

Aristotle and Real Possibility

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Ross, Hintikka, Waterlow and Makin have all suggested that there is something problematic about Aristotle's treatment of possibility. I will canvas their concerns and propose that the problem is not so much with Aristotle as the fact that the notion of possibility is not a single simple concept. I will present eight different components of the notion of possibility and suggest that Aristotle may have been aware of all of them. I will conclude whilst his treatment can appear inconsistent, it is instead, an attempt to give a complete description of a complex notion.

Introduction

A number of scholars have suggested that there is something wrong with Aristotle's discussion of possibility. In section 1, I will canvas their concerns and will agree that they are justified.

I will argue that the problem arises because the word *possible* is ambiguous and has many different meanings, depending on context, even in English. In section 2, I will consider possibility as *capacity*, possibility as *chance*, possibility as a *conjecture in an argument*, possibility as *fiction*, and possibility as arising from *human agency and creativity*. I will show that all of these different readings occur in Aristotle and argue that these differences might contribute to reading Aristotle's discussions in a consistent manner. I will conclude that Aristotle is being complete in his treatment of possibility rather than inconsistent.

1. Some Problems

In moral philosophy and metaphysics we are confronted by the problem of free will and determinism. Science tells us the world is deterministic. This means that my actions are determined and not voluntary. Hence, how can I be morally responsible? How can I be blamed or praised? In *The Nicomachean Ethics* Aristotle raises this question in regard to involuntary acts. Ross (1923:201) suggests that Aristotle may have also confronted the bigger problem of determinism. Human beings love the idea of

causation. Prior to natural science the cause of things was attributed to the Gods or maybe things just happened — everything was possible. Aristotle may have been the first to realise that strict causation of things leads to determinism, makes everything necessary and eliminates all possibility.

In his book *Aristotle*, Ross (1923:31) says “It is excessively hard to be sure whether Aristotle thinks in the long run that there is a sphere of real contingency in the world”. In other words, is Aristotle a realist about possibilities? Why should Ross voice this worry?

Throughout his works Aristotle is engaged in two important tasks. There is an ontological task of telling us what really exists in the world and what reality is like. Also there is an epistemic task of developing a style of reasoning, or argumentation, for discovering the truth. Hintikka (2004) presents us with an analysis of Aristotle’s method, which seems to be based around the use of syllogisms. We will see in section 2.5 that some premises of an argument are identified as *mere possibilities*.

Aristotle does not always clearly distinguish between these two tasks. Whilst some of his books are clearly about methods of reasoning to obtain the truth (i.e. the *Analytics* and *Sophistical Refutations*), the *Metaphysics* and *On Interpretation* seem to be a combination of both ontology and epistemology. One might wonder whether Aristotle believes the context clarifies what he is doing. Aristotle’s epistemic method starts by considering the possible alternative answers to a particular question. Thus, possibility has a role to play in his epistemic task. He reasons about possibilities in the same way a modern scientist might compare alternative theories. If we read Aristotle as just identifying possibilities with fictional elements used in an argument, then this might justify Ross’s worry about whether Aristotle believes in real world possibilities.

Later, Ross voices a slightly different worry about Aristotle’s notion of contingency. Since contingent (P) can be defined as “possibly (P) and possibly (not-P)” this concern will also apply to Aristotle’s notion of possibility. “Aristotle frequently distinguishes between the necessary and the contingent element in the universe. It is not always clear whether he means that there are events which are objectively underdetermined, or is distinguishing between necessity which we can trace and that which eludes us; but apparently he believes that in human action, at all events, there is an actual contingency” (1923:188). There are two concerns here. First, there is the issue of causation or determination and an identification of possibility with being “objectively underdetermined”. Secondly, there is the identification of possibility with a lack of knowledge. If a necessary chain of causes eludes us, especially in the case of future events, then we cannot predict the outcome and tend to say that alternative outcomes are both possible. In section two we will see that both readings can be found in Aristotle.

Hintikka (1959:136) suggests that Aristotle has a multiplicity of approaches to modal logic and “In different parts of his modal syllogistic, he relies on different principles, often based on independent insights into the logic of modal notions. There

is no reason to believe that these principles are all compatible, even though each of them embodies a valid insight or at least an idea that is in itself unobjectionable". He goes on to suggest that the different principles are incompatible and hence attempts to derive a single all encompassing modal logic for Aristotle is misguided.

I will endorse Hintikka's position but extend it. In section two we will see that possibility is not a single notion but has multiple elements, and thus we should expect to see different principles and even different modal logics depending which type of possibility Aristotle is discussing.

Waterlow's 1982 book *Passage and Possibility* argues that Aristotle identifies possibility with the extensional notion of occurring-at-some-time and thus we can question whether Aristotle's notion of possibility corresponds to any of our modern notions.

Finally, Stephen Makin (2006:xxiiff) notes that in translating Aristotle, the selection of the two different words "capacity" and "potentiality" seems to be a choice of the translator. Whilst "potentiality" seems synonymous with "possibility", a capacity is much more like a concrete disposition or property that one might possess. In line with this distinction, Wikipedia (2013) quotes the Perseus dictionary: "*Dunamis* is an ordinary Greek word for possibility or power. Depending on context, it could be translated 'potency', 'potential', 'capacity', 'ability', 'power', 'capability', 'strength', 'possibility', 'force' and is the root of the modern English words 'dynamic', 'dynamite', and 'dynamo'". Aristotle himself recognises this ambiguity: in *On Interpretation* (ch. 13) he says:

For the term 'possible' is ambiguous, being used in the one case with reference to facts, to that which is actualised, as when a man is said to find walking possible because he is actually walking, and generally when a capacity is predicated because it is actually realised; in the other case, with reference to a state in which realisation is conditionally practicable, as when a man is said to find walking possible because under certain conditions he would walk.

Makin seems to be suggesting that Aristotle might be made consistent by judicious choice of translations. His translation of *Metaphysics Theta* focuses on just "capacity" and "potentiality", however, I believe we also need to keep in mind the many other meanings captured by the notion of possibility.

To help clarify Aristotle's views we next need to look at how we might understand the idea of possibility. We will discover justifications for Ross and Waterlow's positions. I will conclude that if Aristotle was dealing with possibility as an ambiguous term, then Makin's suggestion that any problems we find might be resolved by careful translations of the synonyms for possible is the correct view to take.

2. Defining Possibility

We need to consider different senses or meanings for the term "possible". The first examples I will consider are all different types of capacity or power or ability. A capacity is something I have but may not be using at any particular time. If I have a

capacity to do X then it is possible for me to do X. An issue for Aristotle will be how to tell what capacities I have.

Hintikka (in *Time and Necessity*, 1973:100, 162, 171, cited by Waterlow, 1982:3) proposes that Aristotle's syllogism provides us with knowledge of someone's capacities. For example:

- 1) All healthy men have the capacity to walk,
- 2) I am a healthy man;

Hence 3) I have the capacity to walk and it is possible for me to walk.

This syllogistic reasoning allows us to talk about unrealised capacities, however it may lead to a problem for Aristotle. Whilst the first (major) premise is an essential truth about healthy men, the second (minor) premise about me may be true, but it is not a necessary truth. Thus the conclusion may be *just* a truth. However, it can become a necessary truth if we can verify the fact of me walking by observing it occurring at some time. For Aristotle the combination of syllogism and perception can provide us with necessary truths.

In *De Caelo* (281a 7–27, Waterlow, 1982:57) Aristotle considers the case of walking a long distance or lifting a weight. Aristotle claims that when talking of these particular capacities we always refer to the maximum. Whilst it is true that an Olympic weightlifter could lift the same amount as the average man, we identify his capacity with the maximum weight he actually lifts.

In both these cases, a capacity, and the possibility of its use requires that it occur-at-some-time. This is Waterlow's type of possibility. So, at least in some cases, possibility reduces to occurs-at-some-time.

A capacity is something that I really possess, so Ross's first worry about an arena of real possibility is answered: these are real possibilities. However, considering capacities as a power-to-do-something makes it causal and determined, thus the issue of underdetermined possibility remains.

2.1 Capacity simpliciter

Since my legs are fully functioning I have the capacity to be walking or to be sitting. This capacity can be used right now. We have both physical capacities and knowledge-based capacities. Aristotle uses both of these examples. A capacity seems to be an active kind of thing, a necessary cause for us to do something. There is a more passive case, which we might want to distinguish. A wall can be painted. It is the type of surface that can exist as painted or not painted. In this case the change is instigated by an external agent and the object is being affected (Makin, 2006:xii).

A physical capacity is the sort of thing that exists at a particular time. Capacities vary between individuals and at different times. The adult Hercules can defeat the lion of Nemea but as a child he did not have that capacity. Also he had that capacity whilst I do not and never will. Thus the notion of capacity, and hence this reading

of possibility, is not an absolute notion, or as Aristotle would say it is qualified: it is relative to individuals and to a particular time.

2.2 Having knowledge and the possibility of its use

The Megarian position is that capacities only exist when they are being used (*Metaphysics Theta*, 1046b29ff). Aristotle rejects this and says that they are actual and exist at other times as well. For Aristotle capacities or the potential-to-do exists. Our knowledge of building a house exists in three different ways: firstly when we are actually using it to build a house; secondly, when we use it in reasoning about what materials might be required to build the house; and thirdly, even when we are not aware of the knowledge, (i.e. it is unconscious). Furthermore, Aristotle claims about knowledge (*Metaphysics*, 1049b30ff) that we learn “to play the harp by playing it, and all other learners do similarly”. Thus, as with Waterlow, we can identify knowledge capacities with occurring-at-some-time.

2.3 Possibility as attainability

At the very end of the *Politics* Aristotle is considering the case of education, and he states that “two principles need to be kept in view, what is possible, what is becoming: at these every man ought to aim” (*Politics*, bk 8, ch. 7). In this situation the possible is distant in time. We cannot do it immediately, it is something that through training and development we will become capable of doing. In this case we use the term “possible” to refer to something we can achieve or attain. The long-term goal may be what Aristotle identifies as our *telos*. The achievement is constrained by physical facts and will occur at some time if the right intervening actions are taken. This change from potential to actual is the fulfilment of our goal, but Aristotle recognises that we may be frustrated in that pursuit.

Since the possibility is aimed at occurring at some time, Waterlow’s concern about the identification of possibility with temporal notions remains, although the case of unfulfilled goals may be a problem for her view, since in this case, failure means that the possibility does not occur at any time. As training to attain some possible goal is a completely deterministic process, Ross’s worry about determinism also remains.

These three concepts of possibility as a type of capacity support Waterlow’s view that possibility can be reduced to the temporal notion of occurring-at-some-time. They also support Ross’s two worries that the term “possible” may just stand in for a lack of knowledge about someone’s abilities, and that the capacity is causally determined.

I next move on to consider possibility as a chance event. We tend to think of chance as a possibility that is uncaused but Aristotle rejects this, thus supporting Ross’s case. Chance events are things that occur at some time so Waterlow’s identification of possibility with occurring-at-some-time is also seen to be justified by this example.

2.4 Possibility as chance

Ross's requirement that a possibility is underdetermined corresponds to our modern notion of chance. Chance events can occur in the past or be future possibilities. Chance events are uncaused. Unfortunately Aristotle's notion of causation does not correspond to our modern ideas. Thus, Ross and Aristotle disagree about what constitutes a cause and underdetermination.

In *Physics* II Aristotle considers the case of two people going to the market to shop and meeting each other by chance. Their purpose in going to the market was not to meet but they had a prior necessary and sufficient cause to go to the market. Their goal was to shop. For Aristotle the complete cause of an event must include a goal (*telos*). Since the goal was not to meet each other, Aristotle calls this a chance event. Since these events have preceding necessary and sufficient deterministic causes for their occurrence, Ross would not identify them as "objectively underdetermined possibilities". Whilst possibility and chance may be seen as related concepts for the modern philosopher, Aristotle's totally different notion of causation means that he is not using the word "chance" in the same way and thus would not associate chance with possibility. We will see in section 2.7 that Aristotle's notion of *accidents* or non-necessary events may play a similar role to modern chance.

We next move on to consider two slightly more abstract notions of possibility: possibility viewed as a hypothesis put forward and possibility as a fictional world.

2.5 Possibility as a problematic element in a discussion

Hintikka (2004) argues that Aristotle's scientific method is based upon question and answer dialogues variously called dialectics or *elenchoi* (depending on the nature of the premises involved). Some of the premises are necessary truths, some are merely true, while others, the problematic ones, are probable or possible. This means that they are contingent or that their truth-value is not known or even that they are ambiguous expressions. This does not mean that we cannot handle them in a discussion. An ambiguous statement may be disambiguated and each of its different meanings may be evaluated. A necessary truth or counter-example might be used to eliminate one of the possibilities, thus making its opposite possibility true. As in the Socratic dialogues we may be left to confront our ignorance, but this is not always the end as we can then try a different approach. (Aristotle often rejects a line of argument and returns to reconsider a problem from a different perspective.) Finally we may derive conclusions from hypotheses, but be forced to recognise that they themselves are only possibilities. This will not give us knowledge of their truth, but may still provide a guide for action.

Hintikka's work on Aristotle's scientific method and this questioning game suggests that Aristotle did have this notion of possibility and Hintikka's view seems justified by numerous passages from *Topics*, *Sophistical Refutations*, *Prior* and *Posterior Analytics* and parts of the *Metaphysics*.

It is unclear to me what one should call this use of possibility, it resembles the hypothetico-deductive method in modern science, but the status of the hypotheses is unclear. Perhaps it is a sort of *conceptual* possibility. That said, this is definitely not an ontological use of possibility and thus Ross's worry about a "sphere of *real* contingency" remains. Waterlow's worry that possibility is identified with temporal notions seems diffused by this case since a conceptual possibility might remain in the realm of discussion and never be instantiated at a time in the real world. She might try to distinguish between hypotheticals which are like thought experiments, and possibilities which exist in an external real arena. Making this distinction is problematic as it seems to beg the question in favour of possibilities as occurring-at-some-time.

2.6 Possibility as an element of fiction

In *Poetics*, Aristotle discusses the construction of a good tragic play. Unlike Plato who thought the arts were dangerous since they could lead us away from the truth, Aristotle seems to have thought they could be used for moral instruction and also as a means of building a sense of community. In the *Politics* musical education is supported for this reason.

The characters in a tragedy must be believable. The events that occur should correspond to real possibilities. The hubris of a nobleman is punished by the succeeding chain of events which lead almost inevitably to a tragic climax. A play is a possible world. This is a very modern component of our concept of possibility. If we can read the *Poetics* in this way, and it is my opinion that we can, then it would justify the view that Aristotle's notion of possibility is not flawed, so much as complex.

2.7 Possibility as could-have-been-otherwise

In *On Interpretation* (chs 12, 13) Aristotle identifies the contradictory or opposite of possibility as necessity. [Aside for the logicians: this should mean that Necessary(P) does not imply Possibly(P). Given that Aristotle thinks of the necessary as the realm of the fixed and determinate, and possibility as the realm of the accidental or variable then there should be no link between them, and so this axiom is defensible.] It is easier to find definitions in Aristotle of Necessity as compared to Possibility. Since they are contradictories this will allow us to construct a definition of possibility based around the opposites.

A common definition of necessity for Aristotle is "could not be otherwise". Thus, since in at least one of his views, possibility is the opposite of necessity, we get that the possible is "that which could be otherwise". I think the philosophically interesting notion of possibility which Ross is interested in is captured by this definition. In his discussion of accidents Aristotle explicitly asks whether an accident could be caused, (and hence could not be otherwise). He argues:

Evidently there are not causes and principles of the accidental, of the same kind as there are of the essential; for if there were, everything would be of necessity. If A is

when B is, and B is when C is and if C exists not by chance but of necessity, that also of which C was the cause, down to the last causatum as it is called (but this [A] was supposed to be accidental). Therefore all things will be of necessity, and chance and the possibility of a thing's either occurring or not occurring are removed entirely from the range of events. (*Metaphysics*, XI ch. 8)

Here, Aristotle recognises the problem of determinism and how it eliminates possibility. This is further evidence that he identifies possibility with the idea that things could be otherwise: either A could occur or not-A.

Aristotle then goes on to reject this option, and claims the accidental is “indeterminate... and its causes are unordered and indefinite”. Aristotle does not give an argument for this position so we can criticise him for that. However, rather than reading Aristotle as making ontological claims, we might read him as simply defining his terms. This is a more detailed requirement for something to-be-otherwise: it must also be indeterminate and have causes that are unordered (so that there is no linear chain of causes transferring necessity to the event) and indefinite.

But this language is problematical here. “Indeterminate” might be read as meaning “unpredictable”, which would identify this notion of possibility with a lack of knowledge. Furthermore, we might read the requirement that it be “indefinite” in the sense of not being fixed which, in contrast, looks like Ross’s notion of possibility as “objectively underdetermined”.

We can find some support for this reading in *On Interpretation*. There, Aristotle argues that the past is determinate and hence that past events could-not-be-otherwise. This does tie Aristotle’s thoughts about possibility to temporal notions. Our modern notion of possibility does allow us to say that a past event could have turned out differently and we can then consider an alternative time line. This usage of the notion of possibility does not seem open to Aristotle. This issue may be restricted to the context of *accidental* events. As we have seen from the preceding discussions Aristotle may have had other notions of possibility which avoid this issue.

In the final part of this section I would like to focus on Book VI of *The Nicomachean Ethics* and argue that here Aristotle is giving us a case of “real possibility”.

2.8 Possibility as an expression of human free will or creativity

Consider Part 1 Book VI of *The Nicomachean Ethics* What is Aristotle doing in this book? It has been titled *Intellectual Virtues* but it does not seem to have a normative character. It is descriptive. I will suggest that Aristotle is doing cognitive science or moral psychology. He is telling us the structure of the mind and how it works.

Aristotle starts with Plato’s division of the mind into a rational part and an irrational part. (This might well correspond to the modern Freudian division of the mind into the conscious [rational] part and the irrational unconscious). Aristotle does not seem to be interested in the irrational part of the mind. The essential defining property of man is that he is a rational animal, so Aristotle focuses on the rational mind. It should be noted that we are not born with a fully formed rational mind, it is something that

we learn and develop as we become adults. Children are controlled by their desires and hence their behaviour is described by Aristotle as in-voluntary. A key component (sense) of voluntary and virtuous behaviour for Aristotle is rational thought.

So turning to the rational mind, what is it like? It consists of five parts or faculties. A similar sort of picture of the mind can be found in modern psychology and intelligence testing where we identify seven different, specific faculties for mathematical ability, language abilities, spatial reasoning, logical reasoning and various verbal and specifically artistic skills (i.e. music) (Darley, 1988). This is clearly different in detail from Aristotle, but the general idea is similar.

The first faculty Aristotle identifies is that for scientific reasoning (ch. 3). This corresponds quite nicely with the modern faculties of deductive reasoning, mathematical reasoning and to some extent spatial reasoning. This faculty involves deductive logic or as Aristotle calls them “demonstrations”. It involves necessary truth, things that could not be otherwise. As Aristotle notes here and in *On Rhetoric* (bk 1, ch. 2) this is not a domain where philosophers discuss things since it is the realm of the necessary and determinate.

The second faculty of the mind considered by Aristotle (ch. 4) is that part of the mind involved in *techne*. *Techne* is a specifically ancient Greek concept, but is most often translated as artistic or creative production. This is specifically identified as dealing with the realm of the *variable*. When we consider a creative act we consider that the product of the act can be anything. Anything is possible. Hence, I suggest we should read Aristotle’s term “variable” here, as a generator of real possibility.

The third faculty is prudence or practical reasoning, this is explicitly described as being in the realm of the variable. Aristotle believes all behaviour is goal directed (his *telos* theory). For plants and animals, and people acting according to the irrational half of their mind, the goal is survival and reproduction which is mediated by pleasure and pain. We, and animals avoid pain and seek out pleasure. Rational human beings are more than this, we set our own goals and behave so as to achieve them. This faculty of prudence or practical reason works out what our goals should be. Ideally they should correspond to virtuous behaviour.

The other two mental faculties Aristotle identifies are not as relevant to the discussion of real possibility. Fourth is wisdom (Based on experience and inductive reasoning we get general premises and how to apply the general in particular cases), and fifth is intuition where intuition is a direct perception that something is true.

Now, it is my view that in human creativity and practical reasoning Aristotle has identified a domain of real possibility which satisfies Ross’s concerns. Human behaviour is something out there in the world and so has ontological status. Human agency is involved in creativity and goal setting, so as Ross says, it would appear to be real contingency for Aristotle.

According to Ross (1923:199) Aristotle’s model of this mental decision making involves Desire, Deliberation, Perception and Choice. Ross quotes Aristotle (*Nicomachean Ethics*, 1112a18–1113a14, 1139a4) as describing “choice is ‘deliberate desire

of things in our own power,' or, as Aristotle puts it elsewhere 'it is either desireful reason or reasonable desire, and that sort of origin of action is a man'. Ross goes on to suggest that this doctrine is an attempt to formulate a concept of the will. Human agency and the human will are a source of real possibilities.

However, there remains the epistemic problem: how do we know what someone else chooses? Our lack of knowledge about another person's desires and the premises used in their reasoning means that we cannot know or predict what they will calculate they should do. Thus, we view their behaviour as encompassing various possibilities. This brings us back to Ross's concerns that possibility might be identified with a lack of knowledge.

This epistemological worry also returns us to Waterlow's position. Our lack of knowledge may only be resolved if we observe the goal driven behaviour or creative product at-some-time. We are only willing to call someone creative if they create some product, which must be situated in time. Thus this possibility is identified with the temporal notion of occurring-at-some-time.

3. Conclusions

I have argued that the concept of possibility is not a single, simple concept. I have suggested that Aristotle may have recognised possibility as capacity, possibility as not completely caused chance, possibility as a mental construct like a hypothetical or fiction, and possibility as arising from human agency or creativity. Translating fragmentary ancient Greek texts means that it is difficult to clearly find these different concepts explicitly described as *possibility* in Aristotle's writings. Thus, the various objections to, and interpretations of, Aristotle's modal theories do have some justification.

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