disability, Nationality, and Species Membership* (Cambridge, MA: Harvard University Press, 2006), pp. 14-25; 176-79.

[17] On this point see Charles Taylor, «Critical Notice: The Fragility of Goodness: Luck and Ethics in Greek Tragedy and Philosophy», *Mind* 96 (1987), p. 411. For a good critique of Nussbaum's understanding of Aristotelian method see William Wians, «Saving Aristotle from Nussbaum's *Phainomena*» in *Essays in Ancient Greek Philosophy Vol. V: Aristotle's Ontology*, ed. Anthony Preus and John P. Anton (Albany: SUNY Press, 1993), pp. 133-49 as well as Kurt Pritzl «Opinions as Appearances: *Endoxa* in Aristotle», *Ancient Philosophy* 14 (1994): 1-10, reprinted in *Aristotle: Critical Assessments*, Vol. 1, ed. Lloyd Gerson (New York: Routledge Kegan and Paul, 1999), pp. 73-83.

and examined in great detail by Aristotle in such texts as the *De Caelo* and the *Metaphysics*. Such talk, Nussbaum contends, has its place within Aristotle's internally realist view «only because such talk is an important part of our world» (*FG* 257). On this point she quotes from the *De Caelo*, «it is well to join in by persuading oneself that ancient beliefs deeply belonging to our native tradition are true, according to which there is something deathless and divine» (*De Caelo*, 284a1-4; translation Nussbaum). Thus belief in the divinity and eternity of the heavenly bodies is true, «has weight in philosophy», as Nussbaum says, «because of its depth for us, because it has survived so many changes of social and political belief of a more superficial nature» (*FG* 257). But, she immediately adds, «by the same token, an internal truth is all we are entitled to claim for such beliefs[18]». In a very interesting way, Nussbaum compares Aristotle's method in this regard to John Rawls's notion of «wide reflective equilibrium[19]», a notion which is similar to Aristotle's in that it suggests what is needed at the outset of the moral life is a broad consensus among the mature and the reflective, an ordering of moral intuitions «through reasoned adjustment of competing considerations» (*DM* 105)[20].

[18] It is certainly worth wondering from what «god's-eye» point of view Nussbaum is arguing that «internal» truth is the only truth we are entitled to.

[19] For Rawls, the notion of reflective equilibrium is the process of making our ethical principles and considered judgments into a coherent system by constantly revising whichever of them we find less certain in light of the greater certainty found in other judgments on any given ethical question. Significantly, the possibility of supporting this system from some meta-ethical foundation or source such as natural law is abandoned as useless. See Rawls, *A Theory of Justice*, pp. 20-21, 51 n. 26. For a good account see Norm Daniels, «Wide Reflective Equilibrium and Theory Acceptance in Ethics», in *Justice and Justification: Reflective Equilibrium in Theory and Practice*, ed. Norm Daniels (Cambridge: Cambridge University Press, 1996), pp. 21-46 and Thomas M. Scanlon, «Rawls on Justification» in *The Cambridge Companion to Rawls*, ed. Samuel Freeman (Cambridge: Cambridge University Press, 2002), pp. 139-67.

[20] W. D. Ross, the well-known translator and commentator on Aristotle's work, adopts what he takes to be Aristotle's method in his own ethical theory. Ross claims that ethics is to start with the «moral convictions of thoughtful and well-educated people». The philosopher is then to work with these beliefs «to compare convictions with each other, and to study them in themselves, with a view to seeing which best survive such examination, and which must be rejected because they contradict other convictions which are better grounded; and to clear up, so far as we can, ambigui-

The Pursuit of the Good Life

But given these reasons why Aristotle approaches his account of *eudaimonia* with the *ergon* argument, we still need to know what the conclusion of the argument brings to practical deliberation. What we are seeking is the answer to questions (2) and (3) above: why does Aristotle in the context of this argument place such stress on the distinctively human; and why, moreover, does he choose rationality as that activity most characteristic of man? Nussbaum's reply to both of these questions relies upon the larger context of the argument in *NE* I. Aristotle's main concern in establishing his own account of *eudaimonia*, she contends, is to distinguish it from «popular hedonism» (*FG* 294-95). Though Aristotle does not want to minimize the exercise of those capacities we share with plants and other animals, he nevertheless wants to combat various forms of popular hedonism by stressing the operation of our rational faculties. For only the rational faculty can order the shared animal functions so that they play their proper role in a complex and fully human life. We desire a life that will exercise all our capacities, shared and non-shared alike, but we can only be successful at living such a life if such shared capacities come under rational direction.

On Nussbaum's interpretation, then, the *ergon* argument is closely linked to Aristotle's pursuit in *NE* I for the best «human» life. For in clarifying the life of reason as peculiar to man we realize that no other life can be an acceptable choice for us. Though it is true we can pursue a life of mindless hedonism, «preferring a life suitable to beasts» such a life would not be a distinctively human life (*NE* 1095b19). It could not logically be the case, that is, that after an examination of the function of man, his peculiar kind of life would no different than that of a plant or an animal. Thus, the essential ingredients of a human life (practical reason predominant among them) point to

ties that lurk in them». See Ross, *Foundations of Ethics* (1935), p. 1. As we see here, the task of ethics is essentially one of internal coherence and the question of whether any of our deep seated convictions can be shown to be true is deemed impossible from the outset.

a distinctively human existence, and without these ingredients one would not want to call a life «human» at all. For this reason, she concludes, the criterion for determining the goodness of such-and-such a life, as the *ergon* argument indicates, is always going to be species relative (*FG* 292-3)[21]. On such account, no criterion determined by some «god's-eye», perfectionist perspective independent from the view of a particular life can qualify in Aristotle's mind as a criterion of the goodness of that life.

Compatibilism and the ergon argument

As we have seen, Nussbaum goes to great lengths to make sense of the apparent peculiarity of the *ergon* argument at *NE* I. 7. While we might expect her to answer these questions by providing an analysis of man's place within the larger context of the *polis*, or even the universe as a whole, we find her, rather, repeatedly objecting to this kind of approach. Although Nussbaum's objection makes clear how a «cosmic» teleology runs counter to her reading of Aristotelian function arguments, she does not seem to take into account the possibility of an analysis of man's place within the larger context of the *polis*. The *polis*, being for Aristotle a natural entity, a community (*koinonia*) analogous to an organism such as a plant or a horse, seems to be just the sort of whole which can be analyzed into its various constituent parts in a function argument[22]. To describe the function of man in this sense would be to explain

[21] In particular, Nussbaum points to Aristotle's claim in *NE* VI 1141a31-2: «The good is not single for all animals, but is different in the case of each».

[22] On Aristotle's political naturalism see J. Ferguson, «Teleology in Aristotle's Politics», in *Aristotle on Nature and Living Things*, ed. Alan Gotthelf (Pittsburgh: Mathesis Publications, 1985), David Keyt, «Three Fundamental Theorems in Aristotle's Politics», *Phronesis* 32 (1987): 54-79, Stephen Everson, «Aristotle on the Foundations of the State», *Political Studies* 36 (1988): 89-101, J. Roberts, «Political Animals in the Nicomachean Ethics», *Phronesis* 34 (1989): 185-202, Fred D. Miller, *Nature, Justice, and Rights in Aristotle's Politics*, pp. 27-61, Julia Annas, «Aristotle on Human Nature and Political Virtue», *Review of Metaphysics* 99 (1996): 731-54, C. D. C. Reeve, «The Naturalness of the Polis in Aristotle», in *A Companion to Aristotle*, ed. Georgios Anagnostopoulos (Oxford: Wiley Blackwell Press, 2009), Adriel M. Trott, «*Logos* and the Political Nature of *Anthropos* in Aristotle's Politics», *Polis* 27 (2010): 292-307.

his role within his larger social and political context – which would consequently underscore, as Aristotle's argument does, the role of practical reason in the pursuit of moral and civic virtue[23]. Man's function could be ascertained, on this view, in keeping with the argumentation of the biological works and without invoking some larger cosmic or universal teleology[24].

However, instead of pursuing this line of thought, Nussbaum contends that the *ergon* argument fundamentally differs in approach from other forms of function argumentation in the biological and zoological works. For Nussbaum, his argument in *NE* I. 7 is strictly concerned with an analysis of the various capacities of human beings, asking which are and are not shared by other living organisms. In the end, this argument shares with other forms only their interest in the distinctive or characteristic – not their goal of analysis (*DM* 101). It simply asks what this thing does that nothing else does. Thus, Nussbaum begins her interpretation by attempting to sever the discussion of the *Nicomachean Ethics* from those of the biological works. It is not clear, however, that Aristotle's function arguments in the biological works in fact proceed in the way Nussbaum claims they do, or that this procedure is consequently departed from in his ethical and political works.

[23] On Aristotle's account of practical wisdom see Norman O. Dahl, *Aristotle, Practical Reason, and Weakness of Will* (Minneapolis: University of Minnesota Press, 1984), pp. Alfonso Gomez-Lobo, «Aristotle's Right Reason», *Apeiron* 25 (1992): 15-34, Sarah Broadie, *Ethics with Aristotle* (Oxford: Oxford University Press, 1993), pp. 179-266, Joseph Dunne, *Back to the Rough Ground: Practical Judgment and the Lure of Technique* (South Bend; University of Notre Dame Press, 1997), pp. 275-315, Linda Zagzebeski, *Virtues of the Mind* (Cambridge: Cambridge University Press, 1996), pp. 137-58, 211-32, John McDowell, «Virtue and Reason», in *Mind, Value, and Reality* (Cambridge: Harvard University Press, 2001), Ch. 3, Richard Kraut, *Aristotle: Political Philosophy* (New York: Oxford University Press, 2002), pp. 50-98, Eugene Garver, *Confronting Aristotle's Ethics: Ancient and Modern Morality* (Chicago: University of Chicago Press, 2006), pp. Rosalind Hursthouse, «Practical Wisdom: A Mundane Account», *Proceedings of the Aristotelian Society* 106 (2006): 283-307, Jessica Moss, «Virtue Makes the Goal Right: Virtue and Phronesis in Aristotle's Ethics», *Phronesis* 56 (2011): 204-61, and Julia Annas, *Intelligent Virtue* (Oxford: Oxford University Press, 2011).

[24] A good example of this approach can be seen in Stephen G. Salkever, *Finding the Mean: Theory and Practice in Aristotelian Political Philosophy* (Princeton: Princeton University Press, 1994), pp. 13-57.

Moreover, it will perhaps strike the careful reader of the *Nicomachean Ethics* as odd that no element of this argument is perspicuous in the text itself. Where, we might rightfully ask, does Aristotle speak of the importance of «conceptual community» to the moral life, or of the need we all have to justify to others our basic notions of the human good? Where does Aristotle speak of «self-respect» as a basic good? Is it one of the virtues? And most importantly, how can we be sure that what Aristotle is after here is not dialectical refinement and clarification of common opinion, but a description of what man is by nature, prior to deliberation and choice[25]? It seems curious that Nussbaum cannot answer any of these questions by an appeal to the text of the *NE*, but must appeal to such a speculative reading of Aristotle's ethical methodology. In this paper, then, I would like to critically examine Nussbaum's suggestion as well as the possible sources of her puzzlement through a close reading of her views of Aristotelian methodology, form, teleology, and function argumentation. By doing so, I hope to challenge contemporary compatibilist interpretations of Aristotelian natural philosophy with a particular focus on the implications for understanding Aristotle's conception of the human good[26].

Form, Teleology, and Compatibilism

Unfortunately, there is very little discussion of form, teleology, or function argumentation in the *Fragility of Goodness* (1986), *Love's Knowledge* (1991), *The Therapy of Desire*

[25] For a good critique of Nussbaum on these points see John Cooper, «Aristotle on the Authority of Appearances», in *Reason and Emotion: Essays on Ancient Moral Psychology and Ethical Theory* (Princeton: Princeton University Press, 1999), pp. 281-91; Terence Irwin, «Ways to First Principles: Aristotle's Methods of Discovery», *Philosophical Topics* 15 (1987), p. 131, n. 4; and William Wians, «Saving Aristotle from Nussbaum's *Phainomena*», in *Essays in Ancient Greek Philosophy V*, *Aristotle's Ontology*, ed. Anthony Preus and John P. Anton (Albany: SUNY Press, 1992), pp. 133-49.

[26] Those who claim that Aristotle's teleology is ultimately compatible with various materialistic and reductionistic approaches include David Charles, «Aristotle on Hypothetical Necessity and Irreducibility», *Pacific Philosophical Quarterly* 69 (1988): 1-53, Terence Irwin, *Aristotle's First Principles* (Oxford: Clarendon Press, 1988), pp. 109-12, and Richard Sorabji, *Necessity, Cause, and Blame* (Ithaca.: Cornell University Press, 1980), p. 153.

(1996), *Upheavals of Thought* (2003), *Frontiers of Justice* (2007), *Political Emotions* (2015), or any of her more recent works and what Nussbaum does mention is often given in terms of what might be called a form of metaphysical agnosticism[27]. In her earlier work on the *De Motu Animalium* (1978), however, the situation is quite different. Far from being agnostic, Nussbaum here abjures any metaphysical reading of the notion of form. She takes, as Jonathan Lear has observed, a strongly «compatibilist» view toward Aristotelian biology[28]. On this account, form is regarded as nothing more than a certain «organization-to-function» of a given organism, not as a real and irreducible principle distinct from the substrate of matter (*DM* 74)[29]. For instance, in the first interpretative essay of the *De Motu* volume she gives three reasons for the superiority of formal accounts as opposed to the purely material explanations offered by the atomism of Democritus. The three reasons are, first, that formal accounts are simpler; second, that they are more general and thus predictive; and third, that they only invoke the relevant data (*DM* 70).

While all three of these reasons might be true enough concerning formal explanation, it seems as though none of them really correspond to what Aristotle himself says about the priority of form: that form, as distinct from matter, gives actuality to matter and most properly tells us what a thing is. Most significantly, form is explicitly identified in *Physics* II. 1 as a principle of actuality, correlated to matter as a potential principle (*Phys*

[27] See Nussbaum, *Love's Knowledge: Essays on Philosophy and Literature* (New York: Oxford University Press, 1991), *The Therapy of Desire: Therapy and Practice in Hellenistic Ethics* (Princeton: Princeton University Press, 1994), *Upheavals of Thought: The Intelligence of the Emotions* (Cambridge: Cambridge University Press, 2003), *Frontiers of Justice: Disability, Nationality, Species Membership* (Cambridge: Harvard University Press, 2007), *Political Emotions: Why Love Matters for Justice* (Cambridge: Harvard University Press, 2015).

[28] Lear, *Aristotle: The Desire to Understand*, p. 36. For a good overview and classification of various approaches to Aristotelian teleology see Bradie and Miller, «Teleology and Natural Necessity in Aristotle», pp. 133-36. For a good account of the compatibilist approach see Wolfgang Weiland, «The Problem of Teleology», *Articles on Aristotle*, Vol. 1, eds. Jonathan Barnes, Malcolm Schofield, and Richard Sorabji (London: Duckworth, 1975), pp. 141-42.

[29] Another good example of this approach is Jonathan Barnes, «Aristotle's Concept of Mind», *Proceedings of the Aristotelian Society* 72 (1971), pp. 63-89.

193b1). This is to say that matter is not able, *by definition*, to reduce or bring itself to actuality. Furthermore, by this account, a thing is more properly said to be what it is when it exists in actuality than when it exists potentially (193b7-8). Matter is thus not only unable by itself to account for the existence of a thing, it is also unable to tell us *what* a thing is – which is, after all, precisely what a scientific account should do. Formal accounts are important for Aristotle, therefore, because they cite the principle of actuality which enables the given entity to be intelligible in the first place. As Aristotle notes, «what is potentially flesh or bone has yet its own nature, and does not exist by nature, until it receives the form specified in the definition, which we name in defining what flesh or bone is» (193b1-3)[30].

Matter and the Actuality of Form

Nussbaum is very shrewd, however, in appropriating the language of form to suit her materialism. She cites various texts from the *corpus* which, taken by themselves and read strictly, do not explicitly implicate form as an irreducible principle distinct from matter. For instance, she uses Aristotle's famous «snub» example from *Physics* II. 1 to emphasize form's inextricable relation to matter, as well as his claim that natural beings should be studied neither apart from matter, nor according to matter alone (*Phys*194a13-15)[31]. This is clearly the case

[30] O'Rourke has given an excellent summary of Aristotle's account of form: «As a *flatus vocis*, 'form' is an exceptionally flat sounding term with which to denote what is for Aristotle the defining element of a real life substance. It carries for the ordinary ear the meaning of external or superficial, suggesting «outline», «condition», «contour», «shape», or «appearance». The popular perception is of an outer shell rather than an inner core; it is shallow in contrast with the philosophical significance of Aristotelian form. *Eidos* is not a profile or lineament which may simply be perceived as *Gestalt*, but the intrinsic, determining principle which actualizes a corresponding potential prime matter and thus radically constitutes the composite as a single individual. For Aristotle, the thing's *eidos* is the origin of its identity in what it is, distinct from all others in its mode of being. It is what makes each thing at its very foundation that which it is . . . its «beingness», in virtue of which it is an existent individual endowed with concrete determination». See Fran O'Rourke, «Aristotle and the Metaphysics of Evolution», *Review of Metaphysics* 58 (2004), pp. 14-15.

[31] As we will see, however, her understanding of form taken from these passages is of a different sort of material account, not of a distinct and irreducible principle.

when she criticizes, *in persona Aristotelis*, the «clumsy» reductionist accounts of Democritus:

> Thus when I criticize your material accounts for living beings, I do not mean to suggest that we want to explain their behaviour on the level of form where form is distinct from, and seen in abstraction from, matter. I am distinguishing two levels on which we can give a material account: the level of ultimate particles, and the level of matter's functional states. Perception, desire, etc., are not physical in the sense that the best account of them involves reference to the basic particles of atomistic (or any other) physics. But they are physical in the sense that an account of what they are necessarily involves matter (*DM* 73).

It is tempting to read this last sentence in the light of the traditional, metaphysical Aristotelian interpretation. For it is surely the case that every formal account is going to necessarily involve matter. But the question for Nussbaum, then, is whether matter is the *only* constituent of the organism under investigation. The earlier portion of the quoted passage seems to suggest this. The distinction being made is between two levels of material account: one atomistic, the other on the level of functional states. The distinction remains ambiguous, however, and the line following the quoted passage fails to shed more light: «form is not a constituent of the animal over and above its material constituents (*DM* 73). Unfortunately, the diction here is somewhat vague. The phrase «over and above» could refer either to a principle wholly abstracted from matter, which the forms of natural beings, at least, are not; or, it could refer to a principle only conceptually distinct from matter; or, it could refer to a principle both conceptually and really distinct from matter, which form in fact is. Which one of these three does Nussbaum have in mind when she claims that form is not a constituent «over and above» matter?

The parenthesis which follows is telling. Nussbaum adds that the term «compound», used so often by Aristotle to note the composite of matter and form (e.g., *Metaphysics* 1041b12), might mislead one into thinking form is «over and above» the

material constituents. In saying this, however, she does not appear to be reading Aristotle's use of compound in any obvious sense. For she is saying «compound» does *not* indicate a composite of one principle and another, i.e., form, but rather that it is «the arrangement of the [material] constituents themselves» (*DM* 73). This phrase itself is ambiguous, because either a metaphysical or compatibilist reading of form could understand the composite as the arrangement of material constituents. The pressing concern is whether a *distinct* principle is affecting the arrangement. Nevertheless it seems clear that this reading of «compound» points to an understanding of form which is *only* conceptually distinct from matter. Why else would Nussbaum caution us as to a misreading of the term «compound?» It is implausible to think that she would be worried we might take the form of an organism as wholly abstracted from matter, like an angel or a mathematical object. Consequently, what she appears to mean by saying that form is not a constituent «over and above» matter is that form is not itself a real principle. On this account, matter is the only real principle of natural beings, matter which seems to arrange itself on its own without the actuality of form.

Form and the Unity of Natural Compounds: Metaphysics VII. 17

And yet there appear to be a number of difficulties with this interpretation. For example, in *Metaphysics* VII. 17, by way of closing the discussion of form as primary *ousia*, Aristotle considers the precise question whether form is something *both* conceptually and really distinct from the material constituents of a natural being. The unity of composite, natural wholes are depicted in this passage not in terms of aggregates (*me hos soros*), but after the manner of syllables (*Meta* 1041b13)[32]. A

[32] Lear offers a good account of this passage: «For Aristotle, an organized unity can always be distinguished from the matter which constitutes it. For an organized unity to be *organized*, there must be a principle responsible for the organization . . . A heap is not really a unity at all and thus may be thought of as a mere agglomeration of its material constituents. The syllable ba, by contrast, cannot be thought of as a mere heap of its constituents b and a. To be a syllable rather than a mere con-

syllable, Aristotle says, upon analysis, is not reducible to its letters; the syllable «ba» is not reducible to the letters «b» and «a». In analogous fashion neither is flesh reducible to the elements of fire and earth. The reason why such a reduction is not possible is because after dissolution the compound no longer exists, even though the material constituents remain. Therefore the syllable is counted as some particular, unified whole; not merely the letters, vowel and consonant, but something else besides. And flesh is not simply fire and earth, or hot and cold, but something else besides. So the question naturally rises: what is this something else «besides?» For Aristotle, it must be the compound itself. It cannot be an element (*stoicheion*), for then something like flesh would consist in fire, earth, and this other element, and we would be back to the original problem of trying to understand the disparate elements as a unity. But if this something else besides is a compound, and a compound is presumably made up of disparate elements, how can we avoid imputing this same problem to the compound? For is not a compound simply an aggregate of elements?

Aristotle's answer to this is an emphatic no; and it seems clear that it is a denial of the attempt to reduce formal causes to nothing more than the arrangement of material constituent parts. As Aristotle notes, «it would seem that this is something, and not an element, and that it is the cause which makes *this* thing flesh and *that* a syllable. And similarly in all other cases» (1041b25-27). The substance of each thing, he goes on to say, is the primary cause of the being of a thing, and it is not an element but a principle (*he estin ou stoicheion all' arche*) (1041b32). An element is furthermore expressly identified as the matter of a thing, that into which a thing is divided (*stoicheion d'estin eis ho diaireitai enuparchon hos hulen*) (1041b33). On this account, therefore, natural beings cannot be understood simply as aggregates of material elements, because material elements themselves are insufficient to account for the unity of a natural object.

cantenation of the shapes b and a, it must have been formed either in writing or speech, by a person who also understands the language. This person – or the linguistic knowledge in his soul – functions a principle of organization: he forms the syllable into the syllable that it is». See Lear, *Desire to Understand*, p. 21.

For Aristotle, the unity of these natural compounds can only be accounted for by positing a distinct immaterial principle which gives existence and unity to the organism[33].

Teleological vs. Causal-Efficient Accounts

I would like to turn now to see how deeply Nussbaum's compatibilist reading affects her understanding of teleology and form. As we noted earlier, teleology, on her view, is ultimately a description of the function of an organ, system, or pattern of behaviour within the overall maintenance of an organism. By «maintenance» Nussbaum means a system of interrelated capacities which tend to promote and maintain the mature functioning of the organism and/or to perpetuate the system beyond the individual life by reproduction (*DM* 78). Accordingly, a teleological account will be one that describes how a certain organ or pattern of behaviour contributes to the maintenance of the organism as a whole. Such an account, she writes, must have two parts: a specification of what it is to be that sort of creature – the *logos*, which she describes in a general way as the form or «functional-organization» of the species under consideration; and secondly, an analytical account that shows how a particular process or organ contributes to the realization or maintenance of some component of the *logos* (*DM* 78). The «logos-state» is thus the goal or end with reference to which growth and particular activities and behaviour patterns are to be explained[34].

Throughout the first essay of the *De Motu* volume, Nussbaum compares such teleological accounts to the «unwieldy» atomistic accounts of Democritus, which she takes to be the ancient counterpart of modern scientific efficient-causal accounts. Teleological accounts have the advantage over efficient-causal accounts, she claims, for two important reasons. First, a teleological account, unlike an efficient-causal account, contextualizes the given process or pattern of behaviour under consideration within the maintenance of the system as a whole,

[33] See for instance *Metaphysics* VIII. 3 (1043b5).

[34] Nussbaum cites *PA* 640a18; cf. *GA* 778b3.

thus showing how it is related to the other systems and activities of the organism (*DM* 79). Efficient-causal accounts, by contrast, must always remain isolated from an explanation of how a given activity affects the organism as a whole. This reason alone would not be enough to discount the possible advantage of efficient-causal accounts if it were not the case that plants and animals were mutable and self-maintaining:

> For then, given a suitable amount of information about the initial state and the laws of efficient-causal interaction, we would be able to adequately predict or explain the outcome. But for living beings as we know them, the teleological account that begins with the creature's *logos* is superior in generality and predictive value. In a wide range of circumstances, an animal or plant responds appropriately, so as to fulfil or maintain some part of its *logos*. As the circumstances change, the behavior, and the efficient-causal laws that explain it, change also. What remains the same, and unifies the various cases, is the teleological law that the behavior is whatever will promote the flourishing of the mature organism (*DM* 79).

The second, and definitive, reason why teleological accounts are superior to their efficient-causal counterparts is due to their ability to account for various responses of an organism to its circumstances and environment (*DM* 79). Empedocles, for example, argues that the growth of plants can be explained solely by the laws of matter: the downward push of the roots occurring due to the fact «that earthy matter pushes down, the upward branching due to the fiery matter pushing up» (*De Anima*, 415b28). But an Aristotelian, she argues, would contend that such an explanation would ultimately fail to explain why it is that, when sources of water and light change position, the rooting and branching change also (*DM* 79). So while heliotropism defies Empedocles' efficient-causal description, Aristotle is able to explain the change in a teleological manner by pointing out how the activity contributes to the maintenance of the health and life of the entire organism[35].

[35] O'Rourke, «Aristotle and the Metaphysics of Evolution», pp. 40-41.

Thus, the material laws cited by efficient-causal accounts, she concludes, while remaining a concurrent mode of explanation, must ultimately be ancillary to a unified, teleological description which accounts for activity in terms of a *logos*-state.

The Nature and Role of Function Argumentation

With this in mind, I would like to turn now to a consideration of how Nussbaum's understanding of form and teleology leads to her own very distinctive account of Aristotelian function argumentation. The first thing to notice about these accounts, she argues, is that they are always given with reference to a «containing system», i.e., they say the function of x is y in terms of the maintenance of the entire system of the organism in question (*DM* 81). This implies that functional accounts are used primarily for the systems of living organisms, and only derivatively for artifacts. Plato's pruning-knife, the function of which is discussed extensively in Book I of the *Republic*[36], and other detached artifacts are amenable to functional accounts only insofar as they have reference to the needs and desires of the beings who use them (*DM* 81)[37]. Therefore, what we demand when we ask for the function of x is an analytical account that begins with a description of the organism's (or artefact's) *logos*, and proceeds to explain how x enables organisms of this sort to maintain themselves.

Such an account, moreover, will take place on two levels. On the first, formal level, a list is made up of what Nussbaum calls the «constitutive activities» of the organism in order to show what contribution each of these makes to the mainte-

[36] For a helpful account see Georgios Anagnostopoulos, «Ancient Perfectionism and its Modern Critics», in *Human Flourishing*, ed. Ellen Frankel Paul, Fred D. Miller, and Jeffrey Paul (Cambridge: Cambridge University Press, 1999), pp. 203-09 as well as Ariew, «Platonic and Aristotelian Roots of Teleological Arguments», pp. 7-32.

[37] As Nussbaum notes, «Plato, in *Republic* I, suggested a three-part account of functions, from which I feel it is important to distinguish my own account. He suggested that the function of a part or an artifact is (1) what it alone does, or (2) what it does best, or (by implication) (3) what it is designed to do (352e-353a). These criteria pick out different functions; and Plato nowhere tells us the point of giving functional accounts, what they are supposed to explain». See Nussbaum, *DM*, p. 81.

nance of the organism as a whole (*DM* 82). This is of course the same first step in teleological explanation: the identification of the *logos*-state. On the second level, once the enumeration of constitutive activities is complete, a more detailed account is required at the level of contingent material realizations of functional states; that is, an account which actually describes particular activities taking place in particular living creatures (*DM* 83). Thus, when Nussbaum claims that the «function of X in O is to y» she means:

1) That y is a «constitutive activity» in the system O (an activity which would be mentioned in the best analysis of how O maintains and reproduces itself).
2) y is an ongoing or regular activity of X in O (to eliminate cases in which a part performs a useful function by accident or sporadically); x has a stable disposition to y in O.
3) X or some functional analogue of X is necessary for y-ing in O.
4) Under normal circumstances X is necessary for y-ing (or good y-ing) in O's as normally constituted (*DM* 84).

Nutrition, for example, may be cited as one of the constitutive activities of a higher-level organism, but the physician or scientist interested in such an organism will require much more in order to understand the function of this particular system within the organism's overall self-maintenance. For instance, this will lead him or her to the study of the circulatory system, which transports the requisite nutritional material, which in turn will lead toward study of the heart. The circulatory system and heart will both, of course, be themselves amenable to functional description, but only, again, as they contribute to the overall health and maintenance of the organism in question.

Nothing, we should add, that does not pertain to the overall function of the organism will go into a functional account of a given organ or activity (*DM* 83). The function of the heart in such an organism is to pump blood throughout the body. It does other things as well: it makes a thumping noise; it leaps from fright or joy. But these are not activities exclusive to the heart, and these will not enter into the functional account of the heart

because they do not pertain to the overall maintenance of the organism – only the pumping activity does this. Thus, while providing an analytical account of the role x plays in the overall maintenance of y, functional accounts also indicate that which is singular or characteristic about an organ or activity (*DM* 84).

Difficulties with the Compatibilist Account

Now that we have examined Nussbaum's interpretation of form, teleology, and function argumentation, I would like to turn to a number of questions to which it gives rise. First, it could be objected, as Nussbaum notes «that a great many characteristic activities, especially of the higher creatures, do not contribute to self-maintenance or reproduction» (*DM* 82 n. 27). The speculative intellect of human beings might be the most striking example which Nussbaum raises. She maintains that Aristotle would hold that *most* activities are somehow connected to the nutritive soul, but in the case of the speculative intellect he could either refuse altogether to give its purely theoretical exercise a functional account, or he could make an exception to the usual rule that functional accounts are relative to nutrition and reproduction.

And yet the question certainly arises as to whether Aristotle indeed lays down the «usual rule» Nussbaum mentions. For instance, where in the text does he argue that a functional account must be relative to a self-maintaining system? Moreover, even if we were to grant that he does, why wouldn't Nussbaum assume that he would choose to give a functional account of the theoretical intellect? Is it not a power or capacity with a particular job to do? Why would she not automatically see it as having a function within the self-maintaining system of the human being? The answer, presumably, is that by self-maintaining system, as the passage from her commentary on the *De Motu* indicates, Nussbaum only means the so-called «nutritive» soul. As she notes slightly later: «this capacity to maintain functional states through self-nutrition and to propagate them through reproduction is the mark that sets off the liv-

ing from the lifeless» (*DM* 76). To this effect she also quotes from Book III of the *De Anima*: «by life we mean self-nutrition, growth, and decay» (412a14-15); and «the living *qua* living, is a self-nourishing body, so that food is essentially, not accidentally, related to the living» (416b9-11). So if self-maintenance is simply equatable with the nutritive soul, speculative activity will not be able to be handled by a functional account because any direct relation between theoretical speculation and nutrition is, at best, tenuous.

Moreover, speculative activity will not be the only activity that will be difficult to account for functionally. For neither does much of the activity of the practical intellect appear to be directly related to self-maintenance as Nussbaum defines it, a point which she curiously admits herself (*DM* 86). As we noted before, the most general form of teleological explanation is «x happens for the sake of y», or, in functional terms, «the function of x is y». But there is another form of teleological explanation which may be expressed, «he or she does x for the sake of y», or «all animals move for the sake of something». Here, the goal is pursued according to an animal or a human being's desires or beliefs. In this regard, Nussbaum argues that most of an animal's desires and beliefs are in some way related to self-maintenance (*DM* 86-87). Consequently, many of these actions can be analyzed functionally, showing how a certain intentional behavior fits into the overall well-being or maintenance of the animal in question. And yet many of the intentional activities of human beings, she admits, do not bear any obvious connection to self-maintenance. Sometimes, in fact, our actions are directly harmful to self-nutrition and life[38]. The intentional form of teleological explanation thus seems intractable to functional analysis. Nussbaum attempts to save this sort of inten-

[38] For Nussbaum this is another defect of Plato's account of practical rationality: «There is another irrational desire that Plato never considers. He never entertains the thought that there may be in human beings a desire simply to act in a perverse and irrational way. For in describing Phaedra's situation we have ignored the possibility that she will eat the single bagel just in order to go against good reasons, to show that she is not bound by reasons, or goodness, or anything else». See Nussbaum, *LK*, p. 121 as well as Julia Annas, «Action and Character in Dostoyevsky's *Notes from Underground*». *Philosophy and Literature* 1 (1977): 257-275.

tional action by explaining that these kinds of action also tend for the most part to realize some means or component in a system of ends. There is a causal relation, in other words, between the ends we seek and our beliefs and desires, a point which Nussbaum acknowledges herself: «to ascribe to the window-smasher a desire to smash a window and a belief that if the window is to be smashed a rock must be thrown is to give a teleological account: we begin with a goal, and show how the agent does what is, in the circumstances, necessary to realize it» (*DM* 88)[39].

The Developmental Power of Formal Causes

As Nussbaum notes, it is important to realize it is the «generality and economy» that recommends these two types of teleological/functional accounts over their efficient/causal counterparts (*DM* 87). But if these are the only advantages of teleological/functional accounts, then we know that a purely material account is sufficient in Nussbaum's view to explain the *nature* of an organism, though it will be inferior in terms of predictive and analytical power[40]. This brings to the fore a second objection. If, for Aristotle, form is simply the *de facto* organization of a material being, and not the *principle* of that organization, then it is impossible for form to account for, not only the being and definition of a thing, as we remarked before,

[39] Furthermore, Nussbaum adds, there is no genuine efficient-causal explanation of intentional activity that remains on the formal or functional level (*DM* 88). It is possible to speak of the physiological aspects of the window-smashing act, but, as Nussbaum remarks, there probably will not be stable or constant relationships between the two levels. A form-type may be instantiated, in different animals and at different times, in various different sorts of matter. Hence there is no way for the Democritean challenger to avoid moving away from teleology in order to explain such actions.

[40] Formal accounts for Nussbaum will also have some aetiological relevance; that is, they may be able to say something about why a certain organ is present in a particular form with a particular structure. For example, to know the importance of the digestive system to a mouse will explain different adaptations of this system in different environments. In this regard, Nussbaum quotes from the *History of Animals*: «Desert mice develop digestive systems that enable them to go without water in the summer; if they drink the amount of water that regular mice do, they die». See Aristotle, *HA* 606b23.

but also the reduction of potency to act in the development of an organism or in a particular action[41]. In this regard, Lear observes that what the compatibilist reading fails to account for is the developmental power of formal causes: «the form of a developing organism is not merely its achieved structure, it is a force in the organism for attaining ever higher levels of organization until the organism achieves its mature form[42]». That the order present at the level of the zygote would be sufficient to account for the order of a mature human being would be highly questionable for Aristotle, tantamount to saying that the order present in a pile of bricks is sufficient for the pile to develop into a house[43]. For Aristotle, formal causality is never static and for this reason teleological/functional explanations must consist in more than a part/whole analysis. It must also include form as the principle of continuous organization (until maturity if not impeded) of the material principle.

It may be objected, however, that because the first part of any teleological explanation is, again, a specification of what it is to be the sort of organism under discussion, and, what is more, a normal and properly functioning adult of that species (*DM* 78), that Nussbaum is recognizing the importance of the fully-actualized *logos* or end-state to teleological explanation. This is, as it stands, true enough. For Aristotle, the most basic sense of *teleios* attaches to living things, particularly to their formation and development. More specifically, the term can imply maturity (*Pol* 1260a32); when, for instance, oak trees or swans stop growing and are able to reproduce, when they reach the peak of their development, we say they are *teleios* speci-

[41] See *Metaphysics* VII. 3 (1029a20-26) and VII. 1 (1042a24-32). On the question of prime matter and potency see Ernan McMullin, «Four Senses of Potency» in *The Concept of Matter in Greek and Medieval Philosophy*, ed. Ernan McMullin (South Bend: University of Notre Dame Press, 1965), pp. 312-19.

[42] Lear, *Aristotle: The Desire to Understand*, p. 39.

[43] Lear captures this point well: «Aristotle finds the idea of structure emerging from necessary properties incredible, because for him the necessary processes could not possibly be grounded in an actual structure. The idea that the order which exists at the level of flesh would be sufficient to generate the order required for human life was as absurd for Aristotle as the idea that the order that exists in a pile of wood would be sufficient for the pile to turn itself into a bed». Lear, *The Desire to Understand*, pp. 39-40.

mens of their respective species. This sense of completion or perfection, although used in the context of biology, has definite parallels to ethical development. A child is not fully formed, not just in physical terms but also in mind and character, and for this reason he or she cannot be called *eudaimon* (*NE* 1100a1-2). Moreover, it fits well as a description of a fully formed human being, one who has the ethical virtues, like *phronesis*, to guide him or her. A person who has not fully acquired the disposition of courage, generosity, and the other virtues is not mature in an ethical sense. The fact that a particular individual may have reached full biological development is not usually enough; some people are young in body, others are young in character (*NE* 1095a7-8). Hence we can translate *teleios* as «having reached an end of development», where *telos* or «end» means a culmination in a process of development, and not simply the termination or last stage (*eschaton*) in a series of changes something undergoes. The last stage in any organic development is of course death, but Aristotle is careful to point out that death is not a true *telos*: «The poet was carried away by absurdity when he said 'he has the end (*teleuten*) for the sake of which he was born.' For not every stage that is last (*eschaton*) is meant to be an end (*telos*), but only the best» (*Phys* 194a28-33)[44].

Significantly, however, Nussbaum's account cannot explain on what principle, for instance, the matter of a zygote develops into a foetus and eventually a fully formed human being. While she can *describe* such a change, even provide an account of how the biological/physiological details contribute to the health and well-being of the mature organism, in the end she allows no way for the potency of the zygote to be reduced to actuality. In other words, she affects a curious disjunction between formal and final causality. For Aristotle, the «organization-to-function» of matter at the level of a zygote is ulti-

[44] The etymological source of *teleios* helps explain why «fully developed» and «mature» work as equivalents of *teleios*: *teleios* comes from the term *telos*, and to reach an end is to be *teleios*. In the case of human beings this point is reached sometime after adulthood but before death, and hence Solon's claim that we need to wait until death (*telos horan*) before calling someone happy is somewhat dubious (*NE* 1100a10-16).

mately insufficient to explain the organization-to-function at the level of a mature human being. And as there is no form actualizing or directing matter into maturity, nature must make a leap – something Aristotle would not understand nature as able to do[45]. So, in the end, Nussbaum can only describe physical change, not account for it. And if she were to contend that it can be explained by material principles alone, we know, at the very least, that this cannot serve as an accurate interpretation of Aristotle.

Teleology, Chance, and Spontaneity

As several scholars have noted, Aristotle's discussion of chance and spontaneity in Book II of the *Physics* can be considered as an outright condemnation of compatibilist teleology[46]. For Aristotle, chance (*tuche*) and spontaneity (*to automaton*) are considered in these chapters of the *Physics* partly as candidates, partly as foils, for Aristotle's notion of final causality. It is suffice to say here that, for Aristotle, a spontaneous event, insofar as it is the inevitable outcome of material processes, is directly opposed to teleology. Spontaneity provides cases of apparent teleology, brought about, not by predisposed form, but by the necessary forces of matter working within or even outside an organism[47]. Natural selection, in this sense, would likely be considered by Aristotle as a spontaneous event[48]. And, in a well-known passage at *Physics* II. 8, Aristotle

[45] O'Rourke, «Aristotle and the Metaphysics of Evolution», pp. 31-33.

[46] See for instance Lear, *Aristotle: The Desire to Understand*, p. 39, William Charlton, *Aristotle: Physics Book I and I* (Oxford: Clarendon Press, 1982), Sarah Waterlow [Broadie] *Nature, Change, and Agency in Aristotle's Physics* (Oxford: Clarendon Press, 1982), Sheldon Cohen, «Aristotle on Cold, Hot, and Teleological Explanation», *Ancient Philosophy* (1989): 255-70, John M. Cooper, «Aristotle on Natural Teleology», pp. 107-29, and «Hypothetical and Natural Necessity» pp. 130-47, and Alan Gotthelf, «Aristotle's Conception of Final Causality», pp. 204-43.

[47] Aristotle distinguishes «luck» from «chance» in that the former involves agents capable of deliberation and choice, i.e. human beings, whereas the latter is restricted to non-rational substances. For a good account see Lindsay Judson «Chance and the 'Always For the Most Part'» in *Aristotle's Physics: A Collection of Essays*, ed. Lindsay Judson (Oxford: Clarendon Press, 1991), p. 73-74.

[48] O'Rourke, «Aristotle and the Metaphysics of Evolution», pp. 26-27.

considers a type of natural selection only to reject it. Why then should it not be, he asks,

> That our teeth should come up of necessity —the front teeth sharp, fitted for tearing, the molars broad and useful for grinding down the food— since they did not arise for this end, but it was merely a coincident result; and so with all other parts in which we suppose there is a purpose? Wherever then all the parts came about just what they would have been if they had come to be for an end, such things survived, organized spontaneously in a fitting way (198b23-31).

Why then, aren't the necessities of matter enough to ground (allegedly) purposive activity? Why is it necessary for us to posit an immaterial form reducing itself to ever more perfect levels of actuality? These are strange questions coming from the Aristotle depicted by Nussbaum. Why would her Aristotle even be interested in anything other an account based upon the necessities of matter alone? He would be interested, again, only to the extent that a teleological account is more general and economical than its efficient-causal counterpart. Empedocles, the source of the account considered by Aristotle above, is faulted by Nussbaum only because his theories failed in generality. She reads Aristotle in this passage as accusing Empedocles «of explaining development piecemeal and of not recognizing that what comes to be is, at any stage of the process, an organic whole» (*DM* 79 n. 22). For Nussbaum, a significant parallel passage is found in the first book of the *Parts of Animals* (640a1-640b5):

> The plan of the house, or the house, has this and that form; and because it has this and that form, therefore is its construction carried out in this or that manner. For the process of evolution is for the sake of the thing finally evolved, and not this for the sake of the process. Empedocles, then, was in error when he said that many of the characteristics presented by animals through what happens (*to sumbenai*) to them in development, for example, that 'foetus gets twisted and so the backbone is twisted into pieces,' he was igno-

> rant that the seed must have the power that belongs to the process of composition, and the effecting agent is not prior only logically but also in time: for a human being comes to be from a human being (*Parts of Animals* I. 1 640a20).

As we see here, Empedocles is again cited for theorizing in error because of his claim that many of the characteristics presented by an organism were merely the result of incidental occurrences during their development. The structure of the backbone, on Empedocles' account, is due to its being broken while the foetus turned in the womb. «In so saying», Nussbaum quotes Aristotle, «he overlooked the fact that propagation implies a creative seed endowed with certain powers» (640a22-23). However, this would not seem to be a passage that enforces Nussbaum's argument, as it appears to locate the integrity of living organisms in the developmental power of formal causes. Nussbaum, however, reads the passage only as highlighting the need for *generality*, for the priority of the account of the *logos*-state in scientific explanation. The efficient-causal laws that explain a certain stage of organization will change, but what remains the same, and unifies the various stages of organization over time, «is the teleological law that the behavior is whatever will promote the flourishing of the mature organism» (*DM* 79).

The Centrality of Final Causes

Yet this seems to miss the full force of Aristotle's criticism of Empedocles, both in this text and in the second book of the *Physics*, which a more comprehensive reading of these texts should make clear. The portion of this argument at the beginning of the *Parts of Animals* begins with a question concerning method. Is the proper subject of our exposition, Aristotle asks, that with which the earlier writers concerned themselves, namely, the way each thing is naturally generated, or rather the way it is (*PA* 640a12-13)? The fittest mode of treatment, Aristotle will conclude, is to say, a man has such and such parts, because the essence (*ousia*) of man is such and such, and

because they are necessary conditions of his existence (640a34)[49]. The principle being employed is that a certain genesis, a certain process of development, is consequent upon form, and not vice versa (640b1)[50]. The usual craft analogy is stated a little earlier: «for in house building too, these things come about because the form of the house is such and such, rather than its being the case that the house is such and such because it comes about thus» (640a17-18). As we have seen, however, Nussbaum, uses the text to defend the exact opposite view. Only because material constituents for the most part come to be in such and such a way, she argues, are we able to say an organism has a particular form. On this account, then, form is not an inherently guiding, actualizing principle; it is only a more convenient and more analytically powerful way of talking about the arrangement of matter[51].

In particular, I would like to note the use of the Greek verb *sumbenai* from the passage above. Interestingly, Aristotle uses this same verb in the *Rhetoric* and the *Poetics* in reference to the understanding achieved by the spectator of *mimesis*[52]. As seen here, Aristotle's usage seems to juxtapose the spontaneous and the necessary, so that what is first grasped as what «just happens» is later grasped as «what follows» from some cause or principle. The use of *sumbenai* in these passages suggests an act of understanding in which some cause is apprehended in a

[49] For a good account of this passage see Cooper, «Hypothetical Necessity», in *Knowledge, Nature, and the Good*, pp. 130-48.

[50] Guthrie captures this point well: «the ordered and definite works of nature do not possess their character because they developed in a certain way. Rather they develop in a certain way because they *are* that kind of thing, for development depends on the essence and occurs for its sake. Essence does not depend on development». See Guthrie, *History of Greek Philosophy,* vol. VI, p. 110 n. 1.

[51] Gotthelf offers a good summary of this view: «living organisms and their parts do come to be by simple material necessity alone; material-efficient causes are the only actual *causes* involved». See Gotthelf, «Understanding Aristotle's Teleology», p. 76. On such an account, teleological explanations fulfill a merely heuristic role.

[52] See Elizabeth S. Belfiore, *Tragic Pleasures: Aristotle on Plot and Emotion* (Princeton: Princeton University Press, 1992), pp. 53-66, Paul Woodruff, «Aristotle on Mimesis», in *Essays on Aristotle's Poetics*, ed. Amelie O. Rorty (Princeton: Princeton University Press, 1992), pp. 73-97, Matthew Polotsky, *Mimesis* (London: Routledge Press, 2006), p. 40, Aryeh Kosman, «Acting: Drama as the Mimesis of Praxis», in *Virtues of Thought: Essays on Plato and Aristotle* (Cambridge: Harvard University Press, 2014), pp. 94-119.

context that at first seems accidental. Most significantly for our purposes here, Aristotle appears to use the term in reference to the grasp of a final cause: the initial grasp of a series of events or changes as accidental is reversed so that each stage or event is perceived as a necessary condition for the next. In this instance, Empedocles' accidental account of the formation of vertebrae is replaced by Aristotle's own teleological account: what «just happens» for Empedocles is replaced by what must happen teleologically because of the work of the final cause through the efficient. Aristotle criticizes Empedocles' explanation then because it seeks to account for a defining characteristic of vertebrates via an accident in their foetal development. In contrast, for Aristotle, any defining or essential characteristic of a natural thing must already be present (either in act or potency) from the beginning of its development.

As Aristotle notes above, since a human being produces another human being (and not some other kind of organism) and human beings are by nature vertebrate animals, then even the seed or principle from which a human being springs must be vertebrate in some sense (640a23). This of course does not imply that the seed actually has vertebrae. The seed has the capacity or the power, as Aristotle states, to produce what pertains to the developed organism (what is required for it to be what it is) by the process of composition so that it results in the expected final form. It is for this reason that Aristotle states that the «effecting agent» (what makes the foetus acquire the final characteristics that are essential to being a human being) must already be present chronologically and not just logically (640a25). In this way, the *telos* is already something real at the beginning of the developmental process because it is already at work in the power of the efficient cause: whatever composes or brings together the parts of the organism is itself already informed by the final cause having an actual ability or power to make something come to be in a certain determinate respect. Empedocles' account, for Aristotle, simply hypothesizes an *ad hoc* or accidental condition (one of many possible conditions) for the final vertebrate form. It therefore fails to be an appropriate scientific explanation for Aristotle.

In contrast, an appropriate scientific explanation aims at a statement of the causes that are not simply logically necessary in the sense of being required solely on the basis of a conceptual analysis apart from empirical observation. Instead, the causes stated must be both necessary and sufficient in light of the observed developmental process and must account both for the process itself (its various stages) and for the final form of the natural thing. For Aristotle, Empedocles's purported explanation simply hypothesizes an efficient cause not determined by any final form. In this regard, Empedocles' explanation is only conceptual because it is forced into giving an accidental explanation of how an efficient cause produces vertebrate as a logical consequence of his materialism (640b15-17). Given that materialism, he is precluded *a priori* from acknowledging the possibility of final causality and is left without any other explanation except that of an efficient cause which is undetermined by any purpose, which is to say that Empedocles cannot really explain why that efficient cause produces vertebrae instead of a say an exoskeleton or some other set of structural characteristics. Significantly, Aristotle's criticisms of Empedocles are relevant here because they show his understanding of how teleological causes work. In particular, these criticisms show that Aristotle considered purely logical analyses, bereft of our experience of nature, to be flawed because they could not properly account for the actions of the causes of the changes we see in natural things[53].

The Reduction of Teleology to Spontaneity

Finally, while Aristotle plainly criticizes Empedocles for using spontaneity to account for natural processes, Nussbaum invokes the Aristotelian text to defend a view of teleology which is ultimately equatable with spontaneity. This raises a third and final objection, namely, that her understanding of teleological/functional explanations is ultimately devastating

[53] On this account, a purely conceptual or logical understanding of the process in which natural things come to be cannot account for the succession of states which results in these things as they actually acquire their final form.

to the Aristotelian notions of chance and spontaneity. For if there is no real act/potency reduction in her conception of teleology, there cannot be the interruption of actuality requisite for a chance event to occur. In her description of the Aristotelian cosmos, it would be impossible to truly distinguish teleology from spontaneity – for all natural processes would be the result of the necessary principles of matter.

This is not to say that a scientist could not recognize that some characteristics of animals and plants come to be for the most part, while some others only rarely. It is only to say that the scientist would have no means by which to account for this difference. He could not argue, for example, that a child born with spinal bifida represents a deviation from the formal strivings of the human *logos* to secure matter in the shape of a backbone. He or she could only point out the deviation from what he normally sees and locate the differences in the competing efficient-causal accounts. On such an account, spontaneity is ultimately as mystifying a phenomenon for him or her as it is for Epicurus[54]. In the end, it is nothing but a sudden and unpredictable lurch of matter from its usual course. In the final section of the paper, then, I would like to turn to a closer examination of Aristotle's account of chance and spontaneity in the *Physics* and *Metaphysics*, as a way of more accurately grounding his account of form, teleology, and function.

Chance as a Source of Explanation

As numerous scholars have noted, Aristotle's concern with luck and the spontaneous is dependent upon his concern for the teleological activity of art and nature[55]. It is therefore under-

[54] On Epicurus see Elizabeth Asmis, *Epicurus' Scientific Method* (Ithaca: Cornell University Press, 1984) and Philip Mitsis, *Epicurus' Ethical Theory: The Pleasures of Invulnerability* (Ithaca: Cornell University Press, 1990), and David Furley, *Two Studies in the Greek Atomists* (Princeton: Princeton University Press, 2015), pp. 111-30.

[55] In regard to translation of the Greek terms, we will follow Nussbaum herself and other Aristotelian commentators such as Dorothea Frede in her article «Necessity, Chance, and What Happens for the Most Part», in *Essays on Aristotle's Poetics*, ed. Amelie Rorty (Princeton: Princeton University Press, 1992), and alter-

standable, as W. K. C. Guthrie has noted, to find that much of his interest in chance concentrates upon occurrences in which art and nature achieve their expected purposes, and not when these purposes are thwarted either by internal or external forces[56]. Aristotle's interest is typified by the example of the man who goes to the *agora* or market on some errand and encounters a man who owes him money (*Physics* II. 4 196a1-5). If the man had known that his debtor would be at the market, he would have purposefully gone there to collect the debt. But as he did not know this, their encounter at the market remains somewhat inscrutable. It is the kind of thing that would happen on purpose, and yet did not. How do we go about explaining this? Can it be explained? If the term «luck» is usually associated with such events, is it then a special kind of cause, or can it be reduced to the familiar scheme of fourfold causes?

None of this is to deny that Aristotle deems the failure of nature and art as instances of chance, only that he is determined to account for chance as a source of *explanation*, just as art and nature are taken as explanations for their productions. For this reason he concentrates on those chance events which operate most similarly to art and nature. And it is precisely in this move that he hits upon the cause of the accidental. For Aristotle, the activities of art and nature, though teleological, are not neces-

nate for the sake of variety between «chance», «luck» and «fortune» as translations for the Greek term *tuche*. Each one of these English words captures fairly well Aristotle's technical definition of *tuche* given at *Physics* II. 5 (197a6) as an accidental cause in the sphere of those actions for the sake of something which involve choice. For Aristotle there does not appear to be any significant distinction, as neither there seems to be in English, between «chance» and «luck». The Greek *tuche* is often translated as «chance» in the context of the *Physics*, but the same word is used to denote what is often translated as good or bad «luck» or «fortune» in the ethical works and the *Poetics*. See for example *MM* II. 8 where Aristotle speaks of *eutuchia* as well as *NE* V. 8 (1135b17). Nussbaum's use of luck, however, appears to be somewhat idiosyncratic in that, as Frede remarks, it is meant to cover all external influences not intended by the agent (Frede p. 217 n. 17). This use of «luck» neither comports with Aristotle's understanding of *tuche* nor with our own usual understanding of the English word insofar as we normally attribute «luck» to some action or series of actions for the sake of something which involve choice.

[56] W. K. C. Guthrie, *History of Greek Philosophy* Vol. VI (Cambridge: Cambridge University Press, 1981), p. 233-242.

sary in their operations. Acorns grow into oak trees «for the most part» (*hos epi to polu*) but it sometimes is the case that a fire comes along and destroys a sapling. What Aristotle finds illuminating in such an example is that the «for the most part» character of the natural process opens up the way for the chance event to occur. If nature were completely of necessity, in other words, no chance event would ever take place. But because it is open to possibility, not only to deviations from the end, but also, as we shall see, to different ways of realizing a given end, nature, as well as art, is amenable to chance[57].

Thus chance and the spontaneous are rooted in the processes of nature and art, and any understanding of Aristotle's notion of luck, let alone his understanding of luck in the moral life, must take into account the teleological features of art and nature as expressed continually throughout the *corpus*, the *Physics* and *Metaphysics* in particular[58]. For this reason it is puzzling to find Nussbaum leaving this metaphysical foundation dormant in her account of luck in Aristotle. The idea that a chance occurrence is not some purely random event, but dependent upon divergent teleological activities, is mentioned only once in her entire account, and that cursorily in a footnote (*FG* 319). Such neglect is not only questionable from a methodological point of view, it is also questionable from the point of view of anyone who attends to the metaphysical basis of Aristotle's philosophy. Unfortunately, Nussbaum's entire reading of Aristotle is hampered by this devaluation of his natural philosophy and metaphysics, and in response I will present and defend an alternative reading which shows how an appreciation of this ground yields a significantly different Aristotelian account.

[57] David Balme, «Greek Science and Mechanism: Aristotle on Nature and Chance», *Classical Quarterly* 33 (1939): 129-38; John M. Cooper, «Hypothetical Necessity and Natural Teleology», in *Philosophical Issues in Aristotle's Biology*, ed. James Lennox and Alan Gotthelf (New York: Cambridge University Press, 1987), pp. 243-75; Lindsay Judson, «Chance and 'Always for the Most Part' in Aristotle», in *Aristotle's Physics: A Collection of Essays*, ed. Lindsay Judson (Oxford: Clarendon Press, 1991), pp. 73-99; and R. J. Hankinson, *Cause and Explanation in Ancient Greek Thought* (Oxford: Oxford University Press, 1998), pp. 132-53.

[58] Myles Burnyeat, «Critical Review of Martha Nussbaum's *Aristotle's De Motu Animalium*», *Archiv fur Geschichte der Philosophie* 3 (1981): 184-89.

Physics II. 4-6: Chance, Spontaneity, and Causality

In *Physics* II. 4-6 we find Aristotle attempting the seemingly paradoxical task of locating the *causality* of chance[59]. The task seems paradoxical in that we tend to think of chance events as precisely those events which happen without cause, indeed, events which «just happen», randomly and without possibility of explanation. And yet Aristotle begins his discussion of chance and the spontaneous (*to automaton*), with another important set of *endoxa* or common opinions: «but chance and spontaneity are also reckoned among causes – many things are said both to be and to come to be as a result of chance and spontaneity» (195b32-33). A geneticist may argue, for example, that the genetic make-up or constitution of an embryo is for the most part a chance confluence of the genetic codes of the parents. Likewise, a novice at a particular game or sport may experience immediate success before he or she has really mastered the game's proper skill, an example we often refer to as «beginner's luck». In these and similar cases, we are accustomed to saying that the given event comes to be «by chance», suggesting the involvement of some sort of agency is in play other than chance. Is this merely a manner of speaking, or is there a partial truth involved?

It is crucial to note at the outset that Aristotle's discussion of chance directly follows the discussion of causality begun in

[59] The *Oxford Classical Dictionary* (Oxford: Clarendon Press, 1961) cites the Greek word *tuche* as containing the stem of the verb *tunchanein*: «to hit the mark». This appears to imply that the sense of good fortune must have been prominent in the use of the word, though the word may, like *moira*, refer simply to one's lot in life, whether good or bad. The word is not found in Homer, but later in the tradition of Greek literature, in Hesiod and Pindar for example, *tuche* is personified. In tragic works the word occurs frequently but there are comparatively few cases in which *tuche* is personified, and even in these instances her influence is negligible compared with that of Fate. For Thucydides *tuche* possessed little or no divine power. The term merely denoted those phases of a situation which men often prove powerless to anticipate or control, no matter how intelligently they may have striven. Aristotle's view of *tuche*, as we will see in the present section, is of a cause distinct from material *ananke* (with which the Atomists equated it), though a cause dependent upon the two causes which operate with purpose: *phusis* and *dianoia*. As we will see then, Aristotle's view thus retains the core sense of the term: luck either hits or misses the mark which *phusis* and *dianoia* strive for.

Physics II. 3, the famous formulation of the four causes, and is a part of this larger discussion[60]. What Aristotle wants to know beginning in chapter 4 is first of all what chance and spontaneity are; secondly, whether chance is to be considered as a «fifth» cause; and thirdly, if not, what its relation to causality is[61]. He apparently assumes, due to his faith in the reasonableness of the way we speak of chance as a cause, that it will at least bear some relation, if not be included with the four causes identified in the previous chapter. Aristotle proceeds in *Physics* II. 4 according to his usual method of examining the *endoxa* surrounding the question. These opinions fall into three camps:

(1) There are those who question whether there are such things as chance and spontaneity. On this account, nothing comes to be by chance, but that everything we ascribe to chance or spontaneity has some definite cause. Aristotle has in mind here the early cosmologists and *phusikoi*, the «wise men of old» who maintained that in all so-called cases of chance it is possible to find something which is the cause, even though, as Aristotle notes, they continued to speak of some things as happening by chance and others not. The very fact they did not stop using the language of chance, however, suggests to Aristotle they ought to have at least discussed the matter to some degree (196a15-16). Then there is the case of someone like Empedocles, who in his cosmogony placed chance among his causal principles while failing to give an account of what he meant by chance and how it pertained to causality.

(2) He considers those who have taken the contrary view. There are some who ascribe the heavenly spheres and the cosmos as a whole to spontaneity. The constancy of nature at the forefront of his mind, Aristotle is surprised by this view; for those who assert it are claiming that chance is not responsible for the existence or generation of plants and

[60] Following the interpretation of David Furley, I think it is likely that Aristotle is contrasting his own approach to the study of natural teleology to the methodology laid out by Socrates in the *Phaedo*. See Furley, «The Rainfall Example in Physics II. 8», in *Aristotle on Nature and Living Things*, ed. Alan Gotthelf (Pittsburgh: Mathesis Publications, 1985), pp. 177-82.

[61] David Charles, «Teleological Causation in the Physics», in *Aristotle's Physics: A Collection of Essays*, pp. 101-28.

animals (they themselves recognize nature or mind as the cause of these), while insisting that the heavenly spheres and the highest of visible things arose spontaneously. But constancy in nature is most perfectly exhibited by the heavenly spheres, and less perfectly by the generation and existence of earthly beings. It is strange, then, that some would think to ascribe chance to the universe and not to the sublunary world, where chance events seem to occur all the time.

(3) A third opinion holds that while chance is indeed a cause, it is nevertheless inscrutable to human intelligence, being «something divine and full of mystery[62]».

What is most fascinating about Aristotle's procedure through this set of opinions is the way in which he preserves, in his own account, the partial truth inherent in each one of them[63]. He begins this task by sorting through the various opinions at the beginning of chapter 5. As he notes, we observe that some things come to be by necessity and always, and some «only for the most part» (*hos epi to polu*). Chance events, however, seem to take place in the intersection between these two types of causality, so that we can speak of chance, provisionally, as the cause of those events which happen neither always nor for the most part.

Physics II. 5: The Distinction between Dianoia and Phusis

The argument to clarify this provisional definition begins with the distinction between two types of things which come to be: those which come to be for the sake of something, and those which do not. Things which come to be for the sake of something, in turn, can be distinguished into those which come to be by intention, for instance, a human action, and those which do

[62] For a useful analysis of these texts see Wolfgang Kullman, «Different Concepts of the Final Cause in Aristotle», in *Philosophical Issues in Aristotle's Biology*, pp. 169-75.

[63] This chapter also provides a good example of Aristotle moving toward a conclusion *outside* the circle of original appearances while still viewing the original appearances as the witnesses and paradigms of the inquiry.

not, such as the growth of a plant. Hence it is clear, Aristotle concludes, that even among the things which are *outside* what is necessary and for the most part, there are some in connection with which the phrase «for the sake of something» is applicable. And yet what exactly does Aristotle mean by this conclusion?

His meaning becomes gradually more apparent as he goes on. He states that things that are for the sake of something include whatever may be done as a result of thought (*dianoia*) or nature (*phusis*). Thought and nature, moreover, are often times the causes of things and events which happen neither by necessity or always, nor for the most part. That is, they are the causes of things which happen for the sake of something, but which do not happen very often if even more than once. For instance, a man goes to buy groceries at the market and encounters a friend who owes him money[64]. He was generally on the lookout for the debtor, but his intention in going to the market was not to encounter him, but to buy groceries. In this instance we can see «thought» as causing this man to act for the sake of something, to buy groceries, but producing an effect, the collection of a debt at the market on a certain day at a certain time, which could not possibly happen always or for the most part. The collection of the debt, in other words, is an accidental effect of the man's intention to buy groceries.

What is essential to note in this example is how the accidental is dependent upon activity which happens for the sake of something[65]. In other words, chance events are never utterly acausal or atelic (198a32-35)[66]. Rather, they are concomitant with

[64] As Judson notes, «Aristotle intends the condition that the chance event 'comes to be incidentally' to be the same as the condition that it happens rarely». See Judson, «Chance and 'Always for the Most Part'», p. 81. Judson argues convincingly here that Aristotle likely has in mind conditional frequency, as opposed to absolute frequency. Solar eclipses, for instance, are relatively rare for any given span of time; this is absolute frequency. On the other hand, when the moon is in conjunction with the sun, the eclipses always take place, this is conditional frequency. The distinction is important in that Aristotle clearly does not want to say that it is by chance that an eclipse comes to be.

[65] See Susan Sauvé Meyer, «Aristotle, Teleology, and Reduction», *The Philosophical Review* 101 (1992): 791-825.

[66] Weiland captures this point well: «chance is only possible because different independent teleological connections can coincide». See Weiland, «The Problem of Teleology», p. 146. See as well John Dudley, *Aristotle's Concept of Chance:*

purposive activity even though they happen outside the sphere of necessity or for the most part[67]. As Wolfgang Weiland notes,

> All this shows that for Aristotle chance is not an independent force which could frustrate or disturb a universal cosmic teleology. Aristotle rather seeks to show that quite generally, where we speak of chance, teleological structures are already presupposed. With chance, an apparent, 'as if' teleology is involved; this is present *if a goal is reached*, *although* there was *no intention* to reach it as such. So this goal proves to be accidental, as it were: i.e., reached *via* the intention to reach another goal. Consequently we never leave the realm of teleology in our talk of chance[68].

Moreover, it is worth noting that Aristotle's notion of luck is closely linked to his notions of *dianoia* and *phusis*, and that any understanding of chance events will have to keep in mind the presence of these two types of causality. We have so far, especially in the example of the man collecting his debt at the market, only been speaking of chance or accidental *events*, and not yet of chance as a *cause*. In the present terms, the first *endoxon* examined above would hold true. One might argue, for instance that while we can talk as if things happen on account of chance, but actually there are real and familiar causes at play (*dianoia* and *phusis*) which underlie and explain these events[69].

Accidents, Causes, Necessity, and Determinism (Albany: SUNY Press, 2012), pp. 163-65.

[67] For a good overview of Aristotle's notion of an accidental cause see Cynthia A. Freeland, «Accidental Causes and Real Explanations», in *Essays on Aristotle's Physics*, pp. 49-72.

[68] Ibid. p. 144.

[69] As O'Rourke notes, «Aristotle realistically recognizes the occurrence of results which are unintended and unforeseen, both by nature and deliberation; but these always result from the activity of an agent. So-called chance events may be unintended, unforeseen, or unpredicted; they are, however, caused and may be explained. The results of spontaneity and chance might have been the goal of mind or of nature, but in the circumstances have emerged coincidentally. Nothing, however, occurs simply through incidental causation». See O'Rourke, «Aristotle and the Metaphysics of Evolution», pp. 31-32.

Formal Definition of Chance: *Physics* II. 5 (197a6)

We are now ready for Aristotle's formal definition of chance, stated at *Physics* II. 5 197a6: «It is clear then that chance is an accidental cause in the sphere of those actions for the sake of something which involve choice». The type of causality luck possesses, moreover, is *efficient* causality (198a1), for luck is dependent upon sources of motion, motion which is for the sake of an end. For this reason we often say luck is dependent upon teleology, in that luck is the enhancement or thwarting of purposive motion[70]. Thus we have seen Aristotle move from the provisional definition given at the beginning of chapter 5, namely, that chance events are those which happen neither always nor for the most part, to the more nuanced claim that chance is an accidental cause in the sphere of actions coming to be, either by *dianoia* or *phusis*, for the sake of some end. He has moreover incorporated into this definition whatever truth contained in the three opinions examined earlier: «for all these statements are correct, as might be expected» (197a11).

First, as we have already noted, it is true to a certain degree that nothing comes to be by chance. Everything that does come to be either by chance or spontaneity can be assigned a definite cause in either *dianoia* or *phusis*. But, as we have seen, this does not preclude the further point that we can accurately determine an accidental cause of these events by the argument outlined above. Secondly, it is also true by Aristotle's argument that things do indeed occur by chance, though not absolutely. The simple fact that chance events occur is an empirical given for him. But it is his detection of chance as that which occurs as a kind of residue of actions occurring for the sake of something which is perhaps his most significant contribution to thinking on the subject of chance. In regard to the theory that the universe came to be by chance and things in the sublunary sphere by nature or mind (*nous*), he mentions in *Physics* II. 6

[70] Aristotle, furthermore, tips his hand in his definition as to the distinction, which he will further discuss in *Physics* II. 6, between chance and spontaneity. Chance events involve choice consigning chance to the sphere of human action, while spontaneous events do not.

(198a5-13) that even if it were true that the heavens are due to spontaneity, it will still be true, given that the *per se* is prior to the *per accidens*, that intelligence and nature (in the form of the separated *nous*) will be prior causes of the universe[71]. Lastly, to say that chance is both inscrutable to human intelligence and also «a divine thing and full of mystery» is likewise partially correct. The causes of the man's going to the market and collecting his money are innumerable. He may have wished to see someone else, or avoiding someone, or may have gone to see a spectacle (197a16-19). In this way to say that chance is unaccountable is correct; for an account, if it is to be intelligible, must hold either always or for the most part, whereas chance occurrences are neither of these[72].

Physics II. 6 (197b1-198a4): The Distinction between Chance and Spontaneity

In *Physics* II. 6, Aristotle closes his discussion of chance by outlining the distinction between chance and spontaneity. While they are both within the sphere of things done for the sake of some end, they differ in that spontaneity is broader and more extensive. Every result of chance is from what is spontaneous, but not everything which is spontaneous is from chance. The specific difference, as noted in chapter 5, is that chance is particularly appropriate to agents that are capable of «good fortune and of action generally» (197b1); that is, chance belongs to the sphere of human action and choice. For Aristotle, a sign of this is that «good luck» (*eutuchia*) is thought by some to be happiness (*eudaimonia*), and happiness to be a kind of action. Hence what is not capable of action, in the sense of deliberative choice, cannot do anything by chance[73]. It is important to

[71] See Weiland, «The Problem of Teleology», p. 144.

[72] Of course, some accidental causes are more relevant than others. A house builder's health might be a more relevant accidental cause of the house than the color of his hair or skin.

[73] By this criterion Aristotle excludes not only inanimate and non-rational animals from chance, but children as well. It would appear that a child's accidental existence would then be ascribed to spontaneity, as is that of inanimate objects and lower animals (197b14-18).

remember, however, that spontaneous events do come to be for the sake of something, though not for the sake of what actually results. For instance, a horse may run off in search of food, and by doing so save its life, but it did not run to save its life. The result is purely spontaneous[74].

Finally, the phrase we often use, «in vain», is an indication of what we mean by chance and the spontaneous. For instance, if I study Greek every evening in order to improve my knowledge, yet never in fact do so, we say my study has been «in vain». That is, what was for the sake of an end (the study) was in vain, because it did not achieve its end (greater knowledge and understanding). What does happen during that period of study, say, thoughts about other topics, is accidental to the desired end. One could say, however, as Aristotle often does, that nature and choice, the ultimate origins of chance and spontaneity, do nothing in vain[75]. But this is only to say that they always *seek* an end, not that they always *attain* the end they seek (199b16-19). Thus, even though nature always works toward a goal it does not always attain its *telos* since events may impede an organism's ability to function. The activities of art and nature, though teleological, are not necessary in their operations. Acorns can grow into oak trees «for the most part» (*hos epi to polu*) but it sometimes is the case that a fire comes

[74] Aristotle, further distinguishes *to automaton* into the properly spontaneous, which cause is external (for example, presumably, the killing of a man by a naturally falling tree); and the «accidentally» spontaneous, which cause is internal (again, presumably, as in the case of physical deformity). Moreover, Aristotle notes the greatest difference between chance and the spontaneous, for whenever anything happens contrary to nature, we usually call it a result of spontaneity, not chance which always involves human choice (*Phys* 197b7-36). In this, as at *Physics* 198a2-4, Aristotle seems to want to restrict chance to *dianoia* alone, and spontaneity to *phusis*, though he cannot mean this in any hard and fast way, in that our choices have their source in our natural desires. In short, every chance event is also spontaneous, though the reverse is not true.

[75] It is therefore understandable, as W. K. C. Guthrie has noted, to find that much of his interest in chance concentrates upon occurrences in which art and nature achieve their expected purposes, and not when these purposes are thwarted either by internal or external forces. See Guthrie, *History of Greek Philosophy* Vol. VI (Cambridge: Cambridge University Press, 1981), p. 233-242. In this regard, Aristotle repeatedly compares nature to a good housekeeper (*oikonomos agathos*) which provides everything that is necessary but nothing wasteful or superfluous. See O'Rourke, «Aristotle and the Metaphysics of Evolution», pp. 19-20.

along and destroys a sapling. What Aristotle finds illuminating in such an example is that the «for the most part» character of the natural process opens up the way for the chance event to occur. If nature were completely of necessity, in other words, no chance event would ever take place. But because it is open to possibility, not only to deviations from the end, but also, to different ways of realizing a given end, nature, as well as art, is amenable to chance[76].

The Argument for Natural Teleology (Physics II. 8 198b10-199b30)

As Aristotle himself was aware, there are serious alternatives to his theory of natural teleology. His defense of why «nature belongs to the class of causes which act for the sake of something» (198a10-11) begins by engaging with a difficulty that his Pre-Socratic predecessors would have likely raised. As we have seen, Aristotle claims that nature acts for the sake of an end and that the goals it achieves are good or intrinsically desirable[77]. But why appeal to the good to explain natural processes when a purely materialistic account is available: «why should nature not work, not for the sake of something, nor because it is better so, but just as the sky rains, not in order to make the corn grow, but of necessity?» (198a17-18). On this account, one can tell a causal story about why it rains that utilizes only the necessary properties inherent in its most basic material constituent parts. The sun warms the lake; causing the water on its surface to

[76] For a good account see David Balme, «Teleology and Necessity», in *Philosophical Issues in Aristotle's Biology*, pp. 275-87, Sorabji, *Necessity, Cause, and Blame*, pp. Nature, Fred D. Miller and Michael Bradie, «Teleology and Natural Necessity in Aristotle», *History of Philosophy Quarterly* (1984), pp. 133-46, John M. Cooper, «Aristotle on Natural Teleology», pp. 107-30, Cooper, «Hypothetical Necessity», Ibid. pp. 130-47, Monte Johnson, *Aristotle on Teleology*, (Oxford: Clarendon Press, 2005), pp. 99-103, and Sarah Broadie, «Nature and Craft in Aristotelian Teleology», in *Aristotle and Beyond: Essays on Metaphysics and Ethics* (Cambridge: Cambridge University Press, 2007), pp. 85-100.

[77] As Cooper notes, «unless one bears the connection between goal and good clearly in mind one will fail to understand much that Aristotle says about natural teleology, and many applications he makes of it». See Cooper, «Hypothetical Necessity and Natural Teleology», p. 245 n4.

evaporate and rise; in doing so, it cools and becomes water once more; this water descends as rain; and the result of this process is that the corn grows. This result was not intended by any agent in the series of events leading up to it; a sign of this is that it sometimes happens to rain when the crop is on the threshing floor (198b17-22). In other words, whether the result is good or not is incidental to the reason for *why* it rains[78]. If the only kind of causality found in nature is reducible to material necessity, then evidently the good has no place in the study of nature, any more than it does in mathematics[79].

Aristotle's response to this objection is elaborate; my intention here is to only touch on only the central themes of his argument. The first counter-argument turns on the notion of «chance» in Empedocles' account. The argument, in brief, is this. What comes to be by «nature», e.g. the parts of animals, either does so for the sake of an end, or it does not; and if it does not, then this result, if good, is coincidental or «by chance». But the parts of animals are, as a matter of fact, good, and this is a point Empedocles himself clearly concedes[80].

[78] There is some ambiguity in the secondary literature about the status of this example in Aristotle's own mind. Aristotle clearly crafts the rainfall example to represent the materialist position, where all events in the natural order, not just the one under discussion, and can be explained in a non-teleological way. The question is whether or not Aristotle regards this causal story as a viable explanation for rainfall in particular, and for non-biological phenomena in general. Some argue that Aristotle does indeed view this type of explanation as sufficient for natural phenomena that lie outside the biosphere, but not for those that lie within. In other words, Aristotle is advocating here for a teleology *restricted* exclusively to the study of living organisms. See Balme, «Teleology and Necessity», p. 277. Aristotle, however, never explicitly makes this restriction, here or anywhere else in his writings. In contrast, David Furley has argued that Aristotle is committed to an *unrestricted* teleology that is neither restricted to a particular class of phenomena (e.g. living organisms), nor even to individual substances. See Furley, «The Rainfall Example in Physics II. 8», pp. 177-82.

[79] Aristotle makes this point clear in the *Metaphysics*: «in mathematics nothing is proved by means of this kind of cause [final], nor is there any demonstration of this kind – 'because it is better, or worse.'» See *Metaphysics* III. 2 (996a29-31). A triangle, for instance, has interior angles equal to two right angles because of the essential properties of the figure, not because it is better for it to be this way than otherwise.

[80] For instance, Aristotle claims that «even the champions of the theory which is before us, i.e., Empedocles and his followers, would agree» that the parts of animals «are due to nature» (199a6-7). What I suspect Aristotle has in mind here is this: each of the four elements has its own distinctive «nature» in the sense of an intrinsic prin-

Therefore, Empedocles is committed to the view that «that which comes to be by nature» is good, but that this is simply a coincidental result. And yet what comes to be coincidentally or by chance does so infrequently, whereas the parts of animals normally come to be in a given determinate way. Therefore it is not by chance that such things come to be. Consequently, the only remaining alternative is that such things come to be for the sake of an end. Therefore, nature acts for the sake of an end.

Types of Infrequency

As we see here, Aristotle's claim is that if a particular phenomenon happens regularly, then we cannot attribute it to chance. In other words, since there is a determinate process that ordinarily results in something which is good or beneficial, then this result cannot be the result of chance. As Sarah Waterlow points out, Aristotle is appealing to «the common sense reaction to regularities of conjunction: if a conjunction regularly recurs, we take this as evidence of a common cause, which accounts not only for each conjunct severally, but also for their togetherness»[81]. Waterlow adds, however, that Empedocles does not deny this causal principle, his point, rather, is that the cause responsible for the conjunction of these phenomena need not be a common end. Implicit in Empedocles' account, she argues, is a distinction between *past* and *present* infrequency, and between infrequency of types and of instances[82]. As things stand now, the parts of an organism come to be generally in the same way, resulting in a particular set of organs and parts beneficial to the organism as a whole. But this was not always the case. In an earlier, chaotic phase of the universe, with the four elements colliding and moving about randomly, countless possible types were instantiated,

ciple of movement and rest, and the parts of animals indirectly come to be as a result of these intrinsic tendencies present in their constitutive elements. «Nature», in this sense, is contrasted with art, and not chance. Thus the parts of animals are «natural» because they are not the products of art.

[81] See Waterlow, *Nature, Change, and Agency*, p. 77.

[82] Ibid. p. 78.

such as the infamous «man-faced ox progeny». Of these possible types, only a few were viable. According to Empedocles, the agency of chance operates (primarily), not in the present, but in the past. In terms of the statistical ratio between viable and inviable types that were instantiated at the formative stage of the biosphere, there is no problem with this appeal to chance to explain the production of viable life forms, since the latter were in fact exceptional. But the present frequency of viable types is not, strictly speaking, by chance, since there is a determinate explanation to account for them. This explanation does integrally involve chance, but in a way that does not violate Aristotle's account. «Thus in one way», Waterlow concludes, «the set of teeth, (and the animal it belongs to) is exceptional, in another sense not. There is no contradiction here, but a coherent (even if rather quaintly illustrated theory), and one that does without teleology[83]».

Finality, Reproduction, and Biological Fitness

Has Aristotle «crudely missed the point of the Empedoclean account» by failing to distinguish between past and present infrequencies of types and instances? I would like to argue here that Empedocles' account is analogous to, but not identical, to the well-known story of the man going to the market discussed above (195b36-196a5). At some earlier stage of the evolution of the cosmos, various biological possibilities are instantiated, of which only a few are functionally viable; all such possibilities, let us grant, come to be by chance. Consider these viable types. Some of these are capable of reproductive generation, others not. These latter are insignificant in the Empedoclean account, and in fact do not really differ from the functionally invalid types, within a few generations they will be eliminated from the pool of actual biological types. Again, of the viable individuals which are capable of reproduction, some do so with fidelity to the parent types, others not. But, for similar reasons, these latter individuals are likewise insignificant in

[83] Ibid.

Empedocles's account, and this is because any significant deviation from the successful parent type will likely be eliminated. The point, then, is this: implicit in Empedocles' account is what counts as biologically fit are precisely those viable types that replicate faithfully to the parent type. What is the significance of this? Fidelity to type is the only kind of reproduction that will have any long term relevance in an Empedoclean universe. Hence what comes to be from a given seed is not random, but determinate; and what the seed is determined to is a form or type that is well adapted to the requirements of life[84]. If we ask today why teeth come to be as they do, the answer, even according to Empedocles himself, is that it is better for them to this way than otherwise. Perhaps initially they came about by chance, but the fact that they continue to do so can no longer be attributed to chance, nor to the necessary properties of their material elements, but to the functional virtues of biological type constituted by these elements.

That is to say, even on the Empedoclean account, nature acts for the sake of an end, and this is because of the intimate connection between reproduction and biological fitness. The only kind of reproduction that matters, on this hypothesis, is that which faithfully replicates the parent type, and the only types that matter are those which are biologically fit. Thus, the end and the process that leads to the end are no longer accidental, but essential: it is because of the end that this process now takes place. Aristotle, of course, does not accept the Empedoclean account of how organisms first originated. As I read him here, he is proceeding dialectically: on the assumption that this is how plants and animals came to be, does this eliminate natural teleology all together? For Aristotle, the fact that natural processes frequently result in what is optimally

[84] See *Parts of Animals*, 640a19. According to Empedocles' account, organic kinds were not originally produced by way of biological generation or reproduction. The parent may very well be generated by chance, but the offspring certainly is not. Thus, if Empedocles is right about the process whereby the backbone of a foetus becomes segmented, this process happens not by chance but because it is a necessary condition for the replication of the parent's type. It is because the parental type is successful, and this type includes a segmented spine, that the foetus is made to turn in the womb, dividing the backbone in the appropriate places.

functional shows that the connection between the means and the resultant end cannot be accidental. Further, the common cause that is responsible for the frequent conjunction of the two (i.e. means and end) is the fact that the end in question is good or beneficial. Thus, even if we allow that it was by chance that nature originally landed upon this conjunction, the fact that this end continues to result by these means is no longer a matter of chance insofar as the restraints upon reproduction ensure that nature will act for the sake of an end.

Intrinsic vs Extrinsic Forms of Teleology (*Physics* II. 8 199a9-13)

Finally, there is a common misinterpretation that often identifies Aristotle with an earlier form of teleological explanation that begins with Anaxagoras and is developed by Plato in the *Phaedo* and *Timaeus*[85]. On such an account, there is very little difference between the products of art and nature: both have as their source the extrinsic agency of mind (*nous*) which imposes form upon a pre-existing material substratum. Significantly, it is the same kind of agency at work in art and in nature, and the two differ only in degree and scope. I suspect what motivates this approach is the fact that Aristotle offers refers to an analogy between art and nature. For instance, here in *Physics* II. 8, he argues: «where there is an end, all the preceding steps are for the sake of that. Now surely as in action, so in nature; so it is in each action, if nothing interferes. Now action is for

[85] See Plato, *Phaedo*, 96d-99d, *Timaeus* 28a-52. On Plato see R. Hackforth, «Plato's Theism», in *Studies in Plato's Metaphysics*, ed. R. E. Allen (London: Routledge, 1965), pp. 439-48, G. E. R. Lloyd, «Plato as Natural Scientist», *Journal of Hellenic Studies* 88 (1968), p. 81, James Lennox, «Plato's Unnatural Teleology», in *Platonic Investigations*, ed. Dominic O'Meara (Washington DC: Catholic University of America Press, 1985), pp. 195-218, Sarah Broadie, *Nature and Divinity in Plato's Timaeus* (Cambridge: Cambridge University Press, 2002), pp. 243-78, Gregory Vlastos, «The Role of Observation in Plato's Conception of Astronomy», in *Science and the Sciences in Plato*, ed. John P. Anton (New York: Eidos Press, 1980), p. 31, Stephen Menn, *Plato on God as Nous* (Carbondale: Southern Illinois Press, 1995), Vlastos, *Plato's Universe*, (Atlanta: Parmenides Publishing, 2006), Gabriela Roxana Carone, *Plato's Cosmology and its Ethical Dimensions* (Cambridge: Cambridge University Press, 2011), pp. 24-79, and T. K. Johansen, «Why the Cosmos Needs a Craftsman», *Phronesis* 59 (2014): 297-320.

the sake of an end; therefore the nature of things also is so» (199a9-13). To put it succinctly, Aristotle's argument seems to be this. Natural processes are similar to artistic processes in that in each we see a series of steps and stages whose final stage is endlike or beneficial (199a13-15)[86]. The tacit premise here, I take it, is that it in both processes the steps follow an *economical* sequence, economical in the sense that nothing is done that is superfluous to the end achieved[87].

But what is often overlooked is the fact that Aristotle carefully *distinguishes* nature from art before drawing any comparisons between them. Hence, whatever similarities there might be between the two must be seen in light of their essential difference, namely, that for any artifact, the principle of agency is extrinsic, whereas in a living organism, it is internal (192b20-23). As David Balme observes: «The novelty in Aristotle's theory was his insistence that finality is within nature: it is part of the natural process, not imposed upon it by an independent agent like Plato's world soul or Demiourgos. This is what allows him to claim that none of his predecessors had recognized the final cause with any clarity[88]». Hardie and other scholars continually fail to take note of this distinction, and so it is not surprising they attribute to Aristotle a view of teleology that actually belongs to Plato[89]. In fact, as his earlier discussion of Antiphon reveals (193a12-193b12), Aristotle is acutely aware of the ambiguity that can arise from the analogy. In thinking through how substantial change is possible, Aristotle

[86] On this point see *Physics* 194a34 as well.

[87] Aristotle's hypothetical examples, which immediately follow the formal argument above, seem to support this approach: «Thus if a house, e.g., had been a thing made by nature, it would have been made in the same way as it is now by art; and if things made by nature were made not only by nature but also by art, they would come to be in the same way as nature». The focus of this analogy is clearly on the pathways that are and nature respectively follow that result in their respective products.

[88] See Balme, «Teleology and Necessity», in *Philosophical Issues in Aristotle's Biology*, p. 275. On Plato's teleology see Friedrich Solmsen, «Nature as Craftsman in Greek Thought», *Journal of the History of Ideas* 24 (1963): 473-96, Mayr, «Teleological and Teleonomic: A New Analysis, *Boston Studies in the Philosophy of Science* XVI (1974): 91-117, Hardie, *Aristotle's Ethical Theory*, p. 23-4, and David Sedley, *Creationism and its Critics in Antiquity* (Berkeley: University of California Press, 2008), pp. 167-205.

[89] Hardie, *Aristotle's Ethical Theory*, p. 23.

distinguishes natural things from the artificial in two closely related respects. First, the type of unity natural substances possess is essential, involving principles (matter and form) that are not themselves substances. Artifacts, in contrast, possess only an accidental unity, that is, a form is imposed upon a subject by an extrinsic principle. A sculptor, for instance, stands outside his or her product or activity bringing together substances that do not themselves have any intrinsic ordination to the intended whole. Second, the principle of change in a living organism is immanent and directed to specific ends. To further clarify this difference, it may be helpful to recall that Aristotle defines nature as a principle of movement and *rest*, natural things do not just move by themselves, but they move in distinctive ways determined by their natures, and they stop when they have achieved their end-state or *telos*. Hence Aristotle will argue that those who deny that nature acts for an end (and he likely has Empedocles in mind here) «do away with nature and what exists by nature» (*Phys* 199a15).

The Accidental in Metaphysics VI (1026b4-5)

We have been considering how chance and spontaneity are accidental causes dependent upon the purposive activity of thought and nature. In turning now to the discussion of the accidental in *Metaphysics* VI, we find an argument that supports this conclusion while making more explicit the way in which thought and nature serve as the causes of the accidental. Aristotle's aim in this chapter is threefold: 1) to relate the study of the accidental to the study of being; 2) show the way in which thought and nature are causes of the accidental; and 3) explain why there can be no science of the accidental.

Of the four ways in which we can speak of the unqualified term «being», only one, «being» in the sense of the accidental, defies scientific explanation. The other three aspects of being, a) being in the sense of the true and the false, b) being in the sense of the categories, and c) being according to potentiality and actuality, remain amenable to *episteme* in that they exist either always or for the most part. But no science, whether prac-

tical, productive, or theoretical, troubles itself about the accidental (1026b4-5). The practice of carpentry, for example, does not concern itself with all the accidental attributes that may come into being along with a particular house, for as we saw in Book II of the *Physics*, such accidental attributes are potentially innumerable. For instance, the building of a certain house might require the sale of someone's land, or might obstruct a beautiful view, or might serve as a vacation home for a family – none of which contingencies can possibly be covered by the universal principles of the practice, precisely because they are just that, contingencies, and therefore incidental to the uniform demands of scientific study and application.

But because of its recalcitrance to scientific explanation, the accidental falls prey to two very different kinds of error. On the one hand is the Parmenidean error of denying its existence, rendering it non-being and consequently unthinkable. On the other hand is the more malicious sophistic error which severs the accidental from its moorings in the essential and uses it to produce all sorts of paradoxical conclusions in order to frustrate genuine philosophy (1026b12-20). Both approaches depend upon the notion that the accidental is akin to non-being, but neither, lacking Aristotle's more subtle articulation of substance and change, gives a satisfying account of *why* the accidental plays so prominent a part in our common experience. Aristotle can agree with Parmenides and the sophist that the accidental is akin to non-being. At one point, in fact, he goes so far as to say the accidental is practically a mere name (1026b13). For in his account of change at *Physics* I. 7 Aristotle demarcates a sphere of relative non-being which saves the accidental from the dangers of nominalism by grounding it in the necessary principle of matter, the *substratum*. This relative non-being is of course his idea of privation, the third principle of change besides form and the underlying material substrate. On this account, the «unmusical» man is not musical, though his non-being is spoken of, *contra* Parmenides, in a qualified sense; for a man to be «unmusical» is only another way of saying the man, on account of the potentiality of matter to be actualized by form, is not yet, though still

able to be musical. His accidental attribute of being unmusical, in a way we have already considered, takes its being from the essential principles of his existence. The accidental therefore does have being according to Aristotle, but not as the sophists would have it, untethered from what truly *is*.

As in the *Physics*, here in *Metaphysics* VI Aristotle locates the accidental in opposition to those things which happen always or for the most part (1026b28). But here he further states that those things which occur for the most part are the *cause* of those things which occur accidentally (1026b31). For instance, if in the middle of August there is freezing weather, we say this is an accident, but *not* if there is a great deal of heat and humidity, because the latter is always or for the most part so. But how are we to understand the heat of August as the *cause* of the anomalous weather of a frigid August? Before answering, let us first take a closer look at the other examples Aristotle gives of things happening for the most part. Besides this first example, there is a) the regularity of seasonal weather; b) the familiar example of the accidental paleness of a man's skin contrasted to his essentially rational nature; c) the accidental healing of a patient by a builder due to the possession of the art of house-building by a physician; and d) the accidental production of something healthy by a chef, whose real aim is make something sweet.

In general, each of these examples concern accidental occurrences involved in the regular happenings of nature and thought. For instance, example a) concerns the natural progression of the seasons; b) with nature conceived as substance, *ousia*, as opposed to accidental attributes; c) with the art of the physician, and d) with the art of the cooking. Thus examples a) and b) concern nature (albeit in two very different senses), while c) and d) concern art. These examples indicate, first of all, that we are dealing with the same kind of argument we saw Aristotle pursue in Book II of the *Physics*. The accidental, as we see here, is being viewed as a concomitant cause within the purposive workings of *dianoia* and *phusis*.

Secondly, these examples help us understand how things that happen for the most part can be causes of their accidents.

Thought and nature are precisely those principles which operate «for the most part» which is to say two things. First, that thought and nature are principles which do not necessarily achieve their ends. And yet why is this? Because thought and nature work in matter which is capable of being otherwise than it is for the most part (1027a11-12). Aristotle is obviously not working within a framework of pure necessity; for there would of course be no such thing as chance or spontaneity in such a deterministic universe. In the sublunary sphere, at any rate, matter is quite capable of being otherwise than it is. Weather patterns can change, for example, however unlikely the change may be. Secondly, it is important to note, however, that matter's capability of being otherwise does not always mean the *failure* to achieve an end. It may simply be that the end achieved by nature could have been otherwise than it is. In this regard, the result may either deviate from the telic arc or there may be multiple possibilities within a telic arc. For Aristotle, the upshot of these examples is that although chance or the accidental cannot occur without something happening for the sake of some end, either by thinking or by nature, these same principles operate in matter which is open to more than one possibility.

Conclusion: The Nature and Purpose of Aristotelian Function Argumentation

As we argued earlier, Nussbaum has interpreted the *ergon* argument in accord with her reading of Aristotelian method as a form of «internal realism». The appreciation of the *phainomena*, on this view, leads her to the contention that Aristotle's interest in function argumentation at *NE* I. 7 is to establish the importance of «conceptual community» to the moral life. Without general agreement as to the good life for man, one could not hope to justify one's way of acting, and therefore one's moral worth, to the community at large. Thus, in order to come to general agreement, examination must be made of what we commonly say about the good human life; that is, of the *phainomena*. Nussbaum's understanding of this kind of exam-

ination, however, implies an understanding of the *ergon* argument severed from any account of substance or natural teleology. According to Nussbaum, we are not to look for any «form» of human nature prior to deliberation and choice; we are only to search for and save the most prevalent and deeply held opinions about what the good life is to be[90].

We then attempted to show how this understanding of function argumentation not only presupposes a faulty conception of Aristotelian method, but a faulty understanding of Aristotelian form and teleology as well. The broader point we have made is that the *ergon* argument is closely linked to Aristotle's teleology: living things, if healthy and not deformed from birth, strive to realize the *telos* set by their species[91]. Moreover, the concepts of *teleios* and *energeia* converge in meaning since any «activity» or «actuality» is by definition «perfect». It has reached an end and transcended the process of coming-to-be. This is the account presented in *Metaphysics Theta* where Aristotle gives

[90] In her work following the *Fragility of Goodness* Nussbaum presents a more developed understanding of the need for a non-relative sense of the human *ergon* for practical reasoning. See for example her articles «Human Functioning and Social Justice» *Political Theory* 20 (1992): 202-46, and «Aristotle on Human Nature and the Foundations of Ethics», in *World, Mind, and Ethics*, pp. «Political Animals: Luck, Love, and Dignity», *Metaphilosophy* 29 (1998): 273-87, and «Aristotle, Politics, and Capabilities: A Response to Antony, Arneson, Charlesworth, and Mulgan», *Ethics* 111 (2000): 102-40. Although she still rejects what she calls «metaphysical essentialism» in this particular essay she defends what she calls «internalist essentialism», explicitly linking this idea with «internal realism» in general. In the end, however, her later views do not appear to differ substantially from her earlier ones. All along she rejects any account of the human *ergon* which sees it as determined prior to deliberation and choice.

[91] To phrase this slightly differently, we might say that even though every plant and animal undergoes a process of development, its perfection lies less in this process of becoming perfect and more in the very state of being perfect. The same distinction is apparent in certain kinds of human actions, ethical and intellectual, that display human perfection always require a prior period of formation and education, but the fruits of this process of coming-to-be (for education always entails a kind of genesis) are not themselves undergoing a process of development. If we want to retain the connection between *teleios* and a process of coming-to-be we might repeat the earlier claim that perfection is a state of having reached an end; in this way, the preceding stages of development are implied by the perfect tense of «having reached». Or better yet, we might coin a new expression and say that *teleios* is the quality of a thing or action that is «end-like», a quality of something that has attained its *telos* and is not still striving toward it.

us a simple guideline for identifying an *energeia*: if we can say about an action that it is complete or perfect at any moment, as we say about the actuality of sight, then it is an *energeia* in the full sense. But if the action unfolds through a series of steps and stages, like a symphony, it is a *kinesis* or *genesis* not an *energeia*. This is of course a familiar distinction, but the important point to recognize is that it underscores the intrinsic worth of any *energeia*. If we can say about a true *energeia* that it is complete or perfect at any moment —if, in fact, it is no coincidence that an *energeia* is always characterized by the perfect tense— this suggests that an *energeia* is never in the process of reaching a goal but has always attained its goal[92]. The goal of sight can be sight itself, and the *telos* of sight is fulfilled whenever we see. The *telos* of any *energeia* is always internal to the «activity» itself, a point which is best expressed by the equivalent term *entelecheia* – literally having the *telos* in itself. When we engage in such activities, that is, when we participate in a true *energeia* beyond which no further end is sought, we are in a state of happiness or *eudaimonia*. Thus, happiness can be defined as activities in accordance with excellence or virtue (*hai kat' areten energeiai*) (*NE* 1100b10-11).

For Aristotle, the perfect human life is constituted by end-like activities. It has reached a stage of development which no longer struggles toward a goal but has actually attained it; it fully displays those activities that make up the human *ergon*. We can rephrase the same point by noting how anything which remains potentially what it could be is still imperfect. This allows us to view from a new perspective the Aristotelian doctrine that actuality takes priority to potentiality, the priority of a final and formal cause[93]. Generally speaking, all living things strive to realize their mature biological form, or, in metaphysical terms, to become their essence (*to ti en einai*), and this is

[92] For an excellent discussion of this point, see L. A. Kosman, «Substance, Being, and *Energeia*», *Oxford Studies in Ancient Philosophy* 2 (1984): 121-49.

[93] The best example of the priority I have in mind here is the relationship of the polis to the family. The family may come first in time but the polis is prior «in nature» to families and individuals (*Pol* 1253a19-20) since individuals reach their fulfillment as political animals in the city. This sort of priority is sometimes called priority in substance. On this point see *GA* 742a19-22: one thing is prior in substance to another if it is more fully developed (*teleioteros*).

the same as becoming what they are supposed to be in actuality. Since human beings, unlike other animals, can rationally decide on a course of action, the concept of actuality (*energeia*) has a kind of ethical and normative force: we seek the course of action that allows us to become fully developed human beings, ethically and intellectually. Education is important in a human life, then, not simply because it teaches us a set of skills but because it teaches us to desire and understand the truly human good. Without this we are likely to be misled by an apparent and false good (*NE* 1113a15-b3).

The notion of a distinctive human end, or *ergon*, thus serves both a natural and normative purpose insofar as our «function» or «task» as human beings is not simply to perform a certain type of activity but to perform it well, just as the *ergon* of a musician is not simply to play a harp but to play it well (*NE* 1098a9-11)[94]. The goal of development for a living thing in general, then, is to become an actual representation of the best qualities of the sort of thing it is. To become a human being in the fullest sense —the *energeia* and *entelecheia* of what a human is in the highest ethical and intellectual sense— requires the right kind of training and practice but also the right opportunities where the excellences of character and intellect can be put into effect. A prerequisite of human fulfilment is therefore a healthy polis, since no one would choose to live without friends (*NE* 1155a5-6 and 1172a2-8), and since ethical and intellectual virtues prosper when there are others to appreciate and share them.

Our conclusion can only be that the *ergon* argument at *NE* I. 7 must be understood as an argument for what the most perfectly actualized human being —by nature— is to be[95]. For

[94] In his definition of capacity (*dumanis*) in Metaphysics *Delta*, Aristotle incorporates the notion of doing well into the very notion of a capacity: «sometimes we say of those who merely walk or speak but not well . . . that they cannot speak or walk (*Meta* 1019a25-26). Alasdair MacIntyre captures this point well in his discussion of «functional» concepts which have normative implications: «It follows that the concept of a watch cannot be defined independently of the concept of a good watch nor the concept of a farmer independently of that of a good farmer». See MacIntyre, *After Virtue*, p. 58.

[95] For a good account see D. S. Hutchinson, *The Virtues of Aristotle*, London, Routledge, 1986, pp. 52-72; Kraut, «The Peculiar Function of Human Beings», pp. 467-78, and Lawrence, «The Function of the Function Argument», pp. 445-75.

function, given our interpretation of form and teleology, implies a reduction of potency to act, and not just to any actuality, but perfect actuality. «Organization-to-function», in the end, is not the same as final causality. This is what we mean when we say, for example, «this computer is not fulfilling its function». This is not to say the computer has ceased to be a computer (the problem may in fact be minor). It is only to say that it is falling short of its perfection[96]. We must remember, moreover, why Aristotle introduces the *ergon* argument at this point in the *Nicomachean Ethics*. As is well known, he is trying to determine the nature of *eudaimonia*. In other words, he is looking to specify the ultimate end (*telos*) of human existence. As we noted earlier, function argumentation provides the answer to just this sort of query; for it tells us the characteristic activity of the fully actualized form of a thing. In addition, chance and spontaneity, must be understood as concomitant occurrences related to the act/potency reductions of natural processes or human actions. Finally, it is the interruption of the natural desire to realize our perfection or fulfilment as human beings, more specifically, which distinguishes chance or luck from spontaneous occurrences, which are due to the necessity of matter. Contrary to Nussbaum, therefore, Aristotle's function argumentation, both in the *Nicomachean Ethics* and in the biological works, is concerned with far more than part/whole analysis or the merely distinctive or characteristic. It is primarily concerned with form as principle, and ultimately, with the perfectly actualized forms of living organisms.

[96] Kraut's arguments against Sidgwick are also relevant in answering Nussbaum's claims: «But Aristotle must be doing more than analyzing common usage; otherwise he could not recognize the existence of virtues for which there are no names (see for example, *NE* IV. 4 1125b17, IV. 6 1127a7, IV. 7 1127a14). He is trying to show why temperance, courage, and so on deserve a prominent place in *any* human life. Excellent theoretical and practical thinking are the proper ultimate ends of human life, just as reproduction is the proper end of plants. See for example *Pol*. VII. 15 1334b15: 'For us, reason and understanding are the end of nature.' This commits him to the view that any society that impedes the full development of this end is defective, even if the 'Common Sense Morality,' of that society makes rational excellence subordinate to certain other 'virtues.' For example, if a political community makes fierceness in battle the ultimate 'virtue,' Aristotle will criticize it, because excellent reasoning, not martial valor, should play that role». See Kraut, *Aristotle on the Human Good* (Princeton: Princeton University Press, 1991), p. 342, n. 27.

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NOTAS Y COMENTARIOS

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