Logic and **L**ogical **P**hilosophy
Volume 27 (2018), 105–141
DOI: 10.12775/LLP.2017.011

David Botting

THE CUMULATIVE FORCE OF ANALOGIES

Abstract. In this paper I will argue that most objections to deductive analyses of *a priori* analogies are incorrect, often involve basic misinterpretations of what the deductive reconstruction of those arguments are saying, and sometimes also betray a confusion about what part of the reasoning corresponds to the analogical inference. In particular, I will be focusing on a raft of objections made by Juthe in [2015] and subject his alternative views to criticism.

I will then argue that Juthe does implicitly have a good argument against deductivism: adding further analogues seems to have a cumulative force that they would not have on a deductivist analysis. This is so not only in ordinary analogical arguments but, perhaps surprisingly, with *a priori* analogical arguments. I will then argue that this does not favor a *sui generis* view of the analogical argument over inductivist views, and attempt to show that a confirmation-theoretic approach to analogical inference makes the best sense of our intuitions about the strength of analogical arguments.

Keywords: arguments by analogy; *a priori* analogy; deductivism; complex analogies; inferential strength

1. Is the inference in an *a priori analogy* deductive, inductive, or some other kind?

Accounts of analogical inference have so far fallen into three broad groups: deductive, inductive, and *sui generis*.[1]

[1] Arguably, there are other types of inference (e.g., abductive) that fall outside these three and could be considered as candidates, but to my knowledge nobody has proposed an account of *a priori analogies* that falls outside these three.

Received January 22, 2017. *Revised* April 11, 2017. *Published online* May 1, 2017

Sui generis accounts can be categorized by saying that in calling an inference "analogical" we are identifying something unique about the inference that cannot be accounted for by deductivist or inductivist reconstruction, where this is sometimes (although there are problems with this) closely linked with the claim that the inference makes ineliminable reference to the analogousness of different particular cases. I wish to break this link: I am prepared to call inferences in which there is such an ineliminable reference "analogical" but deny that in doing so I am committed to a *sui generis* account, that is to say, my usage is quite consistent with denying that either *a priori* analogical inferences or analogical inferences as such comprise a special *sui generis* class of inferences with distinctive non-deductive and non-inductive norms of their own. Being analogical and being *sui generis* are quite orthogonal to each other. That there is irreducible reference to a comparison claim does not settle the issue of what kind of inference it is one way or another.

This is not to deny that "analogical" arguments have features that distinguish them as a class from other arguments, or similarly that *a priori* analogical arguments have features that distinguish them as a class from other analogical arguments: to call something an analogical argument is to say something about the content of the argument, namely that it refers to a particular case (called the "source") claimed to be analogous to another particular case about which we desire to draw an inference (called the "target"), while to call it an *a priori* analogical argument — or more conveniently just an *a priori* analogy — is to say something about how that particular case from which the inference is drawn functions within the argument, what inferences can be drawn, and how they are drawn. A principal difference between *a priori analogies* and analogical arguments as such lies in the consequences of adding further particular cases: an ordinary analogical argument will become stronger, while it is commonly held that an *a priori* analogical argument will not.

However, in this paper I want to challenge this: both types of analogical argument become stronger, and in the same way, when they become complex, and this complexity affects directly the strength of the inference from particular to particular. Analogies have a cumulative force, even in *a priori analogies*, and choosing between the options of deductive, inductive, and *sui generis* accounts will ultimately be decided on the basis of which best explains this cumulative force.

I will give an example of each kind of account, regarding them with the following considerations in mind:

(I) Does the argument ineliminably refer to the analogue/source/comparison?
(II) Does the argument ineliminably refer to a universal claim?
(III) Is the inference defeasible?
(IV) Is the inference *a priori*?
(V) Is the inference one that can vary in strength in the appropriate ways?

I am not saying that these considerations are conclusive, but they may provide clues. I only intend to take one example of each kind; I am not attempting a comprehensive survey of every single account.

In regards to (I): there are some cases where analogies perform a purely heuristic function and do not make any real contribution to the inference. Once we have the universal claim that subsumes the target and the source, then the target follows deductively from the universal claim without any contribution from the analogue; once we understand the similarities and dissimilarities involved in the analogy — that is to say, once we know why and how the target and the source are analogous — the analogy itself plays no role in the argument. If this is so for all appeals to analogy then there are no analogical arguments or analogical inferences as such, just deductive arguments and deductive inferences that have been suggested to us by analogies. I call this eliminativism, and this is the view we are left with if arguments do not ineliminably refer to the analogue or make a comparison claim.

However, an argument may ineliminably refer to the analogue and still be deductive. I call this reductionism. To be an eliminativist about *a priori analogies* is not the same as being a reductionist; one can claim that *a priori analogies* can be reduced to deductive arguments yet, because the analogue does play an ineliminable inferential role, these *a priori analogies* are genuine arguments and the analogies themselves not simply heuristic. In short, deductivism (in the form of eliminativism) follows if the argument does not ineliminably refer to the analogue, but nothing much follows if it does ineliminably refer to the analogue, for reductionist, inductivist, and *sui generis* accounts may all refer to the analogue and give it a real inferential role to play. Since I am prepared to call such arguments "analogical", it follows that arguments can be analogical and still be also reductionist or inductivist, depending on which of these turns out to give the best account (if either does); hence, calling the argument "analogical" does not settle either way the question

of what kind of inference is involved, that is to say, it does not imply that the norms are *sui generis*.

In regards to (II): a deductivist account (of either type) will always refer to a universal claim, so if we think that analogical arguments can be claimed to be good without the arguer implicitly resting his claim to goodness partially on the truth of a universal or general claim, then the *a priori* analogy cannot be deductive but must be either inductive or *sui generis*. If not, however, this does not mean that the inference is not inductive or *sui generis*. In short, an inductive or *sui generis* account follows if the argument does not ineliminably refer to the universal claim, but nothing much follows if it does ineliminably refer to the universal claim.

In regards to (III): the source and the target may be analogous in the claimed ways and yet the attribute that we claim to belong to the target (because it belongs to the source) does not do so. If we take the latter as the conclusion and the similarity between the source and target among the premises, then the argument is defeasible since it is possible for the premises to be true (i.e., the source and target are similar in the ways claimed) and the conclusion false (i.e., the projected attribute does not belong to the target). This may be because of a relevant dissimilarity between the two cases not taken into account in the original argument, or because the elements held to be similar are not sufficient, either in the source or the target or both, for the source or target to be classified in the way the argument says. In short, an inductive or *sui generis* account follows if the inference is defeasible in such a way and deductivism must be false. At least, this is a common line of reasoning. However, more will be said about this later, for we must be cautious firstly about what the conclusion is actually saying — as we will see, this is not necessarily how reconstructions of *a priori analogies* state their conclusions, so it is not obvious that we should take the attribute's belonging to the target as the conclusion — and secondly about whether deductive arguments are not defeasible in the first place.

In regards to (IV): in *a priori analogies* the inference is held to be *a priori* because the source need not be an actual case and an empirical investigation of actual cases does not seem to be relevant to how we should classify the target. Furthermore, (as has already been mentioned and will become more important) adding further cases, whether real or invented, will not affect the strength of the inference [Govier, 1987]. It

is in these ways that an *a priori* analogical inference differs from an ordinary analogical inference.

In regards to (V): analogical inferences seem to be stronger in proportion to the number of similarities between the source and the target and weaker in proportion to the number of dissimilarities between the source and the target. The other means by which we might attempt to make our analogical inferences stronger is by adding more analogues. However, in this case intuitions seem to be unclear whether this does make inferences stronger: if the inference is *a priori* as explained in (IV) and does not depend on empirical confirmation then it seems that adding extra analogues should be beside the point. This is one of the things that Govier [1987] says distinguishes *a priori analogies* from other arguments by analogy, and most of the accounts that I will consider, of all types, attempt to account for this feature. However, I think that Juthe's [2015] account does not, and that he successfully challenges the intuition that it should; indeed, one of the great merits of his paper is in showing how in complex argumentation this intuition can be misleading, even when the particular to particular inference appears to be conclusive on its own and not to be affected by further cases. It is this in the end that I will take to be decisive against deductivism, because it is difficult for a deductivist account to explain this and it is quite likely incompatible with deductivism; it is unclear, though, whether this concession favours a *sui generis* approach over the inductivist approach, as I hope to show.

I will now go on to give one example of each kind of account.

1.1. Waller's deductivist schema [Waller, 2001]

Waller's schema is:

(W1) We both agree with case a.
(W2) The most plausible reason for believing a is the acceptance of principle C.
(W3) C implies b. (b is a case that fits under principle C)
(W4) Therefore, consistency requires the acceptance of b.

Let us analyse this with regards to the considerations above.

In regard to (I) and (II) this schema refers to both the analogue and to the universal claim. While it is certainly true that deductivist reconstructions *tend* to make the analogy redundant and thereby *tend* also to make the universal claim solely responsible for the goodness of

the argument,[2] we have already seen that deductivism as such is not committed to this. Waller's deductivism is reductionist, not eliminativist. So, it is not enough to reject deductivism simply to show that the comparison forms a necessary part of the inference and is ineliminable from the argument, since Waller's argument also ineliminably refers to the analogue a in both (W1) and (W2).[3] Further, if *a priori analogies* are not *sui generis* and can be reduced to arguments in deductive logic, then there is no problem in saying that the argument is both analogical and deductive (again, as already said), for these simply describe different aspects of the argument: it is analogical in virtue of its content (i.e., because it contains an ineliminable reference to an analogy) and deductive in virtue of its form.

I want to say more about Waller's schema, for it seems to be a kind of critical test of the *sui generis* view for it is not necessarily different from inductivist and *sui generis* accounts with respect to (I) and possibly not to (II) either. Guarini, who criticizes Waller's paper in detail, claims that there is an inference between (W1) and (W2): "Clearly, the move from the first claim to the second is non-deductive. By calling this reconstruction deductive, Waller must have in mind the move from premises 2 and 3 to the conclusion" [Guarini, 2004, p. 167 ff.2]. This attributes to Waller a two-stage view of the inferential process.[4] Shecaira, defending Waller, refers to Guarini's footnote at [Shecaira, 2013, p. 410] and follows this lead, saying: "Waller's schema does not represent analogical arguments as deductive inferences, but as complexes of two inferences only one of which is deductive" [Shecaira, 2013, p. 407]. In her criticism of Shecaira, Bermejo-Luque [2014, p. 335] says:

> As he [Shecaira] explains, this complicated proposal arises from the need to avoid the problem that, by adding universal principles, the analogies in analogical arguments are rendered redundant.

[2] When this happens Waller [2001] says that the analogies are being used 'figuratively' and are not part of the argument but only help us to find arguments.

[3] Juthe [2015] shows time and again that the comparison is necessary and seems to think that this tells conclusively against deductivism, but it does not, as mentioned above. It might be objected that although Waller's scheme refers to a, it does not explicitly have a comparison claim between a and b as a premise. Nonetheless, it is obvious that the inference goes through on the grounds that a and b are both implied by C, and this makes them analogous to each other.

[4] Kraus [2015, p. 179] goes one better, finding three inferences: two examples of inference to the best explanation, namely to (W2) and to (W3), plus the final deductive step to (W4).

According to these critiques, without taking a two-stage view where the analogy is ineliminable from the first stage, Waller's reductionism would just collapse into eliminativism; with it, the whole argument is a genuine argument by analogy (and not just a deductive argument suggested by an analogy), and the question becomes whether the argument is deductive. Note, however, that the first stage where the analogy is referred to is held by this interpretation to be non-deductive — it is only the second stage that is held to be deductive, and it is on the basis of this second stage's being deductive that the argument as a whole is held to be deductive.

I will argue that this interpretation is wrong. If the first stage is non-deductive, as Guarini and Shecaira both hold, then it is puzzling that Waller would call his schema deductive at all, and even more puzzling that Guarini should follow him. It is interesting to compare in this respect Guarini's [2004, pp. 161–162] own schema:

(G1) a has feature f_1, f_2, …, f_n,
(G2) b has feature f_1,f_2, …, f_n,
(G3) a and b should be treated or classified in the same way with respect to f_{n+1},
(G4) a is X in virtue of f_1, f_2, …, f_n.
(G5) Therefore, b is X.

This also contains two inferences: from (G1) and (G2) to (G3), and from (G3) and (G4) to (G5). The second inference (when it is present, for the argument may be content to stop at (3) with saying that a and b should be treated the same way without continuing to (5)) is deductive.[5] Yet, because the first stage is non-deductive (and in his view *sui generis*) Guarini describes the argument as a whole as non-deductive and *sui generis*. By the same token, then, Guarini should say that Waller's schema is non-deductive too, no matter what Waller himself says about it.[6] If

[5] Obviously, whatever we take to instantiate X is the kind of thing that can be instantiated as f_{n+1}, so when something that is "in virtue of" f_1, f_2, …, f_n is slotted in for X and f_{n+1} in the scheme, the argument instantiated by (G3); (G4); therefore, (G5) is deductively valid. It seems that Guarini [2004, p. 162] himself is taking this part to be deductively valid when he says that "instantiations of this schema are such that the third and fourth claims entail the fifth". The fact that "in virtue of" may not describe logical entailment and may be defeasible does not — as I will argue in more detail later — make this part of the argument any less deductive, nor does Guarini take it to do so.

[6] One could amuse oneself by substituting Waller's schema for a and Guarini's schema for b in Guarini's schema. It seems that Guarini should say either that both

he were to attribute a non-deductive schema to Waller, however, he would not be arguing against deductivism but talking past it. Out of a desire to attack deductivism, Guarini inconsistently treats Waller's schema and his own schema differently: Waller's as deductivist, his own as *sui generis*.

I think that Waller's schema has been misunderstood. There is no inference between (W1) and (W2) and Waller never says otherwise.[7] There are not two stages or two inferences: (W4) is meant to follow deductively from (W1), (W2) and (W3) together. In fact, it does not matter at all how the arguer has come to accept premise (W2), whether for good reasons or for bad. What the schema expresses is the performative inconsistency of agreeing about case a and not accepting case b when the arguer believes that both cases fall under C and that C is his most plausible reason for accepting a.[8] As a consistency constraint, it requires that these beliefs be consistent with each other and is entirely indifferent to how the beliefs arose originally.

Suppose that you and I both agree about a, whether for the same or for different reasons. I accept a because I accept C and believe that a falls under C; at least, I consider this a plausible explanation of why I accept a — a reconstruction of reasons that I am possibly not fully aware of but that I find plausible. I also believe that b falls under C. Following the reasoning of Waller's argument I must now accept (W4), which is to say that I must treat a and b alike. If I now fail to accept b then you are entitled to complain that I am being inconsistent, whether C was your reason for accepting a or not; b is not thereby shown to be true, or plausible, but only *required by consistency to be accepted*. The conclu-

schemas are deductive or that they are both non-deductive, since they have the same feature and so, according to (G3), should be classified in the same way.

[7] There may, of course, be subordinative arguments for the premises but that is beside the point for these are not inferences from the premises. If all that Kraus [2015] means is that (2) and (3) are usually inferred (i.e., established by a subordinative argument at a lower level through premises not mentioned in the argument itself) then he may be right but this is trivial. All that is required for Waller's argument is that the arguer makes the claims represented by (W1), (W2) and (W3), no matter how he came by them. If Kraus is trying to claim more than this, then I think he has fallen into the same trap as Guarini and Shecaira.

[8] Govier [1987, p. 58] says: "The thrust that underlies logical analogies is that of consistency — not the consistency required in order to avoid assenting to contradictory propositions, but that required for consistent behaviour. This is the consistency of treating relevantly similar cases similarly."

sion is that consistency requires something, nothing more, and like any deductive argument this conclusion depends on the acceptability of the premises, meaning that I could restore consistency by ceasing to agree with you about a. Like Guarini's conclusion at (G3), Waller's conclusion is effectively that a and b should be treated alike. Thus, Guarini's objection (2004: 158-59) that Waller's schema does not handle cases where the conclusion is just that two cases should be treated the same (i.e., an exclusive disjunction) is wrong and is evidence of his misunderstanding of Waller's schema.[9]

In regard to (III) to (V), Guarini objects [2004, pp. 159–161] that analogical arguments come in different strengths and Waller's scheme does not allow for this. If the conclusion of Waller's schema were b itself [as it is in Shecaira's [2013, p. 429] mistaken 'improvement' of the schema] this might be valid, but the conclusion, as already said, is simply that consistency requires something, and this is not something that can have different strengths: consistency requires something or it does not. Nor is this conclusion defeasible — although a may be true and b may be false, this does not alter the fact that they would be inconsistent in treating them differently whoever believed that they both fall under C, where C is their reason for accepting a. Even if the projected attribute does not belong to the target, and one correctly says that it does not even though it belongs to the source, this does not alter the fact that one is inconsistent when one says this.

In regard to (IV), since Waller does not care how a or b fit under principle C, it is not inconsistent with this being *a priori*. I suspect that he takes it to be subsumption, that is to say, that a and b are substitution-instances of C, and that this is what he means by "C implies b". However, it would not harm his account were we more permissive about the meaning of "implies." So, its being *a priori* does not rule out Waller's deductivist account and hence does not rule out deductivism as such.

[9] In conceding this criticism, Shecaira [2013, p. 426] does no better. Guarini [2004, p. 164] makes the same criticism of Govier's scheme, but her scheme also is (at least in its intention) an argument whose conclusion is a claim about consistency. So although I find it an attractive feature of Guarini's account that what we infer in the first place is simply that two cases should be treated alike and he is right to emphasize this point, I find his claim that Waller's and Govier's schemas do not allow for this to be an overstatement.

1.2. Botting's inductivist (confirmation-theoretic) schema [Botting, 2012b]

In [2012b] Botting puts forward a way of construing analogical inferences as confirmation relations from particular to particular that do not use a universal generalization explicitly, although one remains in the background without needing to be definitively formulated.[10] The claim that analogical inferences were *sui generis* with their own conception of 'validity' and methods of evaluation were there found to be inadequately motivated.

Botting's account also relies on two inferences, or to be more precise, one inference and one network of implications that he called [2012b, p. 109] "the closure of the confirming instance." Basically, he places a constraint on the paradoxical result in confirmation theory that everything confirmed everything else by requiring the posterior probability of the existential generalization of the target to be higher than its prior probability on the evidence of the existential generalization of the source's being true. This allows for a confirmation relation directly between the source and the target [2012b, pp. 109–111].

In regards to (I), there is ineliminable reference to the analogue, so we can call it genuinely analogical. In regards to (II), although the universal generalization is confirmed by the source, this is something that happens automatically, so to speak, without our ever having to refer to it or specifying precisely what features of the source get generalized and are responsible for the classification. We need to know only that the right generalization is confirmed, and this is trivially true even if we do not know what generalization is the right one. In regards to (III) and (V), since in the general case we are talking about confirmation, which is a probabilistic concept, our inferences can vary in strength and can be defeasible.

However, there is a wrinkle here that affects also (IV). Botting accounts for the fact that when we have a confirming instance of an *a priori* analogy we do not seem to make the inference any stronger when we add more analogies by the fact that, where classifications are concerned, a single instance not only confirms its universal generalization but also deductively implies it. It is this that marks off *a priori analogies* as a special case of inductive analogical arguments:

[10] Later we will see Juthe refer to the same kind of thing as an "ontological correctness condition."

> The general form of an instance [...] does not establish [the universal generalization] [...] by incremental confirmation only but, because all instances are on a par with respect to a classification [...] by the rule of universal generalization — the universal generalization is a logical consequence of the existential generalization.
>
> [Botting, 2012b, pp. 106–107]

Any variation in strength, then, is due to the probabilistic relation between the two existential generalizations. But in typical "same domain" cases these will both be instances of the same universal generalization, and so they will have the same existential generalization also, which means in turn that the probability will always be unity. Thus, in these cases the conclusion will not be defeasible and adding further analogues will not make the analogical inference any stronger, though adding further similarities between the source and target will in all cases, since the more similarities we can cite, the more likely it is that the features in these similarities are those of the right generalization.

1.3. Juthe's *sui generis* schema [Juthe, 2005, 2015]

In a recent paper Juthe (2015) gives the form of the argument as: (Standpoint) The Target-Subject$_{TS}$ has the Assigned-Predicate$_{AP^*}$.

(Argument) The element$_{\varepsilon}$ of the Analogue$_{A}$ is comparable with element$_{\varepsilon^*}$ of the Target-Subject$_{TS}$.

(Linking Premise) The element$_{\varepsilon}$ of the Analogue$_{A}$ determines the Analogue$_{A}$'s Assigned-Predicate$_{AP}$.[11]

There is a horizontal comparison relation, typically (as it is here) given as the "argument", and a vertical 'determines' relation — including

[11] It is not entirely clear whether there is meant to be a difference between Assigned-Predicate$_{AP}$ and Assigned-Predicate$_{AP^*}$, and Juthe is not always consistent in his notation. From what he says at [2015, pp. 382–383] and [2005, p. 5], and from the fact that in his discussions he often refers just to Assigned-Predicate without any subscript, I think it is meant to be the same predicate that is applied to both the Target-Subject$_{TS}$ and the Analogue$_{A}$. If so this might be a limitation of the account, for it seems there could be cases where it is not the same predicate as is applied to the Analogue$_{A}$ but only one that is itself analogous to or a counterpart of that predicate. Therefore, I will treat these predicates as potentially different, though in most cases they will be the same. I think that Juthe can accept this without it really affecting his account too much, and in his discussion he treats the typical and simpler cases where it is the same predicate.

but not limited to relations of supervenience, resultance, truthmaking, inferential, function, genus to species, and explanatory — typically given as the "linking premise".

In regards to (I): that an act of comparison is always necessary and cannot be eliminated is stressed when Juthe says:

> The inference is same-level reasoning that moves from particular to particular [...] and you could not infer that a vertical determining relation exists in the Target-Subject unless you knew that it obtained in the Analogue and that there were corresponding elements in the Target-Subject. Thus, without the act of comparison and the similarity between the Analogue and the Target-Subject, you could not infer that the elements of the Target-Subject stand in the same determining relation. [Juthe, 2015, p. 383]

In regards to (II): this vertical relation applies only to the particular analogue in question and is not meant to be generalizable; the analogical inference does not go through a universal claim or general principle. So, there is an ineliminable reference to the comparison but not to the universal claim; in this it matches Botting's schema and contrasts with Waller's schema, since the latter has an ineliminable reference to the universal claim (viz., C). Juthe does not say so explicitly, but it is implied that because there is no need for a universal generalization and there is a need for an act of comparison, the analogical inference cannot be reconstructed deductively without fundamentally changing the argument.

It should be noted that the analogical argument works in two stages: firstly by establishing that the same determining relation that applies in the $\text{Analogue}_{\text{A}}$ applies also in the $\text{Target-Subject}_{\text{TS}}$ (on the basis of there being one-to-one correlations between the elements of the $\text{Analogue}_{\text{A}}$ and those of the $\text{Target-Subject}_{\text{TS}}$, where these elements of the $\text{Analogue}_{\text{A}}$ determine in the $\text{Analogue}_{\text{A}}$ the application of the $\text{Assigned-Predicate}_{\text{AP}^*}$ to the $\text{Analogue}_{\text{A}}$), and secondly, in virtue of the determining relation we have just established to hold we can establish that the $\text{Assigned-Predicate}_{\text{AP}^*}$ is determined in the $\text{Target-Subject}_{\text{TS}}$. The analogical inference, as such, seems to be the first part, and what is inferred is that a relation holds (viz., "that the elements of the Target-Subject stand in the *same* determining relation") and it is this relation that establishes the final conclusion (viz., that the $\text{Assigned-Predicate}_{\text{AP}^*}$ holds of the $\text{Target-Subject}_{\text{TS}}$); in this second part there is no longer any mention of the analogue, so I do not think that Juthe would count it as an analogical inference, though he does not make it clear what he would

count it as. I think that there are places where Juthe mixes up these two stages, sometimes taking the analogical inference to be the first part, and sometimes the second part, and this vitiates some of his discussion.

This affects our consideration of (III) and (IV). Which inference is it that we need to consider with respect to whether it is defeasible and *a priori*, the horizontal inference or the vertical inference? Attacking deductivism, Freeman [2013] concludes that the analogical argument cannot be deductive because this relation is defeasible and cannot be inductive because it is *a priori*. Now, the vertical relation can be defeasible and *a priori*. But this relation is not the analogical inference; the analogical inference is the horizontal relation, since it is this that exploits the similarities between the $\text{Analogue}_{\text{A}}$ and the $\text{Target-Subject}_{\text{TS}}$, and this is not obviously defeasible or *a priori*, and nor is it claimed to be. In a similar vein, Juthe seems to say that deductivism is false, on the grounds of the pluralism of the determining relations, pointing out that the determining relations are not themselves formally valid but only materially valid, that is, valid in virtue of how certain elements of the analogue determine the application of the $\text{Assigned-Predicate}_{\text{AP}^*}$ to the $\text{Analogue}_{\text{A}}$ [Juthe, 2015, p. 384; italics original]:

> [T]he sense of determining is broad, and, as such, only indicates that there is some kind of material *connection* between the determining elements and the Assigned Predicate in the Analogue so that the connection can be transferred via the one-to-one correspondence. Thus, analogical inference is an example of *materially valid inference in virtue of a substantial argument scheme*.

This is unclear, however, and it seems like Juthe has already fallen into the trap of confusing the two inferences. The *determining relation* may be material, but why does it follow from this that the *analogical inference* is material? Yet Juthe seems to be implying by the italics that because the determining relations are material — or in other words, because the elements being present are not presumed to be logically sufficient for the Assigned Predicate's being applied but can be sufficient in some non-logical way — this means that the analogical inference cannot be deductive. If this is what Juthe is implying (though he does not say it explicitly), then it is a non sequitur; I may deductively infer that a non-deductive inferential relation holds between two things.

So the vertical relation is, or at least can be, *a priori*. Also, by distinguishing between "arguments by conclusive analogy" and "arguments by

inconclusive analogy" Juthe [2015, p. 388] allows that they can be defeasible and can vary in strength. However, this is largely irrelevant for our purposes, for this is the wrong inference to be considering. Even so, I still think that this vertical inference is open for deductive reconstruction. If the determining relation obtains then a material conditional will be true that says basically "If the target has these elements, then it will have the assigned predicate", and if there are cases where it can have these elements without having the assigned predicate, this means only that we are not certain of the material conditional and this degree of uncertainty will be transmitted to the conclusion; we still behave deductively when we infer that the target has the assigned predicate even when we allow that doing this may lead us sometimes to the wrong conclusion. The material conditional will not, of course, express what being determined means in this case, but the arguer is nonetheless committed to it (even when he is not certain of it) and it may play the role of the linking premise all the same, and so the vertical inference will be deductive. The material connection Juthe is keen to stress is quite naturally given as a material conditional. One gets the impression that Juthe thinks that instead of a mere material conditional the deductivist is committed to putting a logical entailment here, that is to say, that the deductivist is committed to saying that the elements must on their own logically entail the assigned predicate, but that is not the case.

As for the horizontal relation (that I have identified as the analogical inference as such), it does not seem to make much sense to say that it is *a priori*, for we are not yet applying a classification. In regards to (III) and (V), it seems that the horizontal relation is not defeasible as such, nor can it vary in strength:

> The critical issue with arguments by analogy will be whether the stated analogy really is correct. If it is established that the analogy is correct then the conclusion will follow conclusively or inconclusively depending on the type of argument. There is no uncertainty due to degree in strength of the analogical relation. In a *complete* analogy there is a one-to-one correspondence between *all* the elements of the objects of comparison and any justified conclusion from the Analogue will be [...] justified about the Target-Subject as well. [Juthe, 2005, p. 10]

This does seem to allow for the inference to be made stronger by adding more similarities; for the more we add the closer we are to having

a complete analogy.[12] When it comes to adding a new object of comparison to the original, although Juthe allows for analogical arguments to be made more complex in this way, it is not exactly clear whether he considers this new more complex argument to be stronger than the original argument in virtue of this addition [Juthe, 2015, pp. 429 and 440]. As we saw above, there is an intuition endorsed by Govier and Freeman, and also accounted for in Botting's schema, that the addition of more instances should not make the analogical argument any stronger.

In this paper I want to argue that the confirmation-theoretic analysis is indeed the correct, general analysis of *a priori analogies*, by arguing that there are features of these inferences that are difficult to make sense of if these inferences and arguments are not fundamentally inductive. Because the analogous cases given in the argument are fundamentally a part of the argument *and the argument can be weaker or stronger depending on how many analogous cases there are and how many points of similarity there are between the given cases*, arguments by analogy are not, generally, well represented as deductive arguments, even deductive arguments of which the analogous cases form a fundamental part. It is not just that by having more arguments for our claims we make them dialectically more difficult to overturn; my intuition (and I do not claim that it is more than an intuition) is that the inference is actually stronger, that even in *a priori* analogical arguments analogies have a cumulative force such that the more analogies we can add, and the more similarities (and fewer dissimilarities) we can appeal to between what we find analogous, makes the truth of what we are inferring more likely. (I thus follow Juthe in denying the intuition that adding extra cases would not make an *a priori* analogy stronger.) This would not be the case if each analogical argument were deductive, for then we should take the strength of the analogical inference as determined by the strength of the closest analogy we offer, leaving the other analogies without an inferential role to play (though they may have other roles to play). This certainly suggests that the argument is inductive, but strictly speaking does not rule out a *sui generis* form of argument with the same feature. The aim is to shift the burden of proof firmly onto those making the *sui generis* claim rather than to make a conclusive argument for the inductivist view.

[12] Also with how clearly the elements in one-to-one correspondence resemble each other [Juthe, 2015, p. 435 ff.51].

2. Are *a priori* analogical inferences deductive?

Although I will eventually reject deductivism, it is important that we do so for the right reasons. In the first part of this section I want to consider what I think are inadequate reasons to reject deductivism. In its second part, I will give what I think are good reasons for rejecting deductivism, based on Juthe's interesting analysis of what happens when analogical arguments become complex. I will then show that this does not support Juthe's own *sui generis* view over inductivist rivals, however. In fact, I argue for a methodological preference for the inductivist account of Botting (2012b) and show how it can be modified to account for the troublesome intuition.

2.1. A defence of deductivism

Juthe [2015] takes up the view that *a priori analogies* are not deductive or inductive but *sui generis*. I will argue that his arguments for rejecting deductivism are unsound and for the most part assimilate deductivism to eliminativism. Juthe [2014, p. 112 and ff. 4] seems to think that if analogies (or more specifically, a claim that two particulars are comparable) are a necessary part of the argument then the argument is argument by analogy, and then, seemingly by a process of elimination, says they are not inductive or deductive, and that "inductive" and "deductive" means something different when applied to arguments by analogy. In short, he seems to focus on (I) and thinks that all he needs to do in order to establish the *sui generis* view over its deductive and inductive rivals is to show that the comparison is a necessary part of the inference or, if we want to talk in terms of arguments rather than inferences, that a comparability claim is a needed premise of the argument.

This is not so, for Waller's view is deductivist and refers to both the universal generalization and the analogue. I have also said that Waller's argument concludes with a claim about consistency, and it does not matter why the arguer is committed to these premises. Arguments that follow Waller's schema are analogical (following my usage of "analogical"), having an ineliminable reference to the analogue in their schema, and deductive, having a conclusion that follows deductively from the premises. That this does not settle the matter is because Waller's scheme still necessarily makes use of a universal claim, and it is not obvious where arguers, when they give analogical arguments, appeal to any universal

claim; there seem to be at least some cases where they do not make any such appeal. I will come back to this.

I now want to say more than this, since it affects (IV): it does not matter either why the features of case a lead to a's acceptance; hence, it is not inconsistent with Waller's account for this to be *a priori*. To put the matter in terms more familiar from Guarini's and Govier's discussions, how it is "in virtue of" features of the analogue that some predicate can be applied to it, i.e., can be classified in a certain way, makes no difference to what kind of inference or argument it is. It is just a fact about the world that gets expressed in the premises. Juthe [2015] gives several kinds of 'determining' relations that could cash out the meaning of "in virtue of" in different arguments; it is a mistake, though, to identify this with the analogical inference. Freeman [2013, pp. 182–183] similarly makes a great deal of the fact that the relation between the features of the analogue and the predicate we apply to it "in virtue of" having those features is defeasible, and concluding therefrom that the analogical inference, being defeasible, cannot be deductive. But I have already explained that this conclusion does not follow because although it is perhaps natural for the deductivist to take those features to be logically sufficient for applying the predicate it is not required by deductivism as such, and I also add that this, once more, confuses the analogical inference with a different relation altogether. The analogical inference goes from the analogue to the target on the basis of having those same features, i.e., similarities. Juthe separates this horizontal relation from the vertical relation with admirable clarity, before bungling the issue in his enthusiasm to refute deductivism.

Even if Juthe is right that the act of comparison is needed, this only works against the thoroughgoing eliminativist; the reductionist may grant these things and still maintain that the analogical inference is deductive. Nor need the deductivist deny that there are many ways in which application of a predicate may be determined by certain elements; this vertical relation is not the inferential relation, and so does not in itself imply that the (horizontal) analogical inference is non-deductive. In any case, the deductivist may say that the vertical inference is deductive as well!

Now, it is true that not only has Juthe shown the indispensability of the comparison, he aims also at showing the dispensability of the universal claim, and this is inconsistent with Waller's schema and any deductivist schema where the universal claim appears as a premise,

which appears to be all of them.[13] However, it is not so clear to me that the universal generalization has been dispensed with as much as Juthe supposes, for I see no reason why we should suppose that the same determining relation applies in the Target-Subject$_{TS}$ because it applies in the Analogue$_{A}$ on the basis of a one-to-one correlation of elements unless this is generally (even if not necessarily universally) true of anything with those elements. I get the impression from what he says at [2015, pp. 407–408] that he thinks that acceptability can be transferred to the standpoint even without this being true, or perhaps he thinks it is true but is a background assumption whereas the real transfer of acceptability occurs in virtue of the meaning of the non-logical concepts, whereas reconstructing it deductively would make it depend on the logical concepts alone. Certainly, it is in virtue of the non-logical concepts involved that what is determined depends on the elements that determine it, but firstly this is not the analogical inference itself, as already said, and secondly this determining relation can still be expressed as a material conditional, also as already said. But once we have this conditional, the validity of the analogical inference depends only on the logical concepts.

Moreover, is it really the case that Juthe has dispensed with the universal claim? *Sui generis* views, while they may not appeal to a universal claim explicitly, do distinguish between relevant and irrelevant properties. For example, in Guarini's example (G1) and (G2) lists only those features of a and b in virtue of which they are classified as X in (G4), and although we do not always proceed to (G4) it is implied that we could if we so wished. I don't think that it is possible to make those judgments of relevance without some universal claim at least as a working hypothesis; we are committed to the universal claim, even if we cannot fully say what it is, as soon as we make the judgment that the target and the source are relevantly similar. If they are similar, it can only be in virtue of something general that they both share and the fact that we may need to adjust the claim as we consider more instances does not change the matter, as Waller insists, and as his detractors concede.[14]

Govier considers this type of response in (1987: 62; 1989: 145) and calls it, following Wisdom, "Euclid's disease." She complains [1989,

[13] Note that in Waller's schema the universal claim does not appear as a premise as such, but is referred to in (W2) in the antecedent of a conditional whose consequent is accepting a. Any ineliminable reference in a premise will be counted here as appearing as a premise.

[14] This point is made in [Botting, 2012b, pp. 103 ff.3 and 104].

p. 145] that deductive reconstruction makes some of the premises (i.e., the analogue) redundant, but we have seen that this is not true of Waller's account or of deductivist reconstruction as such but only true of eliminativist proposals. Then, she says in [1987, p. 77] and [1989, p. 145] that our knowledge of rules and generalizations depends on our knowledge of particulars, but we will see in a moment that this is what we should expect if we adopt meta-epistemological particularism. Certainly, as we consider more instances and counter-instances (i.e., particulars) we may need to formulate and reformulate our universal claim, but this is because our intuitions in these cases do not track the rule we took them to be tracking; we have been applying the same rule all along, though we have not yet successfully pinned down what this rule actually is. I do not think that it is too mysterious that we could be mistaken about what universal rule we are following, and that we might follow in practice — i.e., in the inferences we actually make and our intuitions in particular cases — rules that if put to us we might not endorse, and that rules we do endorse we do not always follow in practice. For example, a common strategy in ethical philosophy is to produce a counter-example where the rule that you took yourself to endorse says one thing and yet your intuitions say another. We do not say in this situation that you have started applying a different rule; we say rather that your intuitions track a different rule from what you thought they did.

It is because of this that the argument we give when we do make an explicit appeal to a universal claim is often weaker than when we do not; we were simply wrong about what universal claim we were following. However, this does not mean we must abandon any feeling that the validity of the argument rests ultimately on there being some universal claim that makes it *deductively* valid and that our intuitions are tracking such a rule, even when we struggle to formulate such a rule. Anti-deductivists try to make it a problem for deductivism that arguers may have such difficulties, but it turns out that very little follows from this difficulty, and certainly not enough to theoretically motivate the rejection of deductivism, especially when the anti-deductivists face a very similar problem in deciding what properties are and are not relevant to the comparison claim. If we had the right universal claim then the conclusion would follow conclusively, that is to say, it would not be possible for similar cases to be treated differently without inconsistency, and this would be so even if those features of the cases found to be similar (and are, so to speak, the antecedent of the universal claim) are not logically

sufficient for the cases being treated the way we do in fact treat them. In other words, even if, following Guarini's schema, a had f_{n+1} and b did not, (G3) would still follow, that is to say, we would still have to classify a and b in the same way, though one of those classifications, unknown to us, is false.

We have inconsistent commitments in this case, because we are committed in practice to one rule and committed in our explicit belief to another, and it is because of this inconsistency that we must either try to make the rule consistent with our intuitions or our intuitions with the rule; if the rule really played no role in the analogical argument we would not feel the force of this inconsistency and happily continue on as we were. In making judgments about which properties that they have in common are relevant to the analogy and which are not, where these relevant properties are listed in the analogical argument, the arguer must be committed to some universal principle that underlies these judgments [Botting, 2012b, pp. 103–104].

This tells against Govier [2002] and Guarini [2004] when they argue that because it is often implausible to attribute to the arguer any belief in any particular universal generalization, and the arguer may even be inclined to reject it, it cannot be on this that the arguer rests the goodness of the analogical argument, and the argument is good even before the arguer comes to recognize the universal generalization that subsumes both cases — it would be inconsistent for an arguer to give an argument that he thought was good and yet, when reconstructed deductively, he thought it to be bad. Even if it turned out that the deductive argument was in fact valid, it could not be this that the arguer took himself as giving, seeing that he gave what he thought was a good argument and not what he thought was a bad one. If the previous paragraph is right, though, this position is somewhat fragile; it proves only that we may not always be the best people to deductively reconstruct our own reasoning, and not that we were not reasoning deductively.

Also, the *sui generis* account seems to be in the same boat: just as you may be unsure what your universal claim should be, you can be equally unsure about what the similarities between the different cases actually are. Perhaps we do not need to specify elements$_{\varepsilon}$ and elements$_{\varepsilon^*}$, and if so perhaps we do not make any kind of covert appeal to a universal generalization in making relevance judgments. But if we allow this, there is no principled reason to deny the same strategy to the deductivist. Juthe [2015, pp 418–419] says (my italics):

> [A]n analogical inference may be based on intuitions of similarity without knowing either exactly what the vertical determining relation is, or exactly what the horizontal corresponding relation is. They are part of the ontological correctness conditions for arguments by analogy, not *necessarily* the conditions for making the inference. An argument is committed to the existence of the ontological correctness conditions, but it can be a good argument even without knowing exactly what they are. Thus you do not need to know exactly about the detailed structure in order to employ it in an argument, *just as you do not need to know every background assumption or unexpressed premise for a deductive argument in order to assess its validity.*

Juthe curiously undercuts his own case by noting (correctly) that deductivists may adopt precisely the same strategy. The moral is that not much follows from the fact that sometimes deductive reconstructions make our arguments appear less plausible than we took them to be.

Here is another illustration of that moral: we must be very cautious about drawing conclusions about what arguments appeal to and what we take their validity to rest on from the phenomenological features of reasoning. I need to take a brief excursus into meta-epistemology to explain what I mean by this: we need to look at the Problem of the Criterion. This is an old problem that was revived in [Chisholm, 1973]. Chisholm says:

> [1] You cannot answer question A ['what do we know?'] until you have answered question B ['how are we to decide whether we know?']. And [2] you cannot answer question B until you have answered question A. Therefore [3] you cannot answer either question. [3a] You cannot know what, if anything, you know, and [3b] there is no possible way for you to decide in any particular case. [Chisholm, 1973, p. 14]

In other words, unless you know some things antecedently there is no way of telling whether the rules correctly capture what we do and don't know; there is no way of validating the rules. This does not mean that those rules do not apply to those cases but only that the truth in those cases can be established without appeal to or reference to the rules. Conversely, without rules there is no way of telling whether you do know what you think you know. Holding [1] and [2] together, therefore, leads to scepticism. Chisholm calls the alternatives methodism and particularism. The methodist devises rules and decides to live with the fact that there is no way of justifying or testing these rules further. The particularist assumes that she does know some things and tries to discover rules

to systematize these particular judgments. The important point for my purposes is this: the particularist may discover in her judgment rules of deductive or inductive logic that she did not actually use in reaching her judgment. Indeed, that she did not use such rules is precisely the point of her strategy and to be expected. It obviously does not follow that those rules do not apply or that we are attributing in our judgments a different concept of validity.

Let me give a few examples. We thought that arguments that instantiate *Barbara* or *modus ponens* were valid arguments (or, if the word "valid" is thought to be too technical, we can say that we thought that the conclusions of *Barbara* or *modus ponens* followed logically from their premises, where we have some pre-theoretical notion of following logically) before the invention of syllogistic or propositional logic, and consequently before we had a proper theoretical grasp of what that validity amounted to. To take a more sophisticated example, we thought that it was valid to infer my strolling from my strolling briskly before Davidson showed us how to analyse such sentences in such a way that this inference is formally valid. Does this mean that, prior to Davidson, this inference was, or was taken to be by those making it, non-deductive, and that the validity that we claimed on its behalf was not deductive validity? No.

It is not necessarily a different kind of argument — in the sense of having a different kind of premise-conclusion relation — to argue without explicitly appealing to a universal claim that makes the argument deductively valid; arguing that it must be different because we did not use the rules or entertain any missing premise or feel any premise to be missing is beside the point — if the particularist position is the right one this is exactly what we would expect. Govier is right to say that our knowledge of rules and generalizations depends on our knowledge of particulars, but this illustrates a quite different moral from the one she draws from it, namely that we should beware of drawing conclusions about logical structure from phenomenological evidence of our intuitions of validity; these are not evidence that our reasoning is not deductive. We should not suppose that there is one kind of validity in use prior to our knowledge of rules and generalizations but posterior to our knowledge of particulars, and a different kind of validity that is in use posterior to our knowledge of rules and generalizations. On the contrary: if knowledge of particulars leads us to knowledge of rules and generalizations which, when added, make the argument deductively valid, this is reason to suppose that it was deductive validity that was in question all along,

even if prior to our knowledge of rules and generalizations we could not say exactly why it was deductively valid, just as prior to our knowledge of Davidson's analysis we could not say why it was deductively valid to infer "I strolled" from "I strolled briskly."

Similarly, we may feel that an analogical inference we have made is valid without appealing explicitly to a universal claim, but does this mean that the validity in question and that we want to claim for our inference is non-deductive? It is not clear, because the universal claim in question does not seem to be the same as a rule such as Barbara or *modus ponens*. So this *might* be evidence that the analogical inference is non-deductive, but hardly conclusive.

Only the confirmation-theoretical approach [Botting, 2012b] really avoids having some idea of the right universal generalization, for although the analogical inference requires a universal claim to be true in order to be valid, it does not require the arguer to formulate or appeal to the universal claim, which is to say that it is not a premise in his argument, nor does it underlie any judgments of relevance or similarity. In some ways it is like Shecaira's account, and also like Aristotle's account of argument by example [Bermejo-Luque, 2014, p. 325 ff.13], which goes from the particular to the universal and then to another particular falling under the same universal. While typical cases are like this, however, the scope of Botting's account is wider for it does not demand that both the source and the target are instances of the same universal generalization, but only for there to be a probabilistic relationship between the existential generalizations of the source and the target.[15]

Juthe's [2015, pp. 384 and 393, and ff.13] other complaint against deductivism is that deductive arguments do not preserve plausibility or likelihood. But this is wrong. What is true is that you cannot detach a statement that says simply that such and such is plausible or likely, but this is a pseudo-problem caused by a mistaken idea of detachment [Botting, 2012a]; in fact the same could be said of truth. What you can say is that the conclusion is plausible relative to the premises, but this is effectively what you are saying about true conclusions as well, since there may come a time when, armed with new information, you wish to reject a conclusion and consequently a premise. Deductive arguments are defeasible in this sense and do not permit you to establish for all

[15] By this means Botting's account stops short of the result of Wreen's [2007] inductive account where everything is analogous to everything else.

time that something is true. The curious thing is that Juthe seems to recognize this at [2015, p. 403], where he cites Tomić [2013]. Juthe's reasoning is that:

> [t]here is a real difference between an argumentation that employs an inference which, unless defeated by additional information, confers a reason for a standpoint to the same extent that there is reason for the "argument", on the one hand, and an argumentation that employs an inference which, unless defeated by additional information, confers a reason for a standpoint but to a lesser extent than there is reason for the "argument", on the other hand. [Juthe, 2015, p. 403]

There is no real difference here. The apparent difference is due to the fact that the logical minimum is part of the argument and thus one of the things that you must have reasons for and that confer reason to the standpoint. If you believe the premises are true but find that they confer on the standpoint less reason than there is for those premises, this is because there is less reason for this conditional and this conditional is among the premises which together confer reason for the standpoint; if the conditional is only true 9 times out of 10, then when the other premises are certain the premises together make it probable 9 times out of 10 that the conclusion will also be true, thereby conferring all their combined reason to the standpoint.[16]

Juthe employs a different argument at [2015, pp. 411–412]. What distinguishes an analogical inference from all other kinds is that it is a case of same-level reasoning. While the deductive or inductive reconstruction would have to be abandoned as a distortion if the arguer would not commit himself to the generalization, this is not so in the case of the analogical inference, which for this reason is more genuinely same-level reasoning since it does not rely to any extent at all on the truth of a generalization to account for its goodness or for its being deemed to be good by the arguer; instead, it relies solely on the act of comparison itself [Juthe, 2015, p. 412], in a way that perhaps it does not in other reconstructions. He gives the following example:

(Standpoint) Positive value_{TS} cannot be adequately conceived apart from responses of moral $\text{approbation}_{\text{AP}^*}$.

[16] This is not the same as saying that the conclusion has a 0.9 probability of being true, still less that we can detach such a conclusion. It would be perfectly true that that conclusion would not follow.

(Argument) The experience of red_{ε} in adequately conceiving of red_{A} is comparable to our response of moral $\text{approbation}_{\varepsilon*}$ in conceiving positive value_{TS}.

(Linking Premise) The experience of red? is essential for us to adequately conceiving red_{AP} [determining relation]

This is meant to be a reconstruction of the following statement in [Tropman, 2010, p. 35]:

> Just as we cannot conceive of red adequately otherwise than in terms of red experiences, positive value cannot also be so conceived apart from mentioning responses of moral approbation on our part.

But Tropman is not giving an argument here: she is not saying that because the concept of redness cannot be defined without mentioning experiences of red, our concept of positive value cannot be defined without mentioning experiences of moral approbation. Nor do I think is she saying that the vertical relation between assigning a colour predicate to something and the colour experiences that we have is the same relation as between assigning a value predicate to something and the experiences of moral approbation that we have. She is saying that, like secondary qualities such as colour, our concept of positive value depends on a certain characteristic set of our responses. She is not saying that positive value is a secondary quality, only that we can think of them in analogy with secondary qualities such as colour.

If so, there is no analogical inference as such, and if we try to put an inference in here it seems rather implausible. If someone were to start an argument for a standpoint with the words "Redness is comparable to goodness" or something like this then I think that, until they have actually explained in what way they have taken redness to be comparable to goodness, that is to say, until they have actually more or less told me the conclusion, my reply would be "Huh?" I do not think that I would see any comparison at all until I could see the relation that is posited to hold between positive value and our responses thereto.[17] The value of the

[17] True, this is not actually what Juthe says; what is being compared in the argument as he presents it is not, apparently, elements of red or redness, but is itself a relation between experiences of red and our concept of red, or, to be more precise, our "adequately conceiving" red. Is this relation the determining relation? This seems inconsistent with the form of the analogical argument as Juthe has given it earlier, in which the determining relation is only given in the linking premise. So, I do not think that it can be the determining relation. This means that we have

analogy is in showing that this unfamiliar relation is alike in some ways to a relation that is more familiar to us, namely between colour concepts and our experiences of colour, though I would certainly hesitate before saying that it is the same relation. It is useful here to give this relation a name, say "response-dependent". The $\text{Analogue}_{\text{A}}$, then, is a paradigm case that explains or even stipulates the meaning of this term, and may even perhaps be used to justify our assigning this term to the $\text{Target-Subject}_{\text{TS}}$. But it is not the basis of the inference: we do not infer that the relation holds between positive value and moral approbation because positive value concepts have elements that are comparable to those of colour concepts, and there is such and such a relation between elements of colour concepts and our assignment of colour concepts. Or if the inference is between a certain relation's holding and the relation's being response-dependent, where the relation between colour concepts and our experiences of colour is now the thing whose elements we are considering, I find this only marginally less unlikely. I do not think that anyone would see there to be any such comparison between the elements, and even if they did I do not think that they would project the relation from the $\text{Analogue}_{\text{A}}$ to the $\text{Target-Subject}_{\text{TS}}$ if they did not already think that there was such a relation in the $\text{Target-Subject}_{\text{TS}}$. Of course, if we only believe that the Argument is true because we believe the Standpoint is true, we would be arguing in a circle if we then used the Argument to analogically infer the Standpoint.

Because the $\text{Analogue}_{\text{A}}$ and the $\text{Target-Subject}_{\text{TS}}$ come from different domains, Juthe seems to be saying that without the comparison we would never come to the conclusion that positive values cannot be adequately conceived apart from responses of moral approbation. I think that the intuition that Juthe is trying to pump by stressing cases where the analogy crosses domains [2015, pp. 412–415] is that the generalization we would have to postulate would have to subsume cases from two

three relations, where the determining relation must be between this relation and the relation's being "response-dependent", with response-dependent being the $\text{Assigned-Predicate}_{\text{AP}}$. This does not match what Juthe says in the linking premise, however, which seems to take the determining relation as being between experiences of red and adequately conceiving red after all, rather than determining response-dependence, as I think it should. In short, Juthe's analysis is hopelessly confused about what it is actually arguing and I don't think we should really draw any consequences from it one way or another.

widely different domains, and it is implausible that the arguer thinks his argument is good on the grounds of any such generalization:

> [A]ttempts to find a specified universal premise that includes exactly those features that are relevant, and that excludes exactly those features that are irrelevant, and that excludes exactly those features that are negatively relevant (all of which are necessary in order to be a deductive argument that avoids obvious counterexamples) is just doomed to failure. Thus, this example [...] constitutes a real bite against deductivism as well. [Juthe, 2015, p. 415]

The problem I want to stress here is that in these cross-domain cases I do not think that the comparability claim is any more plausible — without assuming what we are trying to prove — than the universal claim would be; we only see that the cases are analogous when we see the similarity in the way the assigned predicate is determined in the analogous cases — which is to say that it is in a sense the argument (i.e., the comparability) that is inferred — rather than inferring that the determining relation holds for the Target-Subject$_{TS}$ because it holds of the Analogue$_{A}$. The analogies Juthe gives as examples of cross-domain cases are not actually analogical arguments at all but explanations, for the role of the Analogue$_{A}$ here is simply to explain what we mean by the unfamiliar technical term "response-dependent." Still, maybe we should conclude no more from this than that Juthe has chosen a bad example. Let us suppose that Juthe is right, that is to say, that his analogical argument is a good one and that acceptance of the standpoint depends on the comparison and is as acceptable as the analogous-ness of the Target-Subject$_{TS}$ to the AnalogueA is close. If so, eliminativism is false,[18] but it is not obvious that the argument cannot be reductionist or inductive.

In short, the arguments Juthe arrays here against deductivism and in favour of a *sui generis* type of inference are effective against eliminativism, are unconvincing against reductionist deductivism, and fail to properly address the inductive views like those of Botting [2012b] and Wreen [2007] at all.[19]

[18] At [2015, p. 415] too Juthe wrongly supposes that because the comparison cannot be replaced by a generalization without distorting the argument, this means that the argument cannot be deductive or inductive, where in fact it only means that eliminativism is false.

[19] No inductivist view even makes it into Juthe's list of references in [2015].

2.2. A refutation of deductivism

After all the bad arguments against deductivism, Juthe does in fact give a good argument against deductivism, though he does not use it specifically in this way.

This comes in Juthe's discussion of complex analogical arguments. He usefully divides the complexity into three kinds:

> [C]omplex argumentation by analogy that is entirely composed of analogies can be complex in three ways: either by means of supplying an added element of resemblance for each added single argument, or by means of supplying an additional entire analogue for each added single argument, or by a combination of such single arguments.
>
> In other words, an analogical argumentation can be made complex by adding another whole object of comparison next to the first comparison and not just adding further resemblances to the first comparison.
>
> [Juthe, 2015, pp. 428–429]

The second paragraph is especially interesting and raises the question: what happens when you add "another whole object of comparison"? Does it become stronger, even in the case of *a priori analogies*? If so, then Juthe's position is interestingly and importantly different from the other accounts as far as *a priori analogies* are concerned, where the established view is that addition of more instances should not make an *a priori* analogical argument any stronger. He does not answer this question, saying only that the argumentation is more complex. However, I am tempted to think that it does become stronger after all. Later, I will explain how this could be, and yet still maintain a difference between *a priori analogies* and other arguments by analogy.

Juthe's discussion seems to centre on adding resemblances, however. He makes the interesting observation that the resemblances may work together or may work singly and independently in determining the assigned predicate; there is often no way of telling from the presentation of the argumentation which structure it should be given. He gives an analysis where he says they work singly:

1. The Target-Subject$_{\mathrm{TS}}$ has the Assigned-Predicate$_{\mathrm{AP}^*}$.

1.1. The elements$_{\varepsilon 1-\varepsilon 4}$ of the Analogue$_{\mathrm{A}}$ is comparable with elements$_{\varepsilon 1-\varepsilon 4^*}$ of the Target-Subject$_{\mathrm{TS}}$.

(1.1′. The element$_{\varepsilon 1-\varepsilon 4}$ of the Analogue$_{\mathrm{A}}$ determines the Analogue$_{\mathrm{A}}$'s Assigned-Predicate$_{\mathrm{AP}^*}$.[20])

1.1.1a. The element$_{\varepsilon 1}$ of the Analogue$_{\mathrm{A}}$ corresponds one-to-one with element$_{\varepsilon 1}$ of the Target-Subject$_{\mathrm{TS}}$.

(1.1.1a′. The element$_{\varepsilon 1}$ of the Analogue$_{\mathrm{A}}$ determines the Analogue$_{\mathrm{A}}$'s Assigned-Predicate$_{\mathrm{AP}^*}$.)

1.1.1b. The element$_{\varepsilon 2}$ of the Analogue$_{\mathrm{A}}$ corresponds one-to-one with element$_{\varepsilon 2^*}$ of the Target-Subject$_{\mathrm{TS}}$.

(1.1.1b′. The element$_{\varepsilon 2}$ of the Analogue$_{\mathrm{A}}$ determines the Analogue$_{\mathrm{A}}$'s Assigned-Predicate$_{\mathrm{AP}^*}$.)

1.1.1c. The element$_{\varepsilon 3}$ of the Analogue$_{\mathrm{A}}$ corresponds one-to-one with element$_{\varepsilon 3^*}$ of the Target-Subject$_{\mathrm{TS}}$.

(1.1.1c′. The element$_{\varepsilon 3}$ of the Analogue$_{\mathrm{A}}$ determines the Analogue$_{\mathrm{A}}$'s Assigned-Predicate$_{\mathrm{AP}^*}$.)

1.1.1d. The element$_{\varepsilon 4}$ of the Analogue$_{\mathrm{A}}$ corresponds one-to-one with element$_{\varepsilon 4^*}$ of the Target-Subject$_{\mathrm{TS}}$.

(1.1.1d′. The element$_{\varepsilon 4}$ of the Analogue$_{\mathrm{A}}$ determines the Analogue$_{\mathrm{A}}$'s Assigned-Predicate$_{\mathrm{AP}^*}$.)

In this analysis, 1.1′ is "one large subordinative part" while the individual resemblances contribute independently to this part.

There are some features of this analysis that are worth pointing out. It is not the addition of any resemblance whatsoever but only those that determine the assigned predicate in the analogue that strengthen the argumentation. In other words, if element$_{\varepsilon 5}$ of the Analogue$_{\mathrm{A}}$ corresponds one-to-one with element$_{\varepsilon 5^*}$ of the Target-Subject$_{\mathrm{TS}}$, it makes no difference to the strength of the analogy. I wonder whether this is actually how we evaluate analogies and that the more resemblances there are the stronger the analogical inference is, but the way Juthe is using the vertical determining relation this does not seem to be possible. On the same lines, this analysis does not seem to take into account elements that may be negatively relevant to the vertical relation's holding in the

[20] This is one of those occasions where Juthe uses Assigned-Predicate$_{\mathrm{AP}^*}$ for the Analogue$_{\mathrm{A}}$ and the Target-Subject$_{\mathrm{TS}}$ alike, rather than Assigned-Predicate$_{\mathrm{AP}}$ for the Analogue$_{\mathrm{A}}$ as we might have expected. Juthe probably takes the predicate to be the same and so it makes no difference, but this inconsistency in notation is a source of potential confusion.

Target-Subject$_{TS}$. According to Juthe, all that matters is whether the elements$_{\varepsilon 1-\varepsilon 4}$ have elements corresponding to them one-to-one in the Target-Subject$_{TS}$, so for each pair of elements for which we can say that this is true, the stronger the analogy is, the more acceptable the standpoint is, and the more likely it is that the Assigned-Predicate$_{AP^*}$ belongs to the Target-Subject$_{TS}$. Another point here is that it does not distinguish between simply not knowing whether there is a correlate in the Target-Subject$_{TS}$ for some element and knowing that there is not a correlate in the Target-Subject$_{TS}$ for some element. If there are elements$_{\varepsilon 1^*-\varepsilon 3^*}$ but no element$_{\varepsilon 4^*}$ should we think that there is just a weaker argument for the standpoint, or should we conclude that there is no reason at all to accept the standpoint? After all, according to 1.1′ it is elements$_{\varepsilon 1-\varepsilon 4}$ *together* that determine the Assigned-Predicate$_{AP^*}$ in the Analogue$_{A}$, and there is no reason to suppose that the Assigned-Predicate$_{AP^*}$ would belong to the Analogue$_{A}$ in the absence of one of these elements. This seems consistent also with the kind of relations that Juthe has said the determining relation can be: supervenience, resultance, etc. However, in 1.1.1a′, 1.1.1b′, 1.1.1c′, and 1.1.1d′, he goes through each element separately and says that each of them determines the Assigned-Predicate$_{AP^*}$ of the Analogue$_{A}$. This does not seem consistent. However, if we do not think that the elements are sufficient on their own but contribute only by establishing one of the necessary conditions of the subordinative part 1.1′, then this part of the structure at least seems to be deductive. True, the elements are not logically sufficient for the Assigned-Predicate$_{AP^*}$ to belong to the Analogue$_{A}$, but they are logically sufficient for the determining relation to obtain in the Analogue$_{A}$, and this is all that the subordinative part claims.

I think that Juthe and I share an intuition that the analogy should become stronger when we add resemblances, but his account does not, I think, account for this as adequately as he thinks. Some surgery is needed. Probably, Juthe has misspoken and does not actually mean ‘determines’ in 1.1.1a′, 1.1.1b′, 1.1.1c′, and 1.1.1d′; in the example analysis he gives at [2015, pp. 433–434] he has in place of ‘determines’ phrases like “was relevant for” and “was not sufficient to avoid.” This probably rescues his account to a large extent, though I am still not sure that the relation between the subordinative part and the single arguments is not deductive, and it still does not strengthen the argument for any element had in common. For the sake of argument, I will allow that Juthe’s scheme could be appropriately modified in response to these criticisms.

Given this act of charity, I think that Juthe is right when he says [2015, p. 435] that "this speaks in favour of this account of analogical argumentation for, in general, you expect analogical argumentation to vary in strength." I agree that it is in the (modified) *sui generis* account's favor that it allows for this variation in strength. Although Juthe does not make this point here, I would also agree that it is in the deductivist account's disfavor that it does not allow for this variation in strength. However, a view that would allow resemblances to confirm the standpoint [such as given in Botting, 2012b] would also allow for this, even outside the limits of elements$_{\varepsilon 1-\varepsilon 4}$, and does not require taking any view on why the Assigned-Predicate$_{\mathrm{AP}^*}$ belongs in the Analogue$_{\mathrm{A}}$ and the Target-Subject$_{\mathrm{TS}}$. It would not, as we have seen, allow for strengthening of the argument by adding entire analogues; however, I propose that here it is the same as Juthe's account, which insists that the horizontal inference is always conclusive as such but we can make the argument stronger by making it compound. Unfortunately, Juthe does not say here whether this applies when the complexity of the argumentation is due to entire analogues being added, or whether there is a difference here between *a priori analogies* and other arguments by analogy. The *sui generis* account and the inductivist account are more or less on a par as far as this kind of variation in strength goes, and one is not favored over the other on this fact alone. So, Juthe does have a refutation of deductivism after all,[21] but not a refutation of inductivist reconstruction.

This is a bit quick: deductivism itself is not inconsistent with standpoints being acceptable to different degrees. The difficulty is how deductive arguments combine their strengths in a complex argumentation. Suppose that we have deductive arguments D_1 to D_4 in favour of some standpoint. To what degree is the standpoint acceptable? According to a standard view in deductive logic, it is the degree to which the premises are acceptable. But here we have four sets of premises, and therefore four strengths relative to those sets of premises. To simplify matters, assume that there are no logical dependencies between the different sets of premises. Assume next that it is the premises of D_1 that are deemed the

[21] Note that for some cases a deductivist reconstruction may be possible; Juthe has said that the structure is basically underdetermined, and this probably applies equally for whether it is a deductive argument. However, in taking an analogical argumentation to vary in strength should we add further analogues, we cannot take it also to be deductive. As long as there is some analogical argumentation like this, deductivism is false.

most acceptable. The degree to which the standpoint is acceptable seems to be the degree to which the premises of D_1 are acceptable, and we do not count the standpoint any more or less acceptable because of the presence of D_2, D_3, and D_4. What contribution do they make, then? They make the standpoint more difficult to rebut, because a rebutter would not only have to refute D_1 but all of D_1 to D_4. We may also correctly think, on the grounds of D_2, D_3, and D_4, that D_1 is a sound argument (or at least that it has a true conclusion), and consequently it will increase our confidence that the acceptability of the standpoint is what D_1 says that it should be. But to say that we are more confident that a standpoint is acceptable (has acceptability of a certain value) is not the same as saying that the standpoint is more acceptable. Deduction does not allow us to say this, but conditionalization does. D_1 to D_4 (or more precisely, their premises) are separate pieces of evidence for the standpoint.

Inductive evidence, too, can perform the same role that I am attributing to deductive arguments for the same standpoint, but at the same time it can contribute to the inferential strength itself. Suppose that I toss a coin 100 times and get 50 heads. I make the statement that the coin is fair. I toss it another 100 times and get another 50 heads. So the evidence has neither increased nor decreased the probability of the coin's landing heads, and if I were to infer that on the next toss the coin would land heads, the strength of that inference would be the same after 200 tosses as after 100 tosses; nonetheless, I feel more confident than before that this is a fair coin, and that my estimate of the probability of the coin landing heads as 0.5 is at least approximately accurate. I toss it another 100 times, and this time I get 80 heads. My confidence that this is a fair coin and that I had accurately estimated the probability of landing heads is shattered, *but not only this*—I am also able to make a new estimation of the probability from the frequency ratio, namely 180/300 or 0.6. A confirmation confirms or disconfirms a probability statement, but also tells you what new probability statement should replace it, because it is itself part of the frequency series. Both deductions and confirmations, when considered in complex argumentation, can change the confidence level without changing the inferential strength, but confirmations can change the inferential strength as well, whereas the only way a deduction can change the inferential strength is if it is the deductive argument with the most acceptable premises, for the inferential strength will always be the same as this and the standpoint will always be as acceptable as those premises.

Let us now go back to the case of adding more objects of comparison in an *a priori* analogy. I think that intuitions on this are unclear, but now I want to argue that there is a way in which having more analogies does make the analogical argument stronger, but only by effectively changing the analogy and what we are comparing, and it turns out to be the confirmation-theoretic approach that best accounts for this.

Suppose that we have two sources and one target. One source we might call the "paradigm case" and remember that this might not be a real case. Because the target is similar to the paradigm case, and these similar features dictate that the paradigm case should be classified a certain way, we conclude that the target should also be classified in that way. Adding the second source here seems to make no difference, especially since it is likely that we have only classified this second source in the way we have because it also is similar to the paradigm case; if we consider this as strengthening the original argument, this seems to amount to counting the paradigm case twice. There is also the fact that the cases are or could be invented, and analogical arguments should not become stronger just because the arguer has a good imagination.

However, I think it does make sense to argue that because an analogical inference was made between one source and target, or to put it more specifically in Juthe's terminology, because the determining relation was projected in one case of similarity, it should be projected also in similar cases of similarity. The analogical inference has moved to a meta-level where the lower-level inference is now effectively acting as the vertical relation and the relation projected. This is consistent with what Juthe says about the horizontal relation always being conclusive, and strength being due to the compoundness of argumentation.

Consider also a kind of case where the sources have the Assigned-Predicate$_{\mathrm{AP}}$ in virtue of different elements. A target that is similar to both will generally have more chance of having Assigned-Predicate$_{\mathrm{AP}^*}$. (This will not always be the case however, for the features it shares with one source may have a negative effect with respect to the other.)

These kinds of cases have not been explicitly considered by any of the accounts. The confirmation-theoretic account seems to deal with the problem most easily, for confirmation-theory can already handle higher-level inductions and both positive and negative confirmations. Juthe's account can probably also handle it after suitable adjustment. Even Waller's schema can probably handle it to a certain extent; if consistency requires the same classification in the case of one similarity, then

consistency with consistency (in other words, consistency becomes the plausible reason for agreeing about *a* in W2, where a is now the treating as the same of the *a* and *b* in the original argument) will require a similar similarity, say of the original *a* with something similar to but different from *b*, to be likewise treated the same. In all cases, we can apply the accounts recursively. The deductivist account, though, will not say that it is more likely that *b* has the same features as *a* in the original argument on the basis of the higher-level argument. It is not obvious that Juthe's account would either, though it is too early to say with any confidence that it would not. The confirmation-theoretic account deals with this comparatively easily, for the higher-level inductions will affect directly the projectibility of the predicate at the lower level and not only the degree of confidence we have with regard to the lower-level induction.

3. Conclusion

In this paper I have found the question of how well the various accounts reflect the intuitions we have about the strength of analogical arguments to be the crucial one. The obvious drawback of this approach is that intuitions are often unclear — I freely admit that my own intuition about strengthening *a priori analogies* by adding extra analogues has changed after reading Juthe's paper and is one that readers may not share. In putting forward the confirmation-theoretic approach as the best among those canvassed, I am motivating a methodological preference; it seems to reflect most naturally our intuitions about strength. In advancing the deductivist approach as the worst, I am saying that the MAXMIN rule — that says that the strength of the inference is that of the strongest argument (which seems the same as saying "the closest analogy") and is not affected by additional arguments or objects of comparison — seems inconsistent with how we actually evaluate the strength of analogical arguments. However, the deductivist may say that he is not committed to the MAXMIN rule, that the conclusion of his argument is not that a particular target has a particular feature anyway but only that consistency requires that two cases should be treated the same (whatever that may be), and that anyway the other views also do not consider additional analogues to strengthen the analogical argument. The problem with the deductivist approach would then be not so much that it is wrong but that it does not tell you what you actually wanted to know, which is whether

two cases that are similar in some ways are likely also to be similar in others. What we want is an account that allows direct consideration of the cumulative force of analogies. This requires detailed consideration of the kind of cumulative force that we can justifiably attribute to analogical arguments, and whether it is attributed only to complex argumentations, as Juthe seems to suggest, and as I am now inclined to agree. (The addition of more similarities is accounted for simply as more first-level confirmations, whereas additional analogues treat such confirmations as themselves the data, thus making the argumentation complex).

There is also one other thing that might lean one towards the confirmation-theoretic approach. If the confirmation-theoretical account is right we would expect a certain kind of interchangeability between explanation and argument. If the source confirms the target, then we would expect that the source would sometimes be used to explain the general term being attributed to the target, for although we would not necessarily have a specification of the universal claim that would explain (by subsuming) the term's belonging to the target, we could at least use the source as a paradigm case to describe the universal claim and refer to it, however indefinitely.

And in fact that is what we do see. We have seen this already where we treated redness's relation to experiences of red as a kind of explanation of what we mean by the theoretical term "response-dependent".[22] Even without any knowledge of the theoretical term, we can explain why from the Target-Subject$_{TS}$'s being similar to the Analogue$_{A}$ it follows that the Assigned-Predicate$_{AP^*}$ belongs to the Target-Subject$_{TS}$. As it stands this is an explanation rather than argument. But, explanations and arguments being somewhat similar in confirmation theory, we expect that if we wanted to we could use it as an argument; we can project from the Analogue$_{A}$ to the Target-Subject$_{TS}$ on the grounds that the more

[22] I think the same criticism applies to Juthe's analysis [2015, pp. 433–434] about whether Kerr-McGee were "strictly liable." It seems to me that the attorney claims that Kerr-McGee are "strictly liable" and then introduces the analogy of the lion-owner to illustrate what he means by this legal term. He does not ask the jury to infer that the determining relation holds in Kerr-McGee's case because it holds in the lion-owner case, and I doubt that any members of the jury would see these as analogous prior to being told what "strict liability" meant. In fact, the attorney says more or less explicitly that this is what he is doing when he begins by saying how the term originated.

similarities they have to each other, the more likely they are to have the similarities relevant to classifying them in the same way, that is to say, that the elements that lead to determining in the $\text{Analogue}_{\text{A}}$ that the $\text{Assigned-Predicate}_{\text{AP}}$ belongs to the $\text{Analogue}_{\text{A}}$ have correlates that lead to determining in the $\text{Target-Subject}_{\text{TS}}$ that the $\text{Assigned-Predicate}_{\text{AP}^*}$ belongs to the $\text{Target-Subject}_{\text{TS}}$.

Acknowledgment. The author would like to acknowledge the funding support of the Fundação para a Ciência e Tecnologia through grants (SFRH/BPD/77687/2011) and PTDC/FIL-FIL/110117/2009

References

Bermejo-Luque, L., 2014, "Deduction without dogmas: The case of moral analogical argumentation", *Informal Logic* 34, 3: 311–336. DOI: 10.22329/il.v34i3.4112

Botting, D., 2012a, "Deductivism without detachment", *Cogency* 4, 2: 9–24.

Botting, D., 2012b, "The paradox of analogy", *Informal Logic* 32, 1: 98–115. DOI: 10.22329/il.v32i1.3143

Chisholm, R., 1973, *The Problem of the Criterion*, Milwaukee: Marquette University Press.

Freeman, J., 2013, "Govier's distinguishing *a priori* from inductive arguments by analogy: Implications for a general theory of ground adequacy", *Informal Logic* 33, 2: 175–194. DOI: 10.22329/il.v33i2.3893

Govier, T., 1987, *Problems in Argument Analysis and Evaluation*, Dordrecht: Foris Publishing.

Govier, T., 1989, "Analogies and missing premises", *Informal Logic* 11, 3.

Govier, T., 2002, "Should *a priori analogies* be regarded as deductive arguments?", *Informal Logic* 22, 2: 155–157.

Guarini, M., 2004, "A defense of non-deductive reconstructions of analogical arguments", *Informal Logic* 24, 2: 153–168. DOI: 10.22329/il.v24i2.2141

Juthe, A., "Arguments by analogy", 2005, *Argumentation* 19, 1: 1–27. DOI: 10.1007/s10503-005-2314-9

Juthe, A., 2014, "A systematic review of classifications of argument by analogy", pages 109–127, Chapter 7, in H. Ribeiro (ed.), *Systematic approaches to argument by analogy*, Argumentation Library, Heidelberg, New York, Dordrecht, London: Springer. DOI: 10.1007/978-3-319-06334-8_7

Juthe, A., 2015, "Analogical argumentation schemes and complex argumentation", *Informal Logic* 35, 3: 378–445. DOI: 10.22329/il.v35i3.4211

Kraus, M., 2015, "Arguments by analogy (and what we can learn about them from Aristotle)", pages 171–182, Chapter 13, in van Eemeren, Garssen (eds.) *Reflections on Theoretical Issues in Argumentation Theory*, Argumentation Library, Heidelberg, New York, Dordrecht, London: Springer. DOI: 10.1007/978-3-319-21103-9_13

Shecaira, F. P., 2013, "Analogical inference in ethics and law: A defence of a deductivist analysis". *Informal Logic* 33, 3: 406–437. DOI: 10.22329/il.v33i3.3778

Tomić, T., 2013, "False dilemma: A systematic exposition", *Argumentation* 27, 4: 347–368. DOI: 10.1007/s10503-013-9292-0

Tropman, E., 2010, "Intuitionism and the secondary-quality analogy in ethics", *Journal of Value Inquiry* 44, 1: 31–45. DOI: 10.1007/s10790-009-9173-9

Waller, B., 2001, "Classifying and analyzing analogies", *Informal Logic* 21, 3: 199–218. DOI: 10.22329/il.v21i3.2246

Wreen, M., 2007, "A second form of argument from analogy", *Theoria* 73, 3: 221–239. DOI: 10.1111/j.1755-2567.2007.tb01201.x

David Botting
Instituto de Filosofia da Nova
Faculdade de Ciências Sociais e Humanas
Universidade Nova de Lisboa
26-C Av. de Berna
1069-061 Lisboa, Portugal
davidbotting33@aol.com