Avoiding *Façons de Parler*:
Potentiality and Possibility in Aristotle's Philosophy

José Luis Fernández
Department of Philosophy
Fairfield University
1073 North Benson Road, Fairfield, CT 06824, USA
E-mail: Jfernandez1@fairfield.edu

Abstract:

The distinction between potentiality and possibility in Aristotle's modal teleology is sometimes conflated by the implicative conjunction that potentiality implies possibility *and* possibility implies potentiality. In his unpublished doctoral dissertation Richard Rorty warns that trying to pin down Aristotle's definition of potentiality often leads to treating the term as a "mere *façon de parler*." Consonant with Rorty, this paper observes that the definition of possibility in Aristotle's works is not without its own share of semantic snags. Subsequently, I abide by Rorty's caveat not only to resist the lure of expressive convenience some commentators have taken in describing potentiality, but also to elucidate possibility's two-fold field of modal application. Consequently, this paper aims to present a nuanced account of how notions of potentiality and possibility are presented in Aristotle's treatises for the sake of demonstrating that both sides of the *potentiality/possibility conjunction* do not mutually imply.

Keywords: Aristotle, Teleology, Modality, Potentiality, Possibility, Necessity, Jaakko Hintikka, Giorgio Agamben

Any attempt to engage with Aristotle's teleological and modal concepts requires close attention paid to the distinction he makes between potentiality and possibility; however, after performing this crucial categorial demarcation one must then be careful in how one chooses to articulate these constituent modal concepts.[1] Jaakko Hintikka suggests that for Aristotle possibility's field of application is twofold, with possibility proper (e.g., logical possibility within the domain of propositions) and with contingency (e.g., metaphysical possibility within the domain of phenomena).[2] In accordance with Hintikka, I shall employ the notion of possibility as it is generally given in modal discourse and does not do violence to Aristotle's fine gradations, i.e., as that which is *not necessarily not* and, subsequently, can be otherwise.[3] Potentiality, too, is not free of semantic snags. In his rich, reflective, and reinforcing treatment of this topic, Giorgio Agamben offers an inviting introduction into the concept,

> The concept of potentiality has a long history in Western philosophy, in which it has occupied a central position at least since Aristotle. In both his metaphysics and his physics, Aristotle opposed potentiality

to actuality, *dynamis* to *energeia*, and bequeathed this opposition to Western philosophy and science. My concern here is not simply historiographical. I do not intend simply to restore currency to philosophical categories that are no longer in use. On the contrary, I think that the concept of potentiality has never ceased to function in the life and history of humanity, most notably in that part of humanity that has grown and developed its potency (*potenza*] to the point of imposing its power over the whole planet (Agamben 2009, 177).

Agamben's focus on the manifold implications that realized and unrealized potentialities have in the world is judicious, and his mention of Aristotle's opposition of *dynamis* (potentiality) and *energeia* (actuality), (which, I would add, are always joined in teleological tandem), provides a clearing into which the concept of potentiality can appear to examine ideas ranging through a luminous collection of thinkers that includes, *inter alios*, Walter Benjamin, Jacques Derrida, Gilles Deleuze, G.W.F. Hegel, Martin Heidegger, William Shakespeare, and Herman Melville. However, in forging his teleologically driven study, Agamben arrives at the problem that can be characterized as something possessing a negative potential or a potential not to x. Drawing from Aristotle's ground-breaking genius in the *Metaphysics*, he identifies a seminal passage, but not without unintentionally introducing another problem,

> Aristotle writes: "A thing is said to be potential if, when the act of which it is said to be potential is realized, there will be nothing impotential" (*esti de dynaton touto, hoi ean hyparxei he energeia ou legetai ekhein ten dynamen, ouden estai adynaton*) (*Metaphysics*, 1047a 24-26). Usually this sentence is interpreted as if Aristotle had wanted to say, "What is possible (or potential) is that with respect to which nothing is impossible (or impotential). If there is no impossibility, then there is possibility." Aristotle would then have uttered a banality or a tautology (Agamben 2009, 183).

Here Agamben points out an infelicitous interpretation that indeed leads to a trivial redundancy; however, although Agamben frames it this way (e.g., "possible (or potential)," the same thing is not being said twice. *Dynaton* and *dynamin* are not coterminous. This conflation can sometimes be attributed to the likeness of the Greek terms *dunaton* (possible) and *dunamis* (potential), but they are different modal/teleological categories.

Indeed, Richard Rorty points out that trying to pin down Aristotle's definition of potentiality often leads to the temptation of using the term as a "mere *façon de parler*."[4] Taking Rorty's lead, I will resist this lure of convenience and treat potentiality as that which has the *power* not only for change, but also for moving toward a more completed state of development.[5] I set out these markers in advance because this paper will not only look closely at the distinction between potentiality and possibility, I will also endeavor to challenge the view that holds this tandem as joined by a material biconditional, *i.e.,* that potentiality implies possibility and possibility implies potentiality (henceforth, the potentiality/possibility conjuncts or *PPC*).

The Ontological Primacy of Actuality over Potentiality

Aristotle's notion of potentiality or potency is ubiquitous in some form or other among his works and we can find important discussions of it in *Physics*[6] and *De Anima*;[7] however, as we have already seen, its most instructive consideration resides in *Metaphysics*.[8] The fundamental idea of potentiality is located in the capacity of an object to *become* something or to perform some action. For example, as seen in the distinction Aristotle makes between passive potentiality and active potentiality: "'Potency' means (I) a source of movement or change, which is in another thing than the thing moved or in the same thing *qua* other" (*Meta.*, 1019a 15-16), and similarly, "Potency then means the source, in general, of change or movement in another thing or in the same thing *qua* other, and also (2) the source of a thing's being moved by another thing or by itself *qua* other" (*Meta.*, 1019a 18-21).

Moreover, this source of change or movement does not do violence to a thing's essence (*Meta.*, 1046a 11-12). An acorn has the potentiality to become an oak tree, and a tadpole has the potentiality to become a frog. In both of these examples it is important to see how potentiality relates to substances; hence, the acorn and tadpole are such that they may experience change without losing their essential properties. At this juncture, we might posit the following ascriptions for potentiality:

(i) *x* has the potentiality to become F only if *x* is the kind of thing that can become F without losing its essential properties; and
(ii) *x* has the potentiality of doing F only if it is the kind of thing that can do F, whether it does F or not.

An important element of potentiality is that it differs in sense from actuality. Indeed, in *Metaphysics* 9, Aristotle's project is partly a response to the strange views of the Megaric school,[9] which seems to have conflated the two notions, "There are some who say, as the Megaric school does, that a thing 'can' act only when it is acting, and when it is not acting it 'cannot' act. ...It is not hard to see the absurdities that attend this view" (*Meta.*, 1046b 28-30). The "absurdities" being referred to are of the following manner, "For that which stands will always stand, and that which sits will always sit, since if it is sitting it will not get up; for that which, we are told, cannot get up will be incapable of getting up" (*Meta.*, 1047a 15-20).

The above is sometimes referred to as the "Immobility Argument,"[10] and Aristotle takes issue with the Megaric school because if potentiality is denied, then actuality will fail to be understood as the actuality of some potentiality. And this would amount to a rejection of change. Hence, for Aristotle, the Megaric position not only triggers a Parmenidean extermination of movement and change,[11] but it also leads to a static and rigid ontology, "Therefore these views do away with both movement and becoming... .[T]hese views make potency and actuality the same, and so it is no small thing they are seeking to annihilate" (*Meta.*, 1047a 14-20). The upshot of the Megaric position amounts not only to a negation of change, but also to the view that all things that exist are eternal

and necessary, i.e., timeless. Aristotle will deny this view. For him, a potentiality is always directed toward a definite actuality that takes place in time. Actuality, then, is not, as Aristotle's portrait of the Megaric school implies, simply what is extant; rather, it is the *fulfillment* of a specific potentiality.

Recall now my two preliminary ascriptions of potentiality, namely,

(i) *x* has the potentiality to become F only if it is the kind of thing that can become F without losing its essential properties; and

(ii) *x* has the potentiality of doing only if it is the kind of thing that can do F, whether it does F or not; *and now let us add*,

(iii) *x* has the potentiality to become or do F only if F is a directed end or activity for *x*.

In Aristotle's teleological ordering, a potentiality *x* is acquired *for the sake of* an actuality *y*; hence, things that exist potentially exist *for the sake of* an actuality:[12] "[T]hat for the sake of which a thing is, is its principle, and the becoming is for the sake of an end...and the actuality is the end, and it is for the sake of this that the potentiality is acquired" (*Meta.*, 1050a 8-10).

Just before this passage, we note Aristotle's famous assertion, "it is clear that actuality is prior to potency" (*Meta.*, 1049b 4-5).[13] Aristotle's granting primacy to actuality over potentiality is in harmony with his *hylomorphism*[14] insofar as actuality corresponds to form and potentiality corresponds to matter. Just as actuality is prior to potentiality, Aristotle also argues that *form is prior to matter*;[15] moreover, actuality is prior in substance vis-à-vis potentiality because that which comes before "already has its form, and [that which comes after] has not" (*Meta.*, 1050a 6). For Aristotle, the act of "becoming" is for the sake of an end. And while actuality is an end, potentiality is acquired for actuality's sake; what is more, the order cannot be reversed, "For animals do not see in order that they may have sight, but they have sight that they may see. And similarly men have...theoretical science that they may theorize; but they do not theorize that they may have theoretical science" (*Meta.*, 1050a 10-14). Thus, by saying that actuality or form is prior to potentiality or matter, Aristotle affirms that actuality *is* the end *for the sake of which* potentiality serves, and this takes place only within the domain of substance.

What is Possible Cannot be Time-less

Aristotle notion of possibility finds expression in, *inter alia*, the *Prior Analytics*: "I use the term 'to be possible' and 'the possible' of that which is not necessary but, being assumed, results in nothing impossible" (*Pr. An.*, 32a 18-20). Richard Patterson refers to this modal characterization of possibility as "not necessarily not".[16] Or as Sarah Waterlow has put it by applying *modus tollens* onto modal discourse:

[I]f 'q' is a consequence of 'p' and 'q' represents an impossibility, then so does 'p'. Whereas if and only if nothing impossible follows from 'p', we are entitled to regard 'p' as meaning something possible. This is precisely the principle stated in *Prior Analytics* I.13, 32a18-20 (Waterlow 1982, 19).

The idea here is that possibility is defined as that which is *not necessary* and *not impossible*. However, just as with our treatment of potentiality, we will have to flesh out Aristotle's notion of possibility some more.

In *On the Heavens* (I.12, 281a 27-283b 22) the following idea of possibility emerges:

(i) If it is possible that p, then at some time it is the case that p.[17]

That is to say, p is possible *if and only if* it is actual at some time *t*. However, there is scholarly concern on whether Aristotle's notion of possibility can be extended to include not only objects, but also states of affairs.[18] For example, as in the problem of future contingents, i.e., that of a future sea battle (sb) depicted in *De Interpretatione* appears to accommodate discussion for the latter state of affairs. Briefly, the issue at hand is whether at some time *t*, say, tomorrow, it *is* true or false that there will be a sea battle (let 'true' be Tsb and 'false' be Fsb). The two states of affairs are contraries, and, hence, cannot be simultaneously true. However, at some time *t*, which is prior to t_n, it does not seem the case, either Tsb or Fsb, that there will be a sea battle at t_n; for the state of affair has not yet taken place.

According to the Law of the Excluded Middle, it seems that either one of Tsb or Fsb must be correct. But if I utter Tsb and it is now true, then, *necessarily*, there must be a sea-battle tomorrow; that is, there *cannot fail* to be a sea-battle tomorrow. Hence, the upshot is to commit to the notion that nothing is possible except what actually happens, viz. there are no unactualized possibilities. A direct consequence of this seems to hold Aristotle to the necessity of future contingents. However, Aristotle avoids this commitment by holding that contingent things, i.e., things and state of affairs *capable* of being or not-being, do not have their existence of necessity, "Now that which is *must needs be* when it is, and that which is not must needs not be when it is not. Yet it cannot be said without qualification that all existence and non-existence is the outcome of necessity" (*De Int.*, 19a 23-25; my emphasis).

Hence, although everything that exists does so of necessity ("must needs be") at the time when it exists, prior to a thing's existence, it is not the case that it was already modally necessary for it to exist. Moreover, Aristotle suggests that in cases which allow for the truth of either contrary, "One of the two propositions in such instances must be true or false, but we cannot say determinately that this or that is false, but must leave the alternative undecided" (*De Int.*, 19a 38-39). One contrary, then, must be true rather than the other, but it must not be already true or false. That is, at a time prior to the actualization of one of the contraries, say, Tsb, a truth value is *not determinate*, i.e., one must not yet be assigned to it, and there must not be any "third way" or intermediate between contradictories. This comports with Aristotle's assertion in *Metaphysics* 7:

> But on the other hand, there cannot be an intermediate between contradictories, but of one subject we must either affirm or deny any one predicate. This is clear, in the first place, if we define what the true and the false are. To say of what is that it is not, or of what is not that it is, is false, while to say of what is that it is, and of what is not that it is not, is true; so that he who says of anything that it is, or

that it is not, will say either what is true or what is false; but neither what is nor what is not is said to be or not be (*Meta.*, 1011b 23-25).

Thus, we can link Aristotle's Law of the Excluded Middle with states of affairs as follows: "In the case of that which is or which has taken place, propositions, whether positive or negative, must be true or false" (*De Int.*, 18a 28-29). For Aristotle, things are only *possible* if they are realized at some point in time. Hence, something is impossible if it is never actualized, and something is necessary if it is always actualized, i.e., if it is eternal.[19] This is a crucial point: impossibilities and necessities have something fundamentally in common, namely, both deal with objects or states of affairs that *are not* contained in time. On the one hand, impossibilities are not contained in time because they have no actualization in time. On the other hand, necessities are also not contained in time because their temporal location is not limited, i.e., they are timeless by virtue of having no beginning and no end.

By framing necessity and impossibility this way, we may gain some insight on Aristotle's notion of possibility, namely, by being made aware that merely possible objects and states of affairs are distinguished from impossible and necessary objects and states of affairs insofar as *possible* objects and states of affairs are *contained in time*. Things that are possible are actualized at some point in time; likewise, if things are possible rather than necessary or eternal (i.e., timeless), then there must exist some time at which they are not actualized. Therefore, if p is possible, there must exist some time at which it *is* actual, and some time at which it *is not* actual.

The Possible is Potential but the Potential might not be Possible

It is clear from the above that Aristotle means to set out markers to distinguish between potentiality and possibility. However, as already seen, some commentators posit that potentiality implies possibility and possibility implies potentiality. In what will ensue, focus will be given to the relation between '*x* is possibly F' and '*x* is potentially F'. Before doing so, however, let us recall some preliminaries. Remember that for *x* to be possibly F, *x* must exist some *time* at which it is actually F and not-actually F. And for *x* to be potentially F, *x* must be *that for the sake of* F.

Charlotte Witt suggests that the "Immobility Argument" in which Aristotle avoids joining potentiality with actuality leans on the negative conditional 'if *x* is incapable of F, then F is impossible for *x*'.[20] Stated positively, this implies that 'if it is possible for *x* to F, then *x* is capable of F'. The idea here is that potentiality is a necessary condition for possibility. Similarly, Witt's analysis of Aristotle holds that possibility is a necessary condition for potentiality: "Aristotle's criterion for when a substance is capable of doing something says that if x is capable of F then it is possible that x do F."[21] If the above holds true, Aristotle seems to be committed to a biconditional connecting the possibility for *x* to F and the potentiality for *x* to F.

However, an objection to the claim that holds Aristotle to the biconditional can be formulated. Namely, a thing may have a capacity to F that is never realized. Recall that while some potentialities are never actualized, every possibility *must* be actualized at some point in time. For

example, an acorn might hold the potentiality to be an oak tree, but if it gets eaten up by a hungry squirrel before realizing its potential, the possibility of becoming an oak tree will be denied. We can imagine any number of similar examples describing unobtained possibilities. Hence, we can show that x having a potentiality to F does not necessarily imply that x also has the attendant possibility to F. These examples of where a potential fails to be possible takes us back to one of Hintikka's constituents of twofold possibility, namely, of possibility as contingency. Hintikka is right to link possibility with contingency, but here we may ask: what about possibility with necessity?

A fairly clear distinction can be seen by recalling how Aristotle links possibility with time and necessity with the eternal or timeless, i.e. what is necessary has neither a beginning nor an end. Indeed, in *On Generation and Corruption*, Aristotle states,

> [I]f its coming-to-be is to be 'necessary', it must be 'always' in its coming-to-be. For what is 'of necessity' coincides with what is 'always', since that which 'must be' cannot possibly 'not be'. Hence a thing is eternal if its 'being' is necessary: and if it is eternal, its 'being' is necessary. And if, therefore, the 'coming-to-be' of a thing is necessary, its coming-to-be' is eternal; and if eternal, necessary (*GC*, 337b 35-338a 1).

Hence, if possibility and necessity are distinct notions, and if what exists of necessity always exists, then what is possible does not always exist. Moreover, in the case of possibilities, 'always' may be interpreted as 'at some time', because, as we have seen, necessities are outside of time, whereas possibilities are contained in time. Recall that Aristotle posits that if something is impossible, then it never occurs. He suggests that "the impossible is that of which the contrary is of necessity true" (*Meta.*, 1019b 23-24). This implies that if there is such a time at which x happens, then x is *not* impossible.

If we now turn our focus to potentiality, we note that if x is potentially F, nothing impossible will follow if not-F is actualized. If it is true that x is potentially F, both F and not-F do not need to be actualized at some point in time; likewise, they may never both be actual at the same point in time. However, Christopher Kirwin suggests that when 'always' is discussed in the context of potentiality as, the term 'always' must not mean 'at every time' but rather it ought to be assumed as a temporalized modal operator.[22] That is, 'always' must not mean 'at every time' in the context of potentiality, because if 'always' did mean 'at every time' in the context of potentiality, then the contrary of an unactualized potentiality would be necessary, and, hence, the potentiality itself would be impossible.

The above view of potentiality and possibility supports the claim that possibility implies capacity.

(i) If x is possibly F, then neither F nor not-F is impossible.
(ii) If x is potentially F, then neither F nor not-F possess impossible consequences.

In (i) F will be actualized; in (ii) F could be actualized. Therefore, this seems to bear that possibility implies capacity, but capacity does not imply possibility.

Given that both possibilities and potentialities admit of either contrary, both concepts are more broadly connected to change. Since if x is possibly F, x will be F at some point in time and not-

F at another point in time, every possibility involves an actual incidence of change. That is, if an acorn is possibly an oak tree, the acorn must become an oak tree at some point in time, *i.e.*, a change or movement from not being an oak tree to being an oak tree is needed in order to make the statement possibility true. Potentiality is similarly connected to change, though this change *might* never become actual. For instance, an acorn may have the potentiality to become an oak tree without ever undergoing the change or movement in order to actualize this capacity.

In the case of possibility, a change from F to not-F, or its converse, is required to make the statement '*x* is possibly F' true. But in the case of potentiality, no actual change is needed: if *x* is potentially F, then *x could* change from F to not-F or from not-F to F with no impossible consequences. If *x* has a capacity to be F, then it is open to x to change into F. This analysis is consistent with the thesis that possibility implies potentiality, but not the other way around: if *x* actually changes to F, it is open to *x* to change to F; but if it is open to *x* to change to F, *x* might not change to F. Possibilities and potentialities both deal with changes in objects. Thus, what it means for *x* to be 'possibly F' or 'potentially F' is tied up with Aristotle's theory of change. Simo Knuuttila relates that "Aristotle uses the notions of generation and corruption so that they denote...the initial state and end state" of change.[23]

In *GC*, Aristotle suggests that there is a difference between the changes involved in "'coming to be' and 'alteration' – for...these changes are distinct" (319b 6). A change is one of alteration if when *x* changes to F, F is a property of *x*. In contradistinction to alteration, a change is one of 'coming to be' when F must not a property of *x* (319b 20-24). Aristotle's proceeds to flesh out his example of alteration by giving us the "passed away" *musical man* and the "come-to-be" *unmusical man*: in this case, the change is merely "in quality", i.e., "it is 'alteration' ", since the man persists, and 'musical' and 'unmusical' are simply properties which belong to the man (319b 25-31). On the contrary, "nothing persists of which the resultant is a property (or an 'accident' in any sense of the term), it is 'coming-to-be', and the converse change is 'passing away'" (320a 1-2).

Therefore, what we ought to note from Aristotle's argument of generation and alteration is the idea that in order for *x* to be changed into F, *x* must not be destroyed. This interpretation closely resembles my ascription of potentiality that was given earlier, and indeed only needs matter added to properties: e.g., *x* is potentially F only if *x* has the capacity to become F, by means of itself or something other, while retaining its same essential matter. If anything is added to *x* or taken away from it such that it loses its essential nature, then *x* is destroyed and F is subsequently generated. So, just as when a man becomes musical, the man persists through the change, it is also holds that the man has the capacity to become musical. For being musical is simply a property that is added to the man.

Another objection to the biconditional linking potentiality to possibility is seen in the example whereby a human being does not have the potentiality to become a corpse (*Meta.*, 1045a 2-6). However, if we return now the problem of a corpse, we ought to note that a "corpse...only begins to exist"[24] at the death of a human being. Put differently, in the case of when a human being becomes a corpse, the human being does not persist; rather, the human being is destroyed. A human being and

a corpse have different essential properties, namely, the first is a *hylomorphic* compound, whereas the second is simply un-enformed matter.[25] Since the object in question does not survive the change, we do not say that a human being is capable of becoming a corpse, but rather that a corpse "comes-to-be" when a human being is destroyed.

The above discussion of generation and corruption also lends itself to possibility. For example, a human being is not possibly a corpse, since at no time is there both a human being and a corpse composed of the same matter. This change, then, is one of alteration. Since *x* is possibly F only if *x* is F at some time $_t$, and there is no time $_t$ such that the human body is also a corpse, it is *not* possible for the human body to be a corpse. Here one might take issue that possibility, in contradistinction to potentiality, ought not be restricted to cases of alteration, but rather should be additionally open to cover cases of generation. A critic may say that it does not have to matter if the human being is destroyed, possibility should cover cases in which one object is destroyed and a new object is generated. However, by limiting our study to cases in which 'x is possibly F', this objection doesn't hold, given the temporal restrictions upon possibility. For instance, we might point out that at some time t, 'a human body is possibly a corpse.' If this statement is true, there must exist some time t_{n+1} such that the human body actually is a corpse. However, 'human body' and 'corpse' are not coterminous. There is no such time, given that for any object *x*, *x* cannot simultaneously be both a human being and a corpse. Hence, since there is no time at which *x* actually *is* a human being and a corpse, then it is not *possible* for a human being to be a corpse.

Conclusion

This paper's aim was to provide an examination on the relationship of potentiality and possibility in Aristotle's teleological and modal theories. It embarked on this goal by giving a preliminary account of potentiality by using not only various sources from Aristotle's texts, but also by looking closely at the contemporary scholarship. The study concluded that an important understanding of Aristotle's use of the teleological term consisted in being made aware of his notion that an for an object to be potentially F, it must be capable of being or becoming F, either from an active or passive source of change, during which it retained its essential matter. Moreover, we saw how actuality is the end *for the sake of which* potentiality is acquired

From its study of potentiality, this paper sailed on to investigate Aristotle's idea of possibility. Immediately it showed how more difficult this task was in relation to potentiality due to the complex and subtle nature of Aristotle's modal discourse. Nonetheless, it was able to draw some important distinctions between possibility and necessity, likewise for impossibility and eternality. Key to this paper's study of possibility was Aristotle's insistence that merely possible objects and states of affairs are distinguished from impossible objects and states of affairs by virtue of its time encapsulation. That is, things which are possible must be actualized at some point in time. Moving forward, the paper put forth a position commonly held by Jaacko Hintikka, namely, that Aristotle is committed to a biconditional linking possibility and potentiality, i.e., that potentiality implies possibility and

possibility implies potentiality. Consequently, this paper demonstrated how to avoid treating the categories of possibility and potentiality as a "mere *façon de parler*," and it argued that their being joined by a biconditional is difficult to maintain.

Endnotes:

1. Indeed, in an exposition on actuality and potentiality, Aristotle cautions, "...we must not seek a definition of everything but be content to grasp by analogy." See Aristotle, *Metaphysics*: 1048a 36-37.

2. Briefly, Hintikka points out that Aristotle sometimes uses 'possibility' to connote either set of (i) {contingency : necessity} or (ii) {possible : impossible}. See Hintikka, *Time and Necessity: Studies in Aristotle's Theory of Modality* (Oxford: Oxford University Press, 1973), pp. 27-40.

3. Richard Patterson also lays out the difficulties of what he calls Aristotle's "two-way possibility." namely, the conflating of logical possibility with natural or causal possibility. See Patterson, *Aristotle's Modal Logic: Essence and Entailment in the Organon*, (Cambridge: Cambridge University Press, 1995), pp. 124-132. For a short treatment of Aristotle's "one-sided possibility ('not impossible' as including necessity) and...two-sided possibility (neither necessary nor impossible)," see A.P. Brogan, "Modality and Quantification in Aristotle," *Mind*, Vol. 82, No. 325 (Jan., 1973), pp. 123-124. My dual qualification of possibility above treats it as being "two-sided." For what is invariable is impossible to be otherwise, both logically and causally. Hence my formulation is commensurate with Richard Sorabji's interpretation that Aristotle does not distinguish logical possibility from causal possibility. See Sorabji, "Aristotle and Oxford Philosophy," *American Philosophical Quarterly* 6, (1969), pp. 127-135, and "Deterministic and Indeterministic Accounts of Possibility" in *Necessity, Cause, and Blame: Perspectives on Aristotle's Theory* (Ithaca: Cornell University Press, 1980), pp. 128-140.

4. See Richard Rorty, *The Concept of Potentiality.* Unpublished Ph.D. Dissertation (Yale University, 1956), p. 1.

5. This implies that some potentialities will find fulfillment and others will not. Hence, a potentiality becomes active when the proper conditions for its fulfillment are present *and* nothing inhibits it from reaching a stage of completed development. See, e.g., *Metaphysics*: 1047b 35-1048a 16. This idea will prove key to the ensuing sections.

6. See especially 191a 24-192b 2 for how potentiality relates to matter, and 200b 25-202a 12 for its relation to motion and change.

7. See especially 412a 7-418a 7 for Aristotle's discussion on the distinction between potentiality and actuality, and how the two differ in cognitive value, i.e., the "different senses in which things can be said to be potential and actual" (417a 22-24). See also *Metaphysics*: 1045b 27-35.

8. See especially Book 9.

9. The Megaric school of philosophy is said to have been founded by Euclides of Megara, a pupil of Socrates. For an overview of Aristotle's clash with the Megaric school, see Jiyuan Yu, *The Structure of Being in Aristotle's Metaphysics* (Dordrect: Kluwer Academic Publishers, 2003), pp. 12-13. See also Nicolai Hartmann's lucid treatment of this topic in "The Megarian and the Aristotelian Concept of Possibility: A Contribution to the History of the Ontological problem of Modality," trans., Frédéric Tremblay and Keith R. Peterson, *Axiomathes* (2017) 27:209-223.

10. Aristotle also provides further arguments against the Megaric school, namely, the "Techne Argument, [which] focuses on agent powers" and "The Perception Argument, [which] addresses the passive power of being perceptible." See Charlotte Witt, *Being and Becoming*: *Potentiality and Actuality in Aristotle's Metaphysics* (Ithaca and London: Cornell University Press, 2003), p. 23.

11. Briefly, Parmenides was committed to a "motionless block universe" through his assertion that the existence of change can be dialectically (i.e., logically) disproved. See Karl Popper, "Beyond the Search for Invariants" in *The World of Parmenides: Essays on Presocratic Enlightenment*, eds. Arne

F. Peterson and Jørgen Meyer (London: Routledge, 1998), especially, pp. 156-158.

12. For an interesting and, I might add, entertaining account of how Aristotle's explanation of *for the sake of which* fits with his notions of *matter-form*, *potentiality-actuality*, *teleology* and *necessity*, see Martha Nussbaum, *Aristotle's De Motu Animalium: Text with Translation, Commentary, and Interpretive Essays* (Princeton: Princeton University Press, 1978), specifically, Part III.

13. Cf. Jonathan Barnes, "Metaphysics" in *The Cambridge Companion to Aristotle*, (Cambridge: Cambridge University Press, 1995). Briefly, Barnes hints at a *reductio*, namely in the form of a regress, in the actuality prior to potentiality schema: "...Aristotle does not manage to point to any general priority of actuality over potentiality: if he is right, then before every potential F there was an actual F – and equally, before every actual F there was a potential F" (p. 96).

14. However, for a discussion of how Aristotle's *matter-form scheme* may not always be associated with the *potentiality-actuality scheme*, see Jiyuan Yu, "Two Conceptions of Hylomorphism in *Metaphysics ZHΘ*," in *Oxford Studies in Ancient Philosophy*, Vol. 15, ed. C.C.W. Taylor, (Oxford: Oxford University Press, 1997), pp. 119-146. Briefly, Yu argues that Aristotle employs two distinct conceptions of *hylomorphism*. In one, matter and form do not run alongside with potentiality and actuality; he calls this the "isolated" conception. In the other, form and matter are integrated; he calls this the "conjoined" conception.

15. See also *Metaphysics*: 1018b 8-1020a 6.

16. See Patterson, *op. cit.*, p. 124.

17. See Waterlow, *Ibid.*: p. 2. Cf. Patterson, *op. cit.*, p. 161. Briefly, Patterson argues that there are scant grounds for believing Aristotle says "that anything that is possible *will* at some time be actual."

18. See, e.g., Allan T. Bäck, *Aristotle's Theory of Predication*, (Leiden: Brill Academic Publishers, 2000), p. 86; and Lambert Marie de Rijk, *Aristotle: Semantics and Ontology,* Vol. One, (Leiden: Brill Academic Publishers, 2002), p. 46. Briefly, states of affairs are propositions that carry truth or falsity by virtue of their truth-bearers.

19. Hintikka points out that, "when [Aristotle] spoke of certain things being 'not in time,' he made clear that he merely meant that they are not 'in the middle of time,' so to speak, i.e. that their existence is not limited by the earlier and later moments in time." See Hintikka, *op. cit.*, p. 96.

20. See Witt, *op. cit.*, pp. 30-34.

21. See Witt, "Powers and Possibilities: Aristotle vs. the Megarians," in *Proceedings of the Boston Area Colloquium in Ancient Philosophy XI*, eds. John J. Cleary and William C. Wians (Lanham: University Press of America, 1995), p. 263.

22. See Christopher Kirwin, "Aristotle on the Necessity of the Present," in *Oxford Studies in Ancient Philosophy*, eds. Julia Annas, Michael Woods, J.L. Ackrill (Oxford: Oxford University Press, 1987), p. 174.

23. See Knuuttila, *Modalities in Medieval Philosophy* (London and New York: Routledge, 1993), pp. 20-21.

24. See S. Marc Cohen, "Hylomorphism and Functionalism," in *Essays on Aristotle's De Anima*, eds. Martha C. Nussbaum and Amelie O. Rorty, (Oxford: Oxford University Press, 1992), p. 69.

25. *Loc. Cit.*

References:

Agamben, Giorgio. *Potentialities: Collected Essays in Philosophy*, ed. and trans. Heller-Roazen, Stanford: Meridian, 1999.

Aristotle. *De Anima*. In: *The Basic Works of Aristotle*. Ed. Richard McKeon. New York: Modern Library, 2001.

Aristotle. *De Interpretatione*. In: *The Basic Works of Aristotle*. Ed. Richard McKeon. New York: Modern Library, 2001.

Aristotle. *Metaphysics*. In: *The Basic Works of Aristotle*. Ed. Richard McKeon. New York: Modern Library, 2001.

Aristotle. *On Generation and Corruption*. In: *The Basic Works of Aristotle*. Ed. Richard McKeon. New York: Modern Library, 2001.

Aristotle. *On the Heavens*. In: *The Basic Works of Aristotle*. Ed. Richard McKeon. New York: Modern Library, 2001.

Aristotle. *Physics*. In: *The Basic Works of Aristotle*. Ed. Richard McKeon. New York: Modern Library, 2001.

Aristotle. *Prior Analytics*. In: *The Basic Works of Aristotle*. Ed. Richard McKeon. New York: Modern Library, 2001.

Bäck, Allan T. *Aristotle's Theory of Predication*. Leiden: Brill Academic Publishers, 2000.

Barnes, Jonathan. "Metaphysics." In: *The Cambridge Companion to Aristotle*. Cambridge: Cambridge University Press, 1995.

Hartmann, Nicolai. "The Megarian and the Aristotelian Concept of Possibility: A Contribution to the History of the Ontological Problem of Modality." Trans. Frédéric Tremblay and Keith R. Peterson. *Axiomathes* 27 (2017): 209-223.

Hintikka, *Time and Necessity: Studies in Aristotle's Theory of Modality*. Oxford: Oxford University Press, 1973.

Knuuttila, *Modalities in Medieval Philosophy*. London and New York: Routledge, 1993.

Nussbaum, Martha. *Aristotle's De Motu Animalium: Text with Translation, Commentary, and Interpretive Essays*. Princeton: Princeton University Press, 1978.

Patterson, *Aristotle's Modal Logic: Essence and Entailment in the Organon*. Cambridge: Cambridge University Press, 1995.

Rijk, Lambert Marie de. *Aristotle: Semantics and Ontology, Vol. I* (Leiden: Brill Academic Publishers, 2002.

Rorty, Richard. *The Concept of Potentiality.* Unpublished Ph.D. Dissertation. Yale University, 1956.

Sorabji, Richard. "Aristotle and Oxford Philosophy." *American Philosophical Quarterly* 6, 1969.

Sorabji, Richard. *Necessity, Cause, and Blame: Perspectives on Aristotle's Theory*. Ithaca: Cornell University Press, 1980.

Waterlow, Sarah. *Passage and Possibility*: *A Study of Aristotle's Modal Concepts*. Oxford: Oxford University Press, 1982.

Witt, Charlotte. *Being and Becoming*: *Potentiality and Actuality in Aristotle's Metaphysics*, Ithaca and London: Cornell University Press, 2003.

Yu, Jiyuan. *The Structure of Being in Aristotle's Metaphysics*. Dordrect: Kluwer Academic Publishers, 2003.