

Aristotle Notes

LART602

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Aristotle on Change – *Physics*, Book I, Chapters 1, 5, 6, 7 (184a11-184b5, 188a32-188b26, 189a28-189b4, 189b30-191b34)

Notes on terminology and basic concepts (see also the text's Glossary, pp. 973ff, for useful discussion of Aristotle's terminology):

- Note the title, *ta phusika*, meaning “the *phusis* things” – i.e., natural things, things with a *phusis*, an internal principle of being – in short, a discourse on nature.
- 184a11-16. Note the explicit reference to principles (*archia*) and their role in human knowledge of the physical world. Note too that Aristotle leaves open the possibility that some things lack an *arche* (principle), suggesting that some things lack logical order (see the discussion of chance and luck).
- Notice, too, that Aristotle recognizes a complex system of principles, elements, forms, essences, and accounts. The form of a thing offers an account (*logos*) of its nature. E.g., the form of Socrates is “man”, roughly speaking, and also, in a somewhat different sense, “philosopher”. The elements, for Aristotle, were earth, air, fire, and water. These have their own nature (*phusis*), such that in various combinations they yield the various stuffs of the world (copper, oil, bone, etc.). In addition, certain things have an “essence”, for Aristotle, which is a complex form identifying its nature (*phusis*). The essence of Socrates would be identified by his taxonomical position: (as we now understand it –) eukaryot-metazoan-deuterostome-chordate-vertebrate-synapsid-mammal-eutheria-primate-catarrhin-hominid-homo-sapiens.
- Note the “data” collection at 189b33-190a13, for example, followed immediately by analysis/synthesis at lns. 13-22.
- Note the references to *logos* – i.e., “account” – e.g., 188b17, 190a18, 191a13.
- Note the reference to order (cosmos) at 188a32-3: the natural world acts not “in just any old way.” Rather, change occurs in an orderly fashion, from opposites (see below).
- Note the mention of order and disorder at 188b11-15, and the role of *logos* (account) in providing order, at the subsequent lines 16-20.

From Parmenides, we have the following puzzle (*aporeia*; see 191a24-28):

1. If change (becoming *P*) is possible, then it must come either from that which is (i.e., *P*), or that which is not (i.e., not-*P*).
 2. But *P* cannot come from *P* (i.e., for that would not be a change).
 3. And *P* cannot come from not-*P* (i.e., cannot come from nothing).
- Hence,
4. Change is not possible.

Aristotle's response

- Change does involve opposites – it is not “completely random” or disorderly.
 - o From *P* comes not-*P*
 - o From not-*P* comes *P*
 - o E.g., the dark, (not-pale) comes from the pale; the musical from the unmusical.

- But, he thinks, change does not involve *only* opposites.¹
- Changing things are not (merely) simple, but compound. See 188b9-10, 189a28-190b1.
 - Simple change involves that which comes or ceases to be, only. E.g., the musical thing (as such) comes to be from the non-musical thing (as such). Where change in simple terms is concerned, we speak solely of opposites.
 - To speak of compound change, by contrast, is to speak of simple change in conjunction with a *subject* of that change. Thus, the non-musical *man* becomes musical. Note that the subject of this change, a substance, is not the “opposite” of anything. Substances *per se* do not have opposites, because substances are things and not simply properties. (Compare *Categories* 4a10.)
- So, in response to Parmenides, Aristotle can reject (1): *P* can come from the *compound* of *not-P* plus a subject (i.e., the subject of *not-P*). (Similarly for a change to *not-P*.)
 - Note that Aristotle can rely here on the substance/property distinction already drawn in the *Categories*. Substances are ontologically prior to the properties (those things *said in* a thing) that inhere in them.
 - In other words, substances *persist*² through change, whereas the property instances they instantiate come and go, replacing each other.

Two forms of change

- Aristotle further departs from Parmenides by recognizing both accidental and substantial change.
- Accidental change: a substance gains or loses an accidental property. E.g., man becomes musical; Socrates becomes pale. Accidental change always involves opposites.
- Substantial change: a substance comes/ceases to be by the gain/loss of an essential property.
 - Here, Aristotle employs a distinction between *matter* and *form*, enabling him to identify a further persisting subject of change.
 - Form: that which is gained/lost (admits of opposites)
 - Matter: the subject of substantial change (doesn't admit of opposites)
 - For example: a (formless) pool of bronze is molded into the shape (form) of a statue (190a26). The persisting subject of change, here, is the bronze. It gains or loses a particular form. The souls of animals (and humans) are the forms defining their matter (641a19-22).
- Aristotle's appeal to *matter* as a persisting subject of change will raise an evident conflict with his account in *Categories*. For if matter can be a subject of change, it would seem to contest primary substance's claim to being the most basic of beings. (We can put this

¹ Notice the point that Aristotle makes at 188b10-21: change involves opposites, but we do not always notice this, since we generally lack names for the disordered state. That is, where change involves order, the opposite of order will be disorder. Knowledge of music is an ordered state; the lack of this knowledge is, relative to knowledge of music, simply a lack of order. (As far as the order of a brain is concerned, ignorance of music entails a certain form of disorder, whatever other order it might exhibit.) Where there is no order, there is no occasion for a name or predicate identifying that lack of order. Thus, we don't ordinarily refer to those who are ignorant of music as the non-musical. And thus, when one acquires a knowledge of music, we may not notice that the musical has replaced the non-musical – that one state has supplanted its opposite. It is interesting to note, here, that Aristotle characterizes the negative state in terms of disorder (chaos).

² Persistence is a philosophical technical terms. A thing *persistent* if and only if it exists at more than one time. Barbaro, for instance, persists throughout the course of his running in the Kentucky Derby, a period lasting about 2 minutes during 2006; obviously, he undergoes some change during this time.

puzzle in the form of this question: why isn't a shapeless pool of bronze itself a primary substance? Perhaps the answer will be that matter as such does not occur without some form or other.)

Physics: Book II, Chapters 3-9, 194b17-200b8,

In General

- To know, says Aristotle at 194b19, is to know the reasons why. He identifies four basic classes of *reason why* or *cause (aition)*.
- Note that his concept of cause is thus broader than our contemporary one. His includes the end or goal that a thing may satisfy, the stuff of which it is constituted, the idea defining it, as well as its immediate producer or source. Only this last do we now usually call *cause*. Where Aristotle speaks of cause, we might rather speak of *explanation*.
- *Aition* (pl., *aitia*) is "spoken of in many ways." As usual, Aristotle's account is comprehensive and systematic. He includes in his account luck and chance, generic v. specific causes, potential causes, coincidence, and a discussion of necessity.

The Four Causes

- Aristotle's four causes are:
 - o Material: the stuff of which a thing is constituted, such as the bronze of a statue, or the boards, bricks, nails, etc. of a house
 - o Formal: the idea defining a thing, such as the shape of a statue (i.e., both in the mind of the sculptor and in the statue itself) or that of a house (as both in the mind of the architect and in the finished house); also sometimes referred to by Aristotle as a thing's *essence* and definable in terms of the differentiae of the categories in which the thing falls – see *Categories*.
 - o Efficient: the producer of a thing, such as the sculptor or the builders of the house; sometimes referred to by Aristotle as the *mover*
 - o Final: the end or goal satisfied by the existence of a thing, such as aesthetic gratification in the case of a sculpture, or protection from the elements in the case of a house
- Everything has these four causes, on Aristotle's view, although formal, efficient, and final cause "often amount to one" (198a25).
 - o Formal, efficient, and final cause come together in natural objects such as plants and animals. Here, "what something is" (its essence or form) is "what it is for" (its goal or end), and this is identical to its "first source of motion" (its efficient cause).
 - o In order to understand this, we need to understand Aristotle's view of the end (*telos*) of living things.
 - ♣ The goal of a natural object is to function in a certain way and thereby to be a being of a certain sort. Thus, the goal of a horse is to function as a horse and, thus, to be a horse. (This notion will include Aristotle's concept of virtue (*arete*): the virtues of a horse are those qualities enabling it to function *well* – i.e., enabling it to be a "good horse." See **Aristotle IV** notes.)
 - o We may contrast the final cause of natural objects with that of artifacts: in natural objects, the final cause is "internal" whereas in artifacts, the final cause is "external" to the object in question. The pleasure we receive from a sculpture is something independent of the sculpture *per se*. On the other hand, horse-life is not distinct from the essence of a horse – rather these are identical.

- Aristotle argues that “nature” does have “ends” and is thus properly “a cause” (Book II, Chapter 8). He acknowledges that we might think everything in nature to occur by necessity or by coincidence – in fact, he does so in terms strikingly similar to the evolutionary account. But he insists that animals and plants must have a proper goal defining them, for we cannot otherwise explain the high degree of regularity with which individual members of species instantiate their respective forms.
- In a sense, then, there are two causes where natural things are concerned: the matter of which they are composed, and their form, which includes efficient, formal, and final cause.
 - ♣ Where the unity of efficient and formal cause is concerned, Aristotle refers to the parent of a given organism. On his account, it is the male of the species that carries the “seed” – i.e., the form – of the offspring; this seed gestates in the womb of the female, who makes no contribution to its nature but supplies the matter to be informed. In this sense, the “first source” of a horse (or man, etc.) is its sire, itself a thing of that form.
- Note that Aristotle is not here attributing to “nature” any *conscious* pursuit of a goal. I.e., natural ends are not like human ends, which are consciously chosen. Rather, natural ends are for Aristotle “principles” which define how nature operates or towards which the natural world tends.
- Note again the epistemological and ontological unity of Greek thought. As we have seen in the Pre-Socratics and in Plato, Aristotle employs a concept of “form” which serves both noetic and metaphysical roles.
 - ♣ As defining the essence of a thing, the form (*eidos*) or concept of a thing is something we can understand.
 - ♣ As its essence and goal, however, the form or concept of a thing is also literally “what it is,” for Aristotle.
 - ♣ This dualism is also apparent in the Greek concept of principle (*arche*) and account (*logos*), as we have seen.
- (See further discussion of these concepts in the *Metaphysics*.)

Luck and Chance

- Luck and Chance can both also be “spoken of” as causes, for Aristotle. Chance is associated with natural ends, for Aristotle, while luck is associated with human (chosen) ends. See *Physics* Book II, Chapters 4-6.
- Events caused by luck, as defined by Aristotle, are those which satisfy some human, chosen end by mere coincidence. Aristotle gives two kinds of illustration:
 - A musical man is the efficient cause of a house (i.e., it is only accidental to the house being built that its builder also happens to be musically trained)
 - A man encounters a debtor in a place where he did not intend to encounter him, thus achieving a goal – the repayment of the debt.
- Aristotle distinguishes Chance from Luck by reference to human intent. Luck is the term he reserves for unplanned or unintended states or events satisfying some human intent. ‘Chance’ refers to all other coincidences pertaining to some end.
 - Here, too, chance involves satisfaction of some goal or end by accident.

Animals find food by chance, according to Aristotle, because they do not make deliberate choices.

Method

- Aristotle seems to start and restart his discussion several times. It is typical of Aristotle to give careful attention to procedure or method, and to observe such general principles informing his topic as thus become evident.
- First, in Book I, Chapters 1-3, Aristotle describes his general topic, namely, “the good” relative to humans. Along the way, he points out several general features of “goods” and of an inquiry into them.
 - For one thing, Aristotle points out that *every* human action “seems to aim at some good” (1094a2). That is, no one does anything without conceiving the goal to be “good” for something.
 - Aristotle also distinguishes different kinds of good, some of which are activities, some products of an activity, where the latter are superior to the activities producing them. (1094a3-6)
 - We see, too, that there are hierarchies of goods, so that the good end of (military) horsemanship is subordinate to that of (military) generalship. Logically, however, this hierarchy cannot be infinite, or else no good would be well-defined; this entails that there be a highest good. (1094a18-22)
 - Aristotle’s note at 1094b20 is important and recurs elsewhere: moral philosophy is not an exact science. Partly this is because of the great variety in “what is fine and what is just.” This makes morality a sufficiently complex matter that we must expect from its study only general principles, not specific instructions on behavior. Cf. 1098a27, 1104a3.
- In Chapter 4, Aristotle considers what “most people” call the highest good, and considers the different beliefs of different groups about what constitutes this state, and the reliability of those beliefs.
 - First, he observes that everyone agrees that “happiness” is the highest human good, though we disagree about what makes one happy. (1095a20)
 - “The many” believe pleasure, wealth, or honor to make one happy, though these beliefs tend to be unstable, and “the wise” tend to think otherwise. (1095a23-28; see further, Chapter 5, for the shortcomings of these goods.)
 - Note at 1095b4-13 Aristotle’s claim that only those who have been raised well will have reliable beliefs about happiness, a claim appearing also elsewhere.
- In Chapter 7, Aristotle articulates certain criteria by which the highest good may be identified.
 - Completeness: an incomplete end is one that is not fully an end in itself – i.e., it is something that is pursued *for* some *further* end. Happiness is thought to be a complete end, insofar as it is not pursued for any further end, but only for itself (1097b1).
 - Self-Sufficiency: “we regard something as self-sufficient when all by itself it makes a life choiceworthy and lacking nothing.” (1097b14-15)
 - Choiceworthiness: choiceworthiness admits of degree: a good is of greater choiceworthiness to the extent that it is (a) chosen over others and (b) thus cannot be made better by the addition of other goods. Happiness

is the most choiceworthy of goods, for Aristotle, because it is chosen over all other goods, and there is no good that can be added to it, making it better. (1097b16-19)

- This completes Aristotle’s general discussion of the human good. He proceeds to a discussion of *virtue*, which enables a more specific account of happiness. (This break occurs in the middle of Chapter 7, at 1097b24.)

Virtue

- The general account of the human good (happiness) provided up to 1097b24 identifies its general features, but does not indicate specifically what it is. In order to make his account more precise, Aristotle appeals to certain structural features of human being, which are informed by his prior work on causes (i.e., *Physics* II).
 - The *phusis* of a thing, for Aristotle, involves its matter and form, where the latter is a further complex of formal, efficient, and final causes. To know a thing is to know its causes. (See *Phys.* 184a10-16.)
- We may further know a thing, according to Aristotle, by reference to its *function* (*ergon*) and to its *virtue* (*arete*). See 1097b24-33.
 - The function of a thing is its “characteristic activity” by means of which it reaches its end (*telos*).
 - The virtues of a thing are those qualities enabling it to perform its function well, so as to be a good instance of its kind. See also 1098a9-12.
- These general principles may be illustrated in the following chart:

Object	End (<i>telos</i>)	Function (<i>ergon</i>)	Form (<i>eidos</i>)	Virtue (<i>arete</i>)
Hammer	the driven nail	striking	(those properties permitting the striking)	(those qualities optimizing striking)
Horse	being a horse (horse life)	galloping, whinnying, eating, mating, etc.	(those properties permitting horse functioning)	(those qualities optimizing horse functioning)
Human	being a human (human life)	(see below)	(those properties permitting human functioning)	(those qualities optimizing human functioning – see below)

- In general, as above, we may define a thing by reference to its end – Aristotle is a teleologist.
- The function of a thing is whatever activity it performs satisfying its end. The form of a thing will be those qualities enabling it to function properly. In the case of a hammer, this entails a certain size, shape, and composition, so as to permit the striking function bringing it about that nails may be driven into wood (etc.). In the case of a horse, the functions are of course more complex and varied, but their end result is that a being of a certain kind exist, namely, a horse.
- Note that the form of a thing will also determine its material composition. See 389b28-31, 390a2-20: in order to function properly, a thing must be composed of a certain material. I.e., a thing’s end determines its function,

- its function determines its form, and its form includes a specification of the kind of material required for proper functioning. In the case of a hammer, iron and wood are suitable material causes, given the hammer's end; styrofoam, not.
- The function of living beings Aristotle discusses in terms of "souls" (*psuche*), and he identifies three basic kinds. See 1097a33-1098a3, 1102a28-1102b4; cf. *De Anima*.
 - The "nutritive" soul is shared by all living things – plants, animals, and humans – and comprises the organism's capacity for metabolic process and growth.
 - The "perceptual" soul comprises an organism's various capacities for sensation, and is shared by animals and humans.
 - The third soul is the "rational" soul and this is peculiar to humans alone.
 - We may think of these various "souls" as different, general respects in which material stuff may be "animated". Note that as functions, they entail a form of a certain kind, where this will include an "efficient cause" or principle of motion. I.e., an organism's soul constitutes an internal principle of change.
 - The virtues of a thing are those qualities enabling it to perform its function well, thus satisfying its goal in the best possible way. See 1097b25-29, 1098a8-17, 1106a17-24.
 - For the given "soul" function, we may presumably identify qualities optimizing the processes of metabolism, the capacities to see and hear, etc. These qualities allow us to speak of a "good liver" or, by contrast, "poor eyesight", where the given virtues are present or absent.
 - Our particular concern is of course with the human good, so Aristotle focuses on the human virtues – those qualities, that is, enabling a human to function well (as a human), resulting not simply in a human life, but in a *good* human life. Thus, whatever are the specifically human virtues, they will be those qualities making life good – i.e., leading to happiness. In this way, Aristotle will provide the more precise account of human happiness mentioned above. See 1102a13-15.

Human Virtue

- For Aristotle, it is the capacity for rational activity that defines humans as such. While we share with other organisms the nutritive and perceptual souls, it is the rational soul that distinguishes us from those other beings. Consequently, to speak of the human good – i.e., the good for humans as distinct from other kinds of being – we must refer to those virtues associated with the rational soul.
- While the human soul as a whole has the three parts specified above, it may also be divided in terms of those parts that "share in reason" and those that do not. The part of the soul that is associated with reason is itself divisible into two distinct parts. See 1102b26-1103a3.
 - Note, first of all, that the rational soul per se is the specific capacity for reasoning – the rational mind.
 - And while the other parts of the soul do not themselves reason, they may "listen to reason," in the sense that rational thought may influence their functioning.

- Thus, Aristotle divides the soul into those parts that have nothing to do with reason, and those that “share” in it, in some respect or other.
- The “plant-like” (i.e., nutritive) part of the soul is deaf to reason. That is, I cannot by rational thought alter the way my liver functions, for example.
- But certain aspects of the “perceptual” soul may be influenced by rational thought. For the perceptual part of the soul includes the capacity for *feeling* and *physical action*, and these may be trained by the rational mind. For example, my proclivity for fear may “listen to” what reason tells me is, in fact, dangerous. (Cf. Plato, *Republic* 439e-441b.)
- Thus, we have on the one hand the part of the soul that performs reasoning activities – reason per se, the rational soul – and then we have the part of the soul that does not itself reason, but is responsive to reason.
- Given the distinctions in the parts of soul that are associated with reason, Aristotle defines two sorts of virtues peculiar to humans. See 1103a4-18.
 - Where reason itself is concerned, we have the “virtues of thought,” such as “wisdom, comprehension, and intelligence.” These are developed by education, primarily.
 - Those parts of the soul that listen to but do not perform reason are optimized by the “virtues of character,” which include “generosity and temperance.” The character virtues are developed by habituation. See 1103a32-b25.
- This brings us to Aristotle’s well-known account of (character) virtue as a “golden mean.” See 1104a12-25, 1106a27-b28, 1107a9-27.
 - Where the character virtues are optimal capacities to act or feel in ways characteristic of human life, Aristotle observes that the optimal state appears to be a mean or average between “extremes” of “excess” and “deficit”. (1104a12) Too much or too little of a given characteristic functioning, in other words, results in worse living.
 - Aristotle supplies a number of examples to illustrate this idea, including his model example, courage: if one fears too much, one becomes cowardly; if one fears too little, one becomes rash. (1104a19-21) Both cowardice and rashness are *vices* – i.e., habits tending to reduce the quality of life.
 - It is important to note that this “mean” state is not itself an act or a kind of act, nor again a feeling or kind of feeling, but a *trained capacity* to act or feel in certain ways. Specifically, it is the trained capacity to act or feel in the way most likely to contribute to a good life, where this is a matter decided by reason.
 - That is, what Aristotle calls courage is knowing when to fear and when not to fear. This state, however, is not simply an item of information that one can know intellectually. Rather, it is a condition ingrained in one’s character by a long process of fearing and not-fearing, guided, presumably, by the many models, teachers, parents, friends, etc. of one’s community.
 - Note, too, that Aristotle places several further conditions on the character virtues: one must find pleasure in virtuous behavior; it should be easy for one; a stable condition. See Book II, Chapters 3 and 4.
- For official definition of character virtue, see 1106b17-18 and 1107a1-4.

Anthropos Logos

- Putting it all together, we have something like the following.
- Humans, like everything else in Aristotle's world, are defined by their various "causes", including their end, form, principle of motion, and matter. The end of human life is human living – living as a human. This is best understood in terms of its ideal or optimal form, meaning the good life, for humans, which itself is made possible by those qualities optimizing human form and function, the human virtues.