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Kraus, Manfred; Boogaart, Ronny; Garssen, Bart; Jansen, Henrike; Van Leeuwen, Maarten; Pilgram, Roosmaryn; Reunecker, Alex

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One-Premise Arguments

Jean Wagemans' Periodic Table of Arguments, a Revival of Aristotle's Topics?

MANFRED KRAUS

*Philologisches Seminar
University of Tübingen
Germany
manfred.kraus@uni-tuebingen.de*

ABSTRACT: Jean Wagemans has proposed an analysis of arguments as consisting of one premise and conclusion and their classification in a Periodic Table of Arguments. This strikingly resembles Aristotle's pre-syllogistic analysis of one-premise arguments in his *Topics*. It is analyzed to what extent Wagemans' concept of the 'lever' of an argument as inference-warrant and classificatory criterion bears analogies to Aristotle's analysis of one-premise arguments according to set-theoretic modifications of subjects or predicates from premise to conclusion.

KEYWORDS: Aristotle, fulcrum, lever, one-premise argument, Periodic Table of Arguments, predicate, premise, subject, syllogism, topics

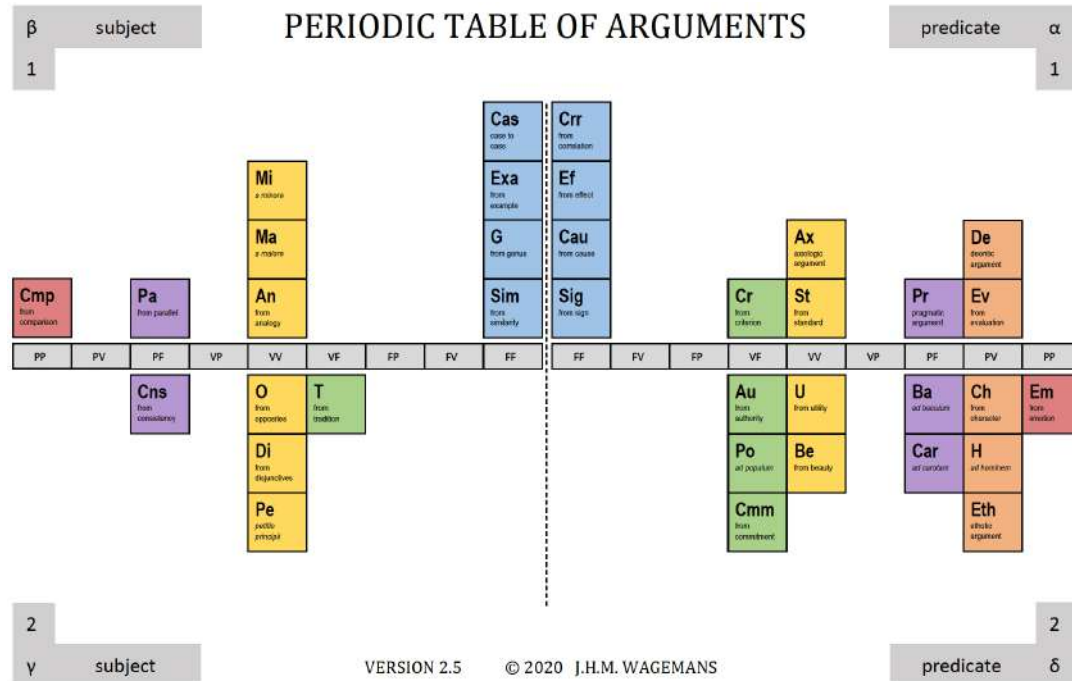
1. INTRODUCTION

Categorizing and systematizing types of arguments has been a central topic in argumentation studies ever since their beginnings. Rhetoricians and philosophers of all periods have proposed their own and sometimes very different taxonomies: The *Rhetoric to Alexander* and Aristotle have done so, so have Cicero and Quintilian, and so have the Stoics and medieval logicians, not to mention the supplements added in modern times, from Locke (1690) and Mill (1843) to Perelman and Olbrechts-Tyteca (1958), Toulmin (1958) and Walton, Reed and Macagno (2008). One can either draw up lists of argument schemes (or *topoi*, if you wish), or else one can establish sophisticated pluridimensional systems according to specific criteria. One can discern valid arguments from defeasible, invalid and fallacious arguments, strong from weak arguments, or introduce categories such as deductive, inductive, abductive or analogical. The most salient feature in all these attempts, however, is their obvious lack of homogeneity and compatibility.

2. THE PERIODIC TABLE OF ARGUMENTS

In most recent years, in a series of publications (2016, 2017, 2018a, 2018b, 2019, 2020, 2021a, 2021b, 2023a, 2023b) Jean H. M. Wagemans has proposed a completely novel approach at categorizing argument types, which he has laid out in what he calls a Periodic Table of Arguments (abbreviated as PTA), in which all familiar types of arguments can be conveniently located in one way or another. This periodic table (Figure 1) is also accessible online on a regularly updated website (Wagemans, 2017).

Figure 1:



The central novel feature of Wagemans' analysis however is that he views arguments as combinations of only one premise and a conclusion, instead of the usual two or more premises model. These two propositions are as a rule connected by linguistic argument function indicators such as 'because', 'so', 'therefore', 'hence' or the like.

According to Wagemans' analysis, both the premise and the conclusion are predicative statements, involving each a subject and a predicate. The important question however is, how to get from the single premise to the conclusion. Wagemans' explanation of what happens on the way from premise to conclusion is that one of the two elements of the premise, either the subject or the predicate, remains stable, while there is a change in the other element. The steady element he calls the fulcrum of the argument, and the variable one its lever.

A second category introduced by Wagemans also comes into play: that is what he calls the substance of the argument. Are the two statements involved statements of fact or of value or of policy? Statements of fact are just factual predications (like 'a is X'). Value statements would point to normative qualifications such as that some thing or action is good, beautiful, useful, ethical, or else bad, indecorous, disadvantageous, immoral. Policy statements finally would take into consideration possible practical consequences such as concrete actions. The nine possible combinations of such types of statements yield nine potential categories of argument types on either side, identified by dyadic combinations of the letters F (for fact), V (for value) and P (for policy), arranged in columns and indicated

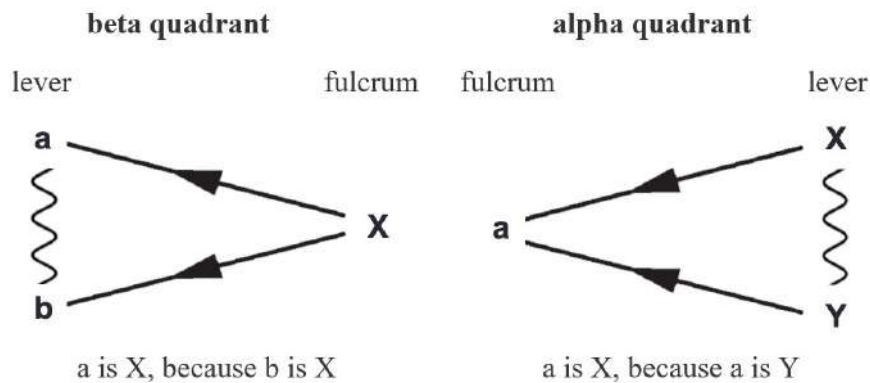
each by their own specific colour. Each of these columns contains arguments of the same type and substance. Some of those potential combinations however are actually void.

My aim in this paper will be to suggest that this way of looking at argument structure has a parallel in an analysis of arguments that Aristotle conceived and applied in his early writings on argumentation, long before he developed his theory of the logical syllogism in the *Analytics*. This parallel is primarily suggested by the shared concept of one-premise arguments. I will first give a brief outline of Wagemans' periodic table concept, and then delineate the similarities with Aristotle's early views. Finally, I will illustrate the parallel using as examples the arguments from sign and from example.

3. THE FOUR QUADRANTS

Depending on which of the two constituents, subject or predicate, functions as the lever and which as the fulcrum, Wagemans' design leads to two basic categories, 'predicate arguments' and 'subject arguments', placed within what he calls the alpha and beta quadrant. The system works as follows: Arguments that share the same argument form are situated within the same quadrant, while those that share the same combination of types of statements are placed in the same column. Those with the predicate as the lever fill the alpha quadrant on the top right hand side, and those with the subject as lever the beta quadrant on the top left. An alpha type argument thus runs 'a is X, because a is Y', a beta type one 'a is X, because b is X' (see Figure 2).

Figure 2:



The arguments in these two quadrants Wagemans calls first-order arguments. Hence there must also be second-order arguments, which are placed in the gamma and delta quadrants respectively. Arguments in the gamma quadrant, like those in the beta quadrant, have the fulcrum on the predicate side and the subject as their lever. But in those argument types the subjects involved are full propositions in themselves, and the shared predicate is simply the claim of the truth of those propositions. Wagemans' example for a gamma argument is "He must have gone to the pub, because the interview is cancelled," which is reconstructed as "It is true that he must have gone to the pub, because it is true that the interview is cancelled." (Wagemans 2017, gamma quadrant). He takes this to be negatively disjunctive (going to the pub is assumed to be incompatible with the interview *not* being

cancelled). Clearly, the relation between the two propositions in question is quite wilful and depends on certain assumptions about standard habits or regular courses of events.

Still weaker are the arguments of the delta quadrant. This quadrant hosts the entire bulk of so-called ad-arguments, such as *ad hominem*, *ad baculum*, *ad verecundiam*, *ad populum* etc., commonly mostly regarded as fallacious. Like in the alpha quadrant, the lever is on the predicate side. A proposition is claimed to be true, because it possesses some other supporting quality. Wagemans' example is from an *argumentum ad verecundiam*: "We only use 10% of our brain, because Einstein said so" (Wagemans 2018b, p. 68), which he reconstructs as "That we only use 10% of our brain is true, because that we only use 10% of our brain was said by Einstein." (Wagemans 2017, delta quadrant). Very clearly, the relation between the two predicates is again quite loose and only imputed.

Hence, for our purpose, we can leave aside the second-order quadrants and focus on the upper two only. But it is immediately obvious that combinations of statements of fact in both premise and conclusion only figure in the alpha and beta quadrants, i.e. in first-order arguments. On these I will now focus. One important question remains: How do the lever arms in Wagemans' model work? In other words: How do we get from b to a or from Y to X along the wiggly line that connects them in his diagrams? And how can we ascertain whether the move of the lever will produce a valid conclusion or only a defeasible if not even fallacious one? For this, a look at Aristotle's *Topics* may be helpful.

4. ONE-PREMISE ARGUMENTS IN ARISTOTLE'S *TOPICS*

It is Wagemans' concept of one-premise arguments that in the first place strongly suggests a parallel with Aristotle's early logic as expressed in his *Topics*. When today we talk about Aristotelian logic, what we usually have in mind is the elaborate syllogistic logic expounded in his *Analytics*, according to which a standard syllogism invariably consists of two premises and a conclusion, and involves exactly three terms, one of which occurs in both premises, but is eliminated in the conclusion. But recent scholarship has progressively called attention to the fact that there had been an earlier stage in Aristotle's reasoning on argumentation, in which he had not yet developed the fully-fledged syllogistic theory, but had allowed also for arguments with one premise only, from which the conclusion would be deduced directly, without the intervention of a second premise. This type of argument is prevalent in Aristotle's earliest work on argumentation, that is the *Topics* (Rapp 2002, vol. 2, pp. 243-248).

The *Topics* is basically about the best method for finding appropriate premises, from which a particular conclusion can be deduced, mainly for the purpose of dialectical disputes as were regularly conducted in Aristotle's school for the training of his students' intellectual abilities. Especially according to Christof Rapp, commentator and translator of Aristotle's *Rhetoric* in 2002, this concept of one-premise arguments would also still underlie Aristotle's theory of enthymemes in the *Rhetoric*, which means that, whenever Aristotle speaks of enthymemes in the *Rhetoric*, he does not talk about syllogisms with one premise missing, but about genuine one-premise arguments (Rapp 2002, vol. 1, pp. 323-335; vol. 2, pp. 228-229; 233-236; 243-248). Of course Aristotle uses the term *sylogismós* in *Topics*, *Rhetoric* and *Analytics* alike, and with more or less the same definition. But Rapp

insists that what he means in each of those cases is not the three-proposition and three-term syllogism of the *Analytics*, but simply a deductive argument.

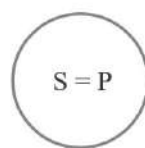
Here is how Aristotle defines *syllogismós* in the very first chapter of the *Topics*: “A deductive argument (*syllogismós*) is a reasoning in which, certain things having been posited, something other than these things necessarily results by virtue of the things posited” (*Topics* I 1, 100a25-27, my trans.). This definition is repeated almost verbatim in the *Analytics* (*Analytica Priora* I 1, 24b18-20), and the *Rhetoric* merely adds that the conclusion may as well follow only “as a rule” (*Rhetoric* I 2, 1356b16-18). This is to say that Aristotle never substantially changed his definition of *syllogismós* qua deductive argument. Some have pointed to the plural of ‘things’; but the corresponding Greek word (the unaccented indefinite pronoun *τινών*, *tinon*) is vague enough to indicate an undefined number of premises, including also the case of one premise only. Or else, ‘things’ may describe the substantial contents of one single premise (quite in the sense of ‘something’ or ‘some facts’).

In the *Topics*, Aristotle’s main concern is with a workable method for finding appropriate premises for deduction, i.e. with the production of arguments. For this purpose, he first asks which different types of predications are possible. And Aristotle would not be Aristotle, if this would not result in a clear methodical and logical system:

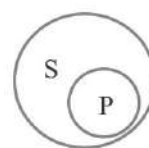
He distinguishes four types of what he calls ‘predicables’: definition, genus, property and accident (Smith 1997, p. xxix-xxx; Wagner & Rapp 2004, pp. 27-28). This fourfold taxonomy comes about by a cross-combination of the two criteria of necessity and exclusivity of the predication: If the predicate applies to the subject both necessarily and exclusively, what we have is a definition; if neither, it is an accidental predicate; if the predicate applies necessarily, but not exclusively, he speaks of a genus; inversely, if it applies exclusively, but not necessarily, we are confronted with a property (Smith 1997, pp. xxix, 4 and 62, prefers to call it ‘unique property’, to avoid equivocations and to render more adequately Aristotle’s term *idion*).

Figure 3:

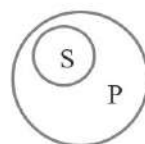
a) Definition:



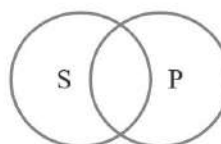
c) Property:



b) Genus:



d) Accident:



With respect to the relative extensions of subject and predicate terms, these four types can be visualized in set-theoretical Venn diagrams (Figure 3). When the predicate is

a definition, subject and predicate are exactly coextensive (all Ss are Ps, and inversely). In the case of a genus, the predicate is wider than the subject, and the latter is a strict subset of the extension of the predicate: hence all Ss are Ps, but there may still be Ps that are not Ss (e.g.: all dogs are animals, but not all animals are dogs). In the case of a property, it is the predicate that is a strict subset of the subject: *only* Ss can be Ps, but not necessarily all of them are (e.g.: only human beings can be philosophers, but not all of them are). The relationship is even looser in an accidental predicate: S and P only partly overlap: i.e. there are Ss that are Ps, but also Ss that are not Ps, and there are also items other than Ss that are Ps (e.g.: there are dogs that are black, but also dogs that are not black, and also many black things other than dogs).

By way of these set-theoretical relations, Aristotle manages to determine which changes or replacements within a subject-predicate proposition may legitimately be made from premise to conclusion without affecting the truth value of the proposition, or, put in Wagemans' terms, which kinds of moves of the argument's lever will preserve the truth of the proposition, and which will in some way impair it. It is for instance immediately evident that any term may in any position (no matter whether subject or predicate) be replaced by its definition and vice versa without jeopardizing the proposition's truth, or that in a genus predication the predicate may always be extended or the subject narrowed down; in a property predication, inversely, the subject may be extended or the predicate narrowed. Neither however is possible without risk of fallacy in predications of accident.

With the help of these insights, for Aristotle's purposes in the *Topics*, the participant in a dialectical debate will be in a position on the one hand to establish and propose appropriate premises, from which the desired conclusions can be directly and consistently deduced, and on the other hand to check the opponent's premises for any weaknesses or logical faults that can be taken advantage of. The main part of the *Topics* (books II-VII out of 8) is filled with instructions on how to proceed in each of the four categories of predicables and with useful standard types (*topoi*) of such arguments. A caveat may be in order here, though: It must be admitted that Books II-VII of the *Topics*, which contain those extensive lists of *topoi*, do not mention deductive arguments (*syllogismoi*), while Books I and VIII, which do speak about *syllogismós*, never mention *topoi* (Wagner & Rapp 2004, p. 33, note 15).

Anyway, by this method Aristotle succeeds in setting up a logical method of deduction that works well for one-premise arguments. To give an illustrative example: While according to the developed syllogistic method the conclusion that Socrates is mortal will require the two premises that (a) all human beings are mortal, and (b) Socrates is a human being, the same conclusion, according to the logic of the *Topics*, can be deduced directly from the premise that Socrates is a human being via the logically legitimate extension of the predicate term 'human' to 'mortal', because the premise is a case of genus predication, in which this replacement is a legitimate and truth-preserving move.

Wagemans' system, like that of Aristotle's *Topics*, is also explicitly intended for producing as well as for analyzing and evaluating arguments. It may not only produce arguments, but also guide the identification and detection of arguments in given texts ("argument mining", as Lawrence and Reed 2019 have called this process), the mapping out of arguments and the identification of argument types, for which latter purpose Wagemans has even developed a special procedure, called Argument Type Identification Procedure, ATIP (Wagemans 2021a).

5. EXAMPLES

In this final section, for the purpose of demonstration I will analyze two types of arguments from Wagemans' periodic table according to the method that underlies Aristotle's *Topics*. For this purpose I will pick one argument type each from the Fact-to-Fact arguments of the alpha and beta quadrants respectively, namely the argument from sign from the alpha quadrant and the argument from example from the beta quadrant, since these have parallels at least in the description of enthymemes in Aristotle's *Rhetoric*, which, if we believe Christof Rapp, still follows the one-premise-argument model of the *Topics*.

I begin with the argument from sign. As a paradigm, Wagemans (2017, alpha quadrant, argument from sign) chooses an example taken precisely from Aristotle, yet from the beginning of the *Metaphysics* (I 1, 980a21-27): "All human beings (*a*) by nature desire to know (*X*), because all human beings (*a*) have a liking for their senses (*Y*)."¹ The fulcrum here is the subject (*a*) 'human beings', and the lever moves from (*Y*) 'having a liking for their senses' to (*X*) 'desiring to know'. Here, 'having a desire to know' is taken as the wider genus of 'having a liking for the senses', since sensual knowledge is a strict subset of knowledge in general.

It may be easier for demonstration purposes to examine an example from Aristotle's *Rhetoric* (I 2, 1357b15), from a medical context (from which Aristotle takes most of his examples for sign arguments): 'Patient X is ill, because s/he has fever'. Laid out more explicitly, this would mean: From the premise 'patient X has fever' is deduced the conclusion 'patient X is ill' (the subject still being the fulcrum). This is justified by the rule that in a genus predication an extension of the predicate is legitimate. Hence what we get by this is an infallible sign (Aristotle calls this a *tekmérion*, a demonstrative proof). Yet most arguments from signs are actually fallible (or defeasible, if you wish) arguments. Just imagine what will happen if we change the argument as follows: 'Patient X has fever, therefore patient X has the flu'. In that case the predicate has been narrowed down instead of extended (since not all feverish persons suffer from the flu; it may just as well be pneumonia, or perhaps even Covid). This is not to say that the argument is completely nonsensical; most doctors will employ such arguments on a daily basis. It is just defeasible logically, yet still quite useful pragmatically. So here we obtain a criterion to distinguish fallible from infallible sign arguments.

Let us finally turn to an argument from example. Wagemans (2017) does not offer any example for that. So we may borrow one from Aristotle: 'Wise men are just, because Socrates was just' (*Rhetoric* I 2, 1357b12-13). Here the fulcrum is the predicate, and it is the subject that is modified. What happens is that the subject gets extended from one exemplary wise person, i.e. Socrates, to all wise men. Yet from a logical point of view, this is eminently risky. For what applies to Socrates as an individual need not necessarily apply to all wise men. Hence the argument is evidently defeasible, as on principle all arguments by example are. It is not logically permitted to extend the subject in such a type of argument without jeopardizing the truth of the proposition.

By contrast, however, it would be perfectly legitimate to further narrow down the subject. But this of course is impossible when the subject consists of only one person in the first place. Hence, for demonstration, let us imagine another example: 'argumentation theorists are clever; therefore: philosophers are clever'. This is clearly a risky conclusion. There may still be some dumb philosophers (other than argumentation theorists, of course).

Yet it would be perfectly legitimate to deduce from the premise that argumentation theorists are clever the conclusion that pragma-dialecticians (or, for that matter, informal logicians) are clever, since they each represent a strict subset of argumentation theorists.

6. CONCLUSION

I hope to have been able to make plausible that there are some striking similarities between Jean Wagemans' recent theory of the functioning of one-premise arguments by way of the mechanism of fulcrum and lever and Aristotle's early model of the functioning of one-premise arguments in the *Topics* and probably still so in the *Rhetoric*; moreover that Aristotle's interpretations, if laid out in a set-theoretical model of extension and narrowing of subjects and predicates respectively, may offer a reasonable method for screening the soundness or defeasibility of argument types within Wagemans' Periodic Table of Arguments. This may perhaps not work for all types of arguments displayed in that table, most probably not for the entire gamma and delta quadrants, in the worst case perhaps even only for the very few fact-to-fact arguments in the alpha and gamma quadrants (which nonetheless represent the core of good and reasonable argumentation). Hence, whether it can rightly be called a revival of Aristotle's early theory remains to be seen, and more research needs to be done. But even so, Wagemans' theory of the possibility and the mechanisms of one-premise arguments and the investigation and study of Aristotle's early pre-syllogistic logic of arguments may lend each other mutual support.

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