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Argument by Analogy

A. JUTHE

Department of Philsophy,
University of Uppsala
Nils Arpis Väg 4,
74732 Alunda,
Sweden
E-mail: juthe@privat.utfors.se

ABSTRACT: In this essay I characterize arguments by analogy, which have an important role both in philosophical and everyday reasoning. Arguments by analogy are different from ordinary inductive or deductive arguments and have their own distinct features. I try to characterize the structure and function of these arguments. It is further discussed that some arguments, which are not explicit arguments by analogy, nevertheless should be interpreted as such and not as inductive or deductive arguments. The result is that a presumed outcome of a philosophical dispute will have to be reconsidered.

KEY WORDS: analogue, analogy, argument by analogy, assigned-predicate, conclusive analogy, counterpart, different-domain-analogy, inconclusive analogy, one-to-one correspondence, same-domain-analogy, target-subject

1. INTRODUCTION

This article is the result of an attempt to give a general but comprehensive characterization of arguments by analogy. I explicate the notion of analogy and the structure of argument by analogy and contrast this with ordinary arguments. Many of the presentations about argument by analogy – even in standard textbooks on informal logic – are faulty. It is often claimed that they are never certain and are only inductive probable kind of arguments.[1] Sometimes it is claimed that arguments by analogy work only by pointing out similarities between objects. Contemporary philosophical argumentation has generally been characterized by the use of deductive arguments and the method of counterexamples. The use of deductive argument and the method of counterexample go hand in hand. It is therefore of no surprise that some philosophers assert that argument by analogy must be reformulated into deductive or inductive argument in order to be valid arguments. The most usual way to accomplish this is to provide a universal premise that makes the analogical relations redundant. All these ideas are faulty I will argue. Further, I try to show that when some "deductive" arguments are plausibly interpreted as argument by analogy the philosophical result will be very different.

Even though arguments by analogy are some of the most frequently used arguments in everyday discourse and regularly occur in philosophical reasoning as well, any deeper analysis is still missing. I hope that this article may contribute to counteract that lack.

2. ARGUMENT TYPES

2.1. *Four basic types of arguments*

In my theory of argumentation there are four basic types of argument of which argument by analogy is one. In order to clarify arguments by analogy a brief discussion of the other types of arguments is done in this section. In the next section argument by analogy is discussed at length and its special features are distinguished in contrast to the other types.

Argument means here an arranged set of statements or propositions (the premises) advanced by an agent in order to support the truth or acceptability of another statement or proposition (the conclusion). An argument is distinguished from other types of reasoning like explanations or reasoning for action.

The kind of argument in the philosophical tradition that have been given most attention is where the meaning of the statements of the arranged set precludes that the statement that which follows is false, if all the statements of the arranged set are true and syntactically well-formed. If an argument of this type is correct then the premises, if true, will guarantee the truth of the conclusion. The reasoning goes very often from the general to the particular or the meaning of the statements entails the conclusion. The conclusion follows necessarily from true premises due to their semantics or syntax. This kind of argument is here called a *deductive argument*. A classical example would be an argument of the form:

(1) If p then q
(2) p
$\therefore q$.

Another type of argument that has been much discussed in the philosophical tradition, especially associated with science, is the type here referred to as an *inductive argument*. The premises of an inductive argument are always justified *a posteriori* and a correct inductive argument only entails a conclusion which is probable.[2] The meaning of the statements makes it improbable in the absence of further information that the statement which follows is false while the statements from which it follows are all true. The reasoning flows from

the particular via particular to the general. An example is an argument of the form:

(1) $A_1 \cdots A_n$ are A:s
(2) $A_1 \cdots A_n$ have q
$\therefore$ All A:s have q

The third type of argument also has a non-deductive inference. As with inductive arguments the meaning of the statements that convey support makes it implausible that the supported statement is false, while the supporting statement is true, given that no further information suggests otherwise. A correct argument of this type is syntactically well-formed and the plausibility of the conclusion is directly proportional to the plausibility of its premises.[3] The premises do not convey truth-value to the conclusion but plausibility-value. The reasoning goes from a particular via the general to a particular. It is often used in order to explain or determine causal relations or about how to understand or think about facts or correlations. An example:

(1) The lawn is wet.
(2) If it had been raining, the lawn would be wet
(3) There is no one around that could have watered the whole lawn with a garden hose
$\therefore$ It has been raining

The argument or reasoning starts with a fact and concludes the best explanation for this fact. This argument is here called "reasoning to the best explanation" or *abductive arguments*.[4] The definitions of types of arguments presented here are not exhaustive, since any non-analogical argument whose conclusion does not follow in any of the three senses distinguished is neither deductive nor inductive nor abductive. The question whether there are plausible inferences which are not abductive is another interesting question which cannot be addressed here, due to limited space. The reader who wishes to pursue that subject further may consult the work of Douglas Walton.[5]

3. ARGUMENT BY ANALOGY

3.1. *Reasoning by analogy*

Argument by analogy is the fourth type of argument and it has certain features not shared with the other types of arguments discussed in the previous section. Reasoning by analogy is as reasoning in general not always in the form of an argument; mostly analogical reasoning is about solving problems, describing something, learning or explaining things by extending our thought from things we do understand to things we do not, at the time, comprehend. Here the discussion is

restricted to arguments by analogy even though a large part may be relevant for reasoning by analogy in general. An argument by analogy is an argument where the inference goes via an analogical relation, in contrast to an inductive or deductive relation. As with all the other types of arguments, there are good and bad arguments by analogy. Let me first explain what a good argument in general is. By a *good argument* I mean that the contents of the premises and the conclusion are adequately related, that the premises provide adequate evidence for the conclusion and that the premises are true, probably or otherwise reliable.[6]A good argument by analogy must fulfil the same criteria for a good argument in general. The only qualification is that the adequate evidence for the conclusion is in virtue of a *correct analogy* stated in one or more of the premises. The premise that states the analogy is then the crucial premise for argument by analogy. In order to clarify the basic argument structure of argument by analogy, the following notation will be used: The *Target-Subject* (TS) is the object of comparison to which the conclusion of the argument by analogy assigns a new predicate. The *Analogue* (A) is the object which is compared with the Target-Subject in order to make the analogical inference to a new predicate about the Target-Subject. The Analogue is the source of the new predicate which is assigned and concluded about the Target-Subject. The *Assigned-Predicate* (AP) is the predicate of the Analogue which is assigned to the Target-Subject in virtue of the analogical relation between them. The Target-Subject and the Analogue are analogous with respect to the Assigned-Predicate if and only if each of the elements of the Analogue (ε_1*...ε_n*) which determines the Assigned-Predicate corresponds one-to-one with a counterpart element in the Target-Subject ($\varepsilon_1 \ldots \varepsilon_n$). It is by virtue of this that the Assigned-Predicate can be assigned to the Target-Subject.[7] Since the Target- Subject has a counterpart of every element of the Analogue that determines the Assigned-Predicate, it means they are analogous and that the Target-Subject also has the Assigned-Predicate. Thus, the Assigned-Predicate can *mutatis mutandis* be concluded about the Target-Subject. A bad argument by analogy, then, is an argument which violates one of the conditions for a good argument by analogy; usually the projection of the Assigned-Predicate is based on an incorrect analogy. An incorrect analogy is an analogy where the elements that determine the Assigned-Predicate of the Analogue do not correspond one-to-one with a counterpart element in the Target-Subject. The concept of analogy will be more fully explicated in the next Section 3.2.

3.2. *A definition of analogy*

Before discussing argument by analogy in more detail, there will be an exposition of analogy in general. All arguments by analogy have at

least one premise which states an analogy between two or more objects. An etymological enquiry reveals that the term *analogy* is Greek and its original meaning refers to *proportion*, and a proportion is a relational structure between two things. My position is consistent with this original meaning. Two objects are analogous if and only if there is a one-to-one correspondence between the elements of the objects. This is what makes analogical inference go from particular to particular without going via any universal premise. My definition of analogy:[8]

> The Analogue is *analogous* with the Target-Subject with regard to the Assigned-Predicate if and only if there is a *one-to-one correspondence* between the elements of the Analogue which determine the Assigned-Predicate and the elements of the Target-Subject.
>
> The elements of the Analogue and the elements of the Target-Subject are in a *one-to-one correspondence* if, and only if, every element of the Analogue which determines the Assigned-Predicate has a *counterpart* element in the Target-Subject.
>
> An element ε_1* of the Analogue is a *counterpart* of an element ε_1 of the Target-Subject if and only if element ε_1* has *relation R* to another element ε_2* in the Analogue and element ε_1 has *relation R* to another element ε_2 in the Target-Subject.

In this way, analogy is reduced to a sameness of relation between the elements in the objects of comparison. The elements of two objects are in one-to-one correspondence if and only if the elements of each object share the same relation. This definition needs to be elaborated further because there is an important distinction between a *same-domain-analogy* and a *different-domain-analogy*. A same-domain-analogy is an analogy where not only the relations between the elements of the different objects are the same but also the elements are from the same domain. In a different-domain-analogy the analogy comes only in virtue of having the same relation between the elements of the different objects; the elements of the two objects belong to wholly different domains. The difference is crucial since it determines what predicate one can infer from the analogy. I think that the distinction between these kinds of analogy also explains what metaphors are. If a different-domain-analogy is between domains that are very distant, then the elements will be very different and the analogy tends to become a metaphor or parable. In a different-domain-analogy the Assigned-Predicate assigned from the Analogue to the Target-Subject is based on the counterpart element of a different domain. The Assigned-Predicate that is concluded about the Target-Subject cannot be assigned from the domain of the Analogue. The Assigned-Predicate will be the predicate that supervenes on the element which belongs to the domain of the Target-Subject. This will be clearer when looking at some examples later. With the distinction between same-domain-analogies and different-domain-analogies two different definitions of analogical relations emerge. Let us first explicate same-domain-analogy:

The Analogue is *same-domain-analogous* with the Target-Subject with respect to the Assigned-Predicate, if and only if, there is a *one-to-one correspondence* between the elements of the Analogue which determines the Assigned-Predicate and the elements of the Analogue are of the same domain as the elements of the Target-Subject.

A classical example of an argument by same-domain-analogy is Mill's argument for other minds:

> "I conclude that other human beings have feelings like me, because, first, they have bodies like me, which I know, in my own case, to be the antecedent condition of feelings; and because, secondly, they exhibit the acts, and other outward signs, which in my own case I know by experience to be caused by feelings. I am conscious in myself of a series of facts connected by a uniform sequence, of which the beginning is modifications of my body, the middle is feelings, the end is outward demeanour. In the case of other human beings I have the evidence of my senses for the first and last links of the series, but not for the intermediate link. I find, however, that the sequence between the first and last is as regular and constant in those other cases as it is in mine... I must either believe them to be alive, or to be automatons: and by believing them to be alive, that is, by supposing the link to be of the same nature as in the case of which I have experience, and which is in all other respects similar, I bring other human beings, as phenomena, under the same generalizations which I know by experience to be the true theory of my own existence."[9]

Elements mapping in one-to-one correspondence

Element ε of the other people (Target-Subject)	Counterpart element ε^* of Mill himself (Analogue)
ε_1Body exhibit acts	ε_1*Body exhibit acts
ε_2Body exhibit outward signs	ε_2*Body exhibit outward sign
$\varepsilon_3$modifications of body	ε_3*modifications of his body (caused by feelings)
ε_3 Feeling and other mental states causes ε_1–ε_2 and is caused by ε_3	ε_3* Feeling and other mental states causes ε_1–ε_2* and is caused by ε_3

Here both the relations and the elements are the same and this means that the Assigned-Predicate of the Analogue will be not *mutatis mutandis* but the same in both the Target-subject, and in the Analogue. The elements are from the same domain in the Target-Subject and in the Analogue; consequently the inferred predicate will be of the same type. Mill's inference is that other people also have mental states similar to his own.[10] Let us define different-domain-analogy:

The Analogue is *different-domain-analogous* with the Target-Subject with respect to the Assigned-Predicate, if and only if, there is a *one-to-one correspondence* between the elements of the Analogue which determine the Assigned-Predicate and the elements of the Target-Subject and the elements of the Analogue are of a different domain than the elements of the Target-Subject.

I think that a confusion of these types of analogical relations is what has deceived some philosophers to make a faulty distinction. On one side there is "proportional analogy" or "argument by analogy based

on analogous relations'' and what they on the other hand call ''predictive analogy'' or ''argument by analogy based on analogous properties''.[11] The distinction between these two allegedly different types of analogy is based on when *relations* are ''analogous'' and when *properties* are ''analogous''. William Brown asserts that the distinction between the analogies is in virtue of their two different goals. The predictive analogy (when properties are analogous) has prediction of a property as the goal, while the proportional analogy (when relations are analogous) has the calling of attention to an underlying principle of two different objects as its goal.[12] But this is confusing being *analogous* with being *similar*; only objects that contain elements with *relations* between them can be analogous precisely in virtue of displaying the same relation between their elements. Just having the same properties would make the object similar but not analogous. For instance, the argument:

> The Porsche and the Chevrolet are both in the $ 40,000 price range, and the Porsche is of excellent quality. Therefore, the Chevrolet is probably also of excellent quality

is surely based on a similarity; the two objects the Porsche and the Chevrolet share a property (costing about $40,000). This may justify the presumptive reasoning that the Chevrolet is probably of excellent quality, but it is not based on an *analogy* between cars, but a *similarity*. A similarity is not the same as an analogy.[13] Arguments by analogy do, of course, involve a similarity and may perhaps be seen as a species of a generic type of argument by similarity. Arguments that refer to property similarity, relational similarity (analogy) and structural similarity would then be different subtypes of the generic type: *argument by similarity*. But that is another discussion, which will not be undertaken here.[14] An example may further clarify the notion of different-domain-analogy. Thomas Hobbes in his classical work *Leviathan*, thinks of the state as an artificial human organism:

> ''Art goes yet further, imitating that rational and most excellent work of nature, man. For by art is created that greate LEVIATHAN called a COMMONWEALTH, or STATE, in Latin CIVITAS, which is but an artificial man... and in which the *sovereignty* is an artificial soul, as giving life and motion to the whole body; the *magistrates*, and other *officers* of judicature and execution, artificial *joints*; *reward* and *punishment*, by which fastened to the seat of the sovereignty every joint and member is moved to perform his duty, are the *nerves*, that do the same in the body natural; the *wealth* and *riches* of all the particular members, are the *strength*; *salus* populi, the *people's safety*, its *business*; *counsellors*, by whom all things needful for it to know are suggested unto it, are the *memory*; *equity*, and *laws*, an artificial reason and *will*; *concord*, *health*; *sedition*, *sickness*; and *civil war*, *death*.''[15]

The following table displays Hobbes' analogy between the human organism and the state:[16]

Elements mapping in one-to-one correspondence

Element ε of the state (Target-Subject)	Counterpart element ε^* of the human organism (Analogue)
State	Man
Sovereignty	Soul
Magistrates, officers	Joints
Reward, punishment	Nerves
Wealth, riches	Strength
Counsellors	Memory
Equity, Laws	Reason, Will
Concord	Health
Sedition	Sickness
Civil war	Death
People's safety	Business (i.e. function or purpose)

Hobbes' analogy between the state and the human organism is correct if it is true that a state consists of the elements above, and if every relation between the elements has a counterpart element in the *same relation*, in this case, the elements play the same functional role.[17] For example, the functional role of sovereignty in a commonwealth is the same as the functional role of the soul in an organism. If there was a counterpart element in the human organism for every element sufficient for a state, then there would be an analogical relationship between them, and any conclusion about one of them could be concluded *mutatis mutandis* about the other. Hobbes' analogy between the state and the human organism is an example of the analogical relation between two very distant domains. The Assigned-Predicate will thus supervene on a counterpart element that belongs to the domain of the state and not to the domain of the human organism. Let us assume for the sake of the argument that we knew that disease would diminish memory, which in turn would weaken the will, and in consequence decrease the strength of the human organism. Then we could, via analogical inference, conclude that sedition would diminish the counselors, which in turn would weaken the laws, and in consequence decrease the wealth of the state. In short, we could analogically infer that sedition will decrease the wealth of a state. Certainly no one can say that this is not a conclusion filled with significant and non-trivial information, but it is not the assignment of the *same* type of predicate to the Target-Subject as in the Analogue. The Assigned-Predicate assigned to the state (the Target-Subject) will be the counterpart element of the human organism which is a very different element since they belong to different domains. Since the strength of the human organism is the counterpart of the wealth of the state, it means that if disease will decrease strength in the human organism, then the counterpart element

of disease in the other domain (the state) – sedition – will decrease the counterpart of the strength of the human organism – the wealth.

3.3. *The implications of this view of analogy*

The first important implication of the view of analogy presented here, which consists of a sameness of relation between elements, is that one cannot lay any domain constraints on analogy or arguments by analogy.[18] Two things seemingly very dissimilar with few properties in common can still be analogous in important respects while two other objects with many properties in common are not analogous in the way one superficially may think.

The second important implication of the view of analogy presented here is that this account of analogy does not entail that two analogous objects have some shared unique structure or that the structure of each is identical. For example, if two arguments are analogous it does not mean that each of them has a unique logical form or that the logical form of each argument is the same. This is discussed more extensively in a forthcoming sequel article *Refutation by Parallel arguments*.

The third implication is that the definition of analogous relationship is formulated in a way that allows two objects to be analogous in different *ways* depending on in which *respect they are compared*. That is why the definition states: The Analogue is analogous with the Target-Subject with *regard* to the Assigned-Predicate. Thus, two objects can be analogous in one regard and disanalogous in another regard. It depends on the perspective from which, or the level of abstraction at which the objects are compared. It is clear that two objects may be analogous in one respect and clearly disanalogous in another respect. For example, the series 2–4–6 and the series 3–5–7 are analogous in that each later member is greater by 2 than its immediate predecessor in the series. But they are disanalogous in that the difference between successive members is in the first case equal to the first member of the series but in the second case not; a series that would be analogous in this respect to 2–4–6 would be 3–6–9. An analogy can be more or less wide-ranging without being a faulty analogy. In the example of Hobbes' analogy above it could be that only some of the elements mentioned in the analogy were sufficient for a state. It could be that only some of the elements had a counterpart in the object of comparison. A state can be analogous to the human organism in certain respects although disanalogous in others. However, *the scope* of the conclusion inferred from an incomplete analogy must correspond to the mapping scope of the elements of the analogical object. The rule is that the extent of counterpart elements in common to the compared objects, will determine the range of the conclusion with the same proportion. This should not be confused

with any thinking that analogy comes in degrees. If someone claims that a Target-Subject and an Analogue are analogous with regard to an Assigned-Predicate, then the Target-Subject and the Analogue either are analogous or not with regard to the Assigned-Predicate; they cannot be analogous in degree with regard to the Assigned-Predicate. Either the Analogue is a correct analogy of Target-Subject with regard to the Assigned-Predicate or not. Thus, if an inference from an analogy is probably true, then the analogy is probably correct, not *partially* correct. The critical issue with argument 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 (see Section 3.4). 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 (*mutatis mutandis* or not) justified about the Target-Subject as well.

The fourth implication from the view of analogy presented here is that the definition of analogy does not need to deal with any complicated analysis of the concept of relevance. Element ε is relevant for the predication of the Assigned-Predicate of the compared object if and only if element ε is a counterpart of element ε^* and ε is part of the determination of the element denoted by the Assigned-Predicate. The determining relation between $\varepsilon_1 \ldots \varepsilon_n$ and the Assigned-Predicate can be every type of relation (including probable, causal, epistemic, normative, evaluative, resultant or supervenient). In literature about arguments by analogy and analogical reasoning it is sometimes stressed that the similarity that generates an analogical relation must not only be similarity but *relevant similarity*.[19] In my terminology, analogy implies relevant similarity. To say that the Target-Subject and the Analogue are disanalogous with respect to the Assigned-Predicate is to say that there is a relevant difference between them. Target-Subject and the Analogue are relevantly dissimilar (disanalogous) with respect to the Assigned-Predicate if and only if one or more of the elements of the Analogue which determine the Assigned-Predicate do not have a counterpart element in the Target-Subject.

3.4. *Different types of argument by analogy*

3.4.1 *Argument by conclusive analogy*

I will here discuss the two basic types of argument by analogy and their argument structure.

The basic formal argument structure for argument by *conclusive analogy* is as follows:

(1) Target-Subject$_{(TS)}$ has element$_{(\varepsilon_1 \ldots \varepsilon_n)}$
(2) The Analogue$_{(A)}$ has the Assigned-Predicate$_{(AP)}$ in virtue of the elements$_{(\varepsilon_{1^*} \ldots \varepsilon_{n^*})}$
(3) The elements$_{(\varepsilon_{1^*} \ldots \varepsilon_{n^*})}$ of the Analogue are counterparts of elements$_{(\varepsilon_1 \ldots \varepsilon_n)}$ of the Target-Subject$_{(TS)}$
$\therefore$ The Target-Subject$_{(TS)}$ has the Assigned-Predicate$_{(AP)}$

Two conditions must be fulfilled if an argument by conclusive analogy is going to be valid. First the elements ($\varepsilon_{1^*} \ldots \varepsilon_{n^*}$) of the Analogue must determine the Assigned-Predicate. In arguments by conclusive analogy the relation of determination is strong; the relation of determination of Assigned-Predicate is strictly determined (causally, epistemicaly, normatively, evaluatively, resultantly or superveniently) by the ($\varepsilon_{1^*} \ldots \varepsilon_{n^*}$) of the Analogue. That is, the Assigned-Predicate that is projected from the Analogue to the Target-Subject is determined definitely in virtue of the elements ($\varepsilon_{1^*} \ldots \varepsilon_{n^*}$). This is why the conclusion can be said to follow conclusively from the analogy even if it is not in virtue of logical necessity (see Section 3.5 for more about this). Secondly each of ($\varepsilon_{1^*} \ldots \varepsilon_{n^*}$) must counterpart each element ($\varepsilon_1 \ldots \varepsilon_n$) of the Target-Subject, otherwise the Assigned-Predicate cannot be justifiably concluded about the Target-Subject. An example of an argument by conclusive analogy (and a different domain analogy) can be seen in Michael Smiths book *The Moral Problem*. The theory of ethical internalism states that if an agent makes a moral judgment then that, in itself, implies a motivation to act in accordance with the moral judgement, *ceteris paribus*. But how can this make sense of the amoralist, the individual who reliably seem to make moral judgments but at the same time seems to have no inclination to follow his own judgements? Michal Smith uses an argument by conclusive analogy to show that the amoralists fail to give any real moral judgments:

> "[reflect] on the case of someone, blind from birth, who has a reliable method of using colour terms. We might imagine that she has been hooked up to a machine from birth that allows her to feel, through her skin, when an object has the appropriate surface reflectance properties. Now such a person certainly has a facility with colour terms, a facility that allows her to engage in many aspects of the ordinary practice of colour ascription. For she uses terms with the same extension as our colour terms, and the properties of objects that explain her uses of those terms are the very same properties as those that explain our uses of colour terms... When she makes colour judgements, she is therefore not appropriately thought of as making judgements about what other people judge to be red, green and the like . . One side [internalism] says that a subject has mastery of colour terms (moral terms), and thus really makes colour judgements (moral judgements), only if, under certain conditions, being in the psychological state that we express when we make colour judgements (moral judgements) entails having an appropriate visual experience (motivation). The other side [externalism] denies this holding instead that ability to use a term whose use is reliably explained by the relevant properties of objects is enough to credit her with master colour terms (moral terms) and the ability really to make colour judgements (moral judgements). Having the appropriate visual experience (motivation) under appropriate conditions is an entirely contingent, and optional, extra."[20]

Elements in one-to-one correspondence	
Element (ε) of Target-Subject	Counterpart element (ε*) of Analogue
ε_1 Reliable use of moral terms	ε_1* Reliable use of colour terms
ε_2 No appropriate motivation	ε_2* No visual experience
ε_3No real moral judgement	ε_3* No real colour judgement

According to Smith's analogy real judgments of colour are to visual experience as real moral judgements are to a proper motivation. The Target-Subject is moral judgments by an amoralist and the Analogue is colour judgments by a blind person with a machine that gives mastery in use of colour terms. This is also a good example of different-domain-analogy; the domain of morality and that of colours are quite different. Therefore, the Assigned-Predicate will not supervene on an element within the same domain as the Analogue (which happens when the Target-Subject and the Analogue share the same domain). The elements ε_1* and ε_2* of the Analogue determines element ε_3* and elements ε_1* and ε_2* correspond one-to-one with elements ε_1 and ε_2 of the Target-Subject. The counterpart element in the domain of the Target-Subject is element ε_3. Thus, the Assigned-Predicate will be ''No real moral judgement''. Formalized according to my suggested structure for argument by conclusive analogy, Smith's argument can be outlined:

(1) The amoralists$_{(TS)}$ make reliable use of moral terms$_{(\varepsilon_1)}$ without appropriate motivation$_{(\varepsilon_2)}$
(2) The blind girl with the helping machine$_{(A)}$ has a reliable use of colour terms$_{(\varepsilon_{1^*})}$ without making real colour judgment$_{(AP)}$ since she has no real visual experience$_{(\varepsilon_{2^*})}$
(3) The reliable use of colour terms$_{(\varepsilon_{1^*})}$without real visual experience$_{(\varepsilon_{2^*})}$ is a counterpart to reliable use of moral terms$_{(\varepsilon_1)}$ without appropriate motivation$_{(\varepsilon_2)}$
$\therefore$ The amoralists$_{(TS)}$ *mutatis mutandis*, make no real moral judgment$_{(AP)}$

One may object that there is one element in the example with the blind girl which does not have a counterpart in the case of the amoralist; namely, that there is no machine that gives the amoralist a mastery of his use of moral terms. How can it be explained that the amoralist has such a reliable use of moral terms? But this element can easily be given a counterpart element with some refinements. We know that one can learn how terms are used by socialization; the uses of terms are learned and one thereby knows in which context one should apply a certain term. The amoralist's social learning of this is the counterpart element which corresponds to the machine which helps the blind girl. I consider this a valid argument by analogy (since I consider the analogy it is based on as correct). I will now give an example of an, in my opinion, incorrect argument by analogy. *Townshall* columnist Dennis Prager defends capital punishment with the help of an analogy with the greater good of higher speed limits:

> "George Will has come out against executing murderers...He offers two arguments the possibility of the state killing an innocent person and capital punishment's lack of deterrence value. But these reasons are so easily refuted...An innocent may be killed? Many moral social policies have the possibility and even the inevitability of the death of innocents... even if raising speed limits means an inevitable increase in innocents' deaths, the greater good of higher speed limits will still prevail. In fact, if preventing the killing of innocents is what should determine capital punishment policy, one should support capital punishment. It is the absence of the death penalty that leads to more innocent people being killed. When there is no death penalty, convicted murderers kill other prisoners and guards; and, when these murderers escape, they kill innocent civilians...in any event, the primary purpose of capital punishment is not deterrence. It is to prevent the greatest conceivable injustice allowing a person who deliberately takes an innocent person's life to keep his own"[21]

Prager's argument can be summarized as follows:

(1) Capital punishment$_{(TS)}$ has the possibility$_{(\varepsilon_1)}$ or even the inevitability$_{(\varepsilon_2)}$ of the death of innocents$_{(\varepsilon_3)}$, but also the greater good (of justly punishing those guilty of murder) $_{(\varepsilon_4)}$.
(2) The greater good$_{(\varepsilon_{4^*})}$ of higher speed limits$_{(A)}$ (of the extra utility such speed gives)$_{(\varepsilon_{4^*})}$ still prevails$_{(AP)}$, despite the possibility$_{(\varepsilon_{1^*})}$, or even the inevitability$_{(\varepsilon_{2^*})}$ of the death of innocents$_{(\varepsilon_{3^*})}$.
(3) The greater good$_{(\varepsilon_{4^*})}$ of higher speed limits$_{(A)}$ and the possibility$_{(\varepsilon_{1^*})}$ or even inevitability$_{(\varepsilon_{2^*})}$of the death of innocents$_{(\varepsilon_{3^*})}$ it causes are the counterparts of the greater good$_{(\varepsilon_4)}$ of capital punishment$_{(TS)}$ and of the possibility$_{(\varepsilon_1)}$ or even inevitability$_{(\varepsilon_2)}$ of the death of innocents$_{(\varepsilon_3)}$ it causes.

The greater good$_{(\varepsilon_4)}$ *mutatis mutandis* of capital punishment$_{(TS)}$ still prevails$_{(AP)}$.

Prager's argument is an argument by conclusive different-domain analogy. The Target-Subject is capital punishment, the Analogue is higher speed limits and the Assigned-Predicate is that the higher good still prevails (over the death of some innocent people). If we for the sake of simplicity assume that Prager's argument satisfies the criteria for a good argument in general, the question is whether the analogy between the greater good of higher speed limits and the greater good of capital punishment is correct. Are they relevantly similar? According to the fourth implication of my view of analogy (see Section 3.3) we have the advantage of avoiding any complicated analysis of the concept of relevance. Element ε is relevant for the predication of the Assigned-Predicate of the compared object if and only if element ε is a counterpart of element ε^* and ε is part of the determination of the element denoted by the Assigned-Predicate. Target-Subject and the Analogue are relevantly dissimilar (disanalogous) with respect to the Assigned-Predicate if and only if one or more of the elements of Analogue which determine the Assigned-Predicate do not have a counterpart element in the Target-Subject. The question, then, is whether there any elements that determine the greater good of higher speed limits that do not have a counterpart in the greater good of capital punishment, which is not mentioned in premise (2). The answer clearly seems to be yes.[22] First, there is no direct causal link between higher speed limits and the death

of innocents. There is a moral difference between *permitting* voluntary risks (such as driving faster), which increase the *probability* of the death of innocents and *directly causing* their deaths. Secondly, the death of innocents due to higher speed limits does not entail the *injustice* of a false judgement of guilt; the dead are not victims of injustice. When innocents on the other hand are put to death by capital punishment, then the dead are victims of an awful injustice.[23] When we summarize the elements of Prager's argument in a table it becomes clear that there are some elements that lack a counterpart.

This means that there is no one-to-one correspondence between the elements of the Analogue (ε_1; ε_2; ε_4 & ε_5) that determine the Assigned-Predicate (ε_3) and the elements of the Target-Subject (ε_1; ε_2; ε_4 & ε_5). Consequently, there is no reason (based on analogical inference) to believe that the element in the Analogue on which the Assigned-Predicate supervenes (ε_3) has any counterpart (ε_3*) in the Target-Subject. Thus, the Assigned-Predicate cannot be assigned and projected to the Target-Subject. It seems also plausible that it really is elements (ε_1; ε_2; ε_4 & ε_5) that determine element (ε_3). If the death of the innocent in car accidents was not due to permitted voluntary risk, but directly caused, and also an awful injustice, then it is highly doubtful that we would think that the greater good of higher speed limits prevails. Thus, this argument by conclusive different-domain analogy fails since the analogy is incorrect.

Elements in one-to-one correspondence

Element (ε) of Analogue The legislation of higher speed limits	Counterpart element (ε*) of Target-Subject The legislation of capital punishment
ε_1 The possibility of the death of innocents	ε_1* The possibility of the death of innocents
ε_2 The inevitability of the death of innocents	ε_2* The inevitability of the death of innocents
ε_3 The greater good of higher speed prevails	ε_3* The greater good of executing guilty murderers prevails
ε_4 Death of innocents is only statistically connected	No counterpart (Death of innocents is directly caused)
ε_5 The innocent dead are not victims of awful injustice	No counterpart (The innocent dead are victims of awful injustice)
ε_6 Death of innocents is due to permitted voluntary risk	No counterpart (Death of innocents is due to a false judgement of guilt)

3.4.2 *Argument by inconclusive analogy*

Arguments by *inconclusive analogy* share the same two conditions for valid inference as arguments by conclusive analogy have. The elements of the Analogue must determine the subvening elements of the Assigned-Predicate and these elements must each have a counterpart in

the Target-Subject. The only difference between argument by conclusive and argument by inconclusive analogy is that the elements of the inconclusive type determine the Assigned-Predicate only probably and not definitely. There is no strict determination between the elements of the Analogue and the Assigned-Predicate, but only a correlation or an intuitive connection based on our experience and background knowledge. When there is some background inductive information that some elements (of the Target-Subject) often go together with some other elements (of the Analogue), then this correlation justifies a probabilistic projection of the Assigned-Predicate to the Target-Subject. It is this correlation between the determining elements of Analogue and the Assigned-Predicate that makes it *probable* that the Target-Subject also has the Assigned-Predicate. The structure is as follows:

(1) Target-Subject$_{(TS)}$ has element$_{(\varepsilon_1 \ldots \varepsilon_n)}$
(2) The Assigned-Predicate$_{(AP)}$ *correlates* with the Analogue's element$_{(\varepsilon_{1^*} \ldots \varepsilon_n)}$
(3) The elements$_{(\varepsilon_{1^*} \ldots \varepsilon_n)}$ of the Analogue$_{(A)}$ are a counterparts of elements$_{(\varepsilon_1 \ldots \varepsilon_n)}$ of the Target-Subject$_{(TS)}$
$\therefore$ The Target-Subject$_{(TS)}$ *probably* has the Assigned-Predicate$_{(AP)}$

An example could be:[24]

(1) Patient $A_{(TS)}$ has symptoms $x_{(\varepsilon_1)}$, $y_{(\varepsilon_2)}$ and $z_{(\varepsilon_3)}$.
(2) Patient $B_{(A)}$ has symptoms $x_{(\varepsilon_{1^*})}$, $y_{(\varepsilon_{2^*})}$ and $z_{(\varepsilon_{3^*})}$.
(3) Symptoms $x_{(\varepsilon_{1^*})}$ $y_{(\varepsilon_{2^*})}$ and $z_{(\varepsilon_{3^*})}$ correlate with the $HIV_{(AP)}$disease.
(4) The symptoms $x_{(\varepsilon_{1^*})}$, $y_{(\varepsilon_{2^*})}$ and $z_{(\varepsilon_{3^*})}$ are counterparts of $x_{(\varepsilon_1)}$, $y_{(\varepsilon_2)}$ and $z_{(\varepsilon_3)}$.
$\therefore$ Patient $A_{(TS)}$ probably has the $HIV_{(AP)}$ disease.

The argument assumes that one has independent reasons for the correlation. However, even without the background knowledge of a correlation or any statistical grounds, one can use arguments by inconclusive analogy. There need not be a connection of correlation between the elements that justify the assignment of the Assigned-Predicate; it can also be a general *intuitive connection* or association between elements based on an *a priori* or *a posteriori* warrant. This warrant could be some tacit background knowledge, which is not explicitly statistical in nature, which gives an intuitive association between the elements and the Assigned-Predicate. This association between the elements would justify that the Assigned-Predicate with plausibility can be assigned to the Target-Subject. It is in virtue of this that arguments by inconclusive analogy can be used even though the analogue is only a single case. The formal structure can be outlined:

(1) Target-Subject$_{(TS)}$ has element$_{(\varepsilon_1 \ldots \varepsilon_n)}$
(2) The elements$_{(\varepsilon_{1^*} \ldots \varepsilon_{n^*})}$ of the Analogue$_{(A)}$ are a counterparts of elements$_{(\varepsilon_1 \ldots \varepsilon_n)}$ of the Target-Subject$_{(TS)}$

(3) The Assigned-Predicate$_{(AP)}$ is *intuitively associated* with the Analogue's element$_{(\varepsilon_{1^*}\ldots\varepsilon_{n^*})}$
∴ The Target-Subject$_{(TS)}$ *plausibly* has the Assigned-Predicate$_{(AP)}$

An example could be:

(1) The cats$_{(TS)}$ I have seen have basic physical features$_{(\varepsilon_1\ldots\varepsilon_n)}$.
(2) The basic physical features$_{(\varepsilon_{1^*}\ldots\varepsilon_{n^*})}$ of dogs$_{(A)}$are counterparts of the physical features$_{(\varepsilon_1\ldots\varepsilon_n)}$ of cats$_{(TS)}$.
(3) The breastfeeding of dogs' offspring$_{(AP)}$is intuitively associated with the basic physical features$_{(\varepsilon_1\ldots\varepsilon_n)}$.
∴ Plausibly, cats$_{(TS)}$ breastfeed their offspring$_{(AP)}$ as well.

3.5. *Argument by analogy is irreducible*

I have hitherto discussed the structure and subtypes of argument by analogy. In this section it will be argued that argument by analogy is a type of argument in its own right and not reducible to any other type of argument discussed in Section 2. Some philosophers have claimed that arguments by analogy are not a genuine class of arguments on their own.[25] While I think that this is wrong, I also believe that *any* argument of any type can be restated in a deductive mode. For example the inductive argument:

(1) $A_1 \ldots A_n$ are A:s
(2) $A_1 \ldots A_n$ have q
∴ Thus, All A:s have q

Could be restated in deductive mode:

(1) $A_1 \ldots A_n$ are A:s
(2) If$A_1 \ldots A_n$ (all observed A) has q then *probably* all A has q
(3) $A_1 \ldots A_n$ are A:s (all observed A:s has q)
∴ Thus, probably all A:s have q

But this means that this deductive argument also could have been restated as an inductive argument. However, the point is that any argument could be restated as a deductive argument while the reverse does not hold. The deductive argument:

(1) A ∨ B
(2) ~A
∴ B

could not be restated as an inductive argument. However there is a crucial difference between claiming that an argument *can* be restated in another mode, and claiming that one *must* interpret them in the other mode in order for them to be valid arguments at all. With *valid*, I mean that the content of the premises is related to the conclusion in

such a way that they make the conclusion true or more probable to the same extent the premises are true or probable. What happened in this deductive reformulation is that the inductive claim is incorporated in the universal premise "If all observed *A* have *q* then *probably* all *A* have *q*" in order to make it a valid *modus ponens*. Thus, to be a valid deductive argument the inductive claim is incorporated (by the term *probably*) in the deductive form. The inductive claim is not made redundant; it is only included in a universal premise which makes the argument have a deductive form instead of an inductive. But even if deductive restatements without including inductive claims could be done for all inductive arguments, it is still not enough to destroy inductive arguments as a category of arguments. Even if inductive arguments can be restated in a deductive mode we would not assert that they cannot be valid or good arguments in their inductive formulation. The only way to argue that inductive arguments *de facto* are concealed deductive arguments would be to argue that: (1) one *must* do this deductive reformulation to have *valid arguments* at all and (2) the deductive mode would make any reference to induction unnecessary. Applying this to argument by analogy a distinction should be made between four claims with increasing antagonism against argument by analogy:

(A) That arguments by analogy are valid by themselves and cannot be restated in any other form of argument without changing them essentially from the original "unanalysed" formulation of the argument. Further, any "restatement" of an argument by analogy into a deductive form of argument would be a wholly new argument without any connection with the original analogical argument. (B) That arguments by analogy are valid in their own form but that they can be restated in a deductive form if the deductive argument includes a reference to the analogical relation as with the example of the inductive argument above. No deductive restatement can make the analogical relation redundant. (C) That arguments by analogy can be restated in a deductive form without any reference to analogy at all but that they are also valid (in the sense given above) in their analogical form. (D) That argument by analogy must be restated in deductive (or inductive) form to be valid or real arguments at all. This position also means that no reference to analogy is necessary.

No philosopher known to the present writer has been attentive to these distinctions. The result is that the wrong conclusions about reducibility of argument by analogy have been drawn. One must be clear about what one means when one claims that argument by analogy is reducible to another type.

My position is that (B) is true. It is always possible to reformulate an argument by analogy (both conclusive analogies and inconclusive analogies) into a deductive argument, if reference to an analogical

relation is included in the new deductive argument structure. The original argument by analogy was, however, valid in its own argument structure. Smith's argument by conclusive analogy could be restated in the deductive form:

(1) If the cases with how a blind girl and the amoralists have a reliable use of colour and moral terms respectively are analogous, then the amoralists make no real moral judgments
(2) The cases are analogous
∴ The amoralists make no real moral judgment

However, the argument still needs the reference to analogy included to be a sound argument, and is valid in its analogical formulation. The deductive formulation does not make the argument better or closer to any original unanalysed primitive form of argument than the analogical formulation. When we see this we understand that the only way to argue that (B) is false is to argue that arguments by analogy always have at least one implicit universal premise which, when made explicit, would make the analogical relation redundant. The conclusion would in that case follow deductively only in virtue of semantical or syntactical structure. The point is not whether the conclusion of an argument by analogy follows with apodictic certainty but in *virtue of what it has that apodictic certainty*. If the conclusion of an argument by analogy follows apodictically, it never does so *only* in virtue of the syntactical or semantical structure in contrast to deductive arguments (see Section 3.4.1). The apodictic certainty of arguments by conclusive analogy comes in virtue of the definite determination between the elements of the Analogue and the elements of the Assigned-Predicate. There is always a difference in the *kind* of certainty that argument by conclusive analogy and deductive argument exhibit. Consider an analogy to contradictions and self-referential incoherence. The self-referential inconsistent statement "I do not exist" is just as false with undeniable certainty as the contradictory statement "my pen is on the desk and not on the desk at t_1" is false with certainty; there is however, an important difference. It *could* have been the fact that I did not exist even though we no know with undeniable certainty that I do exist. The same could not be said with the example of the pen on the desk. It could never be the case that my pen lies on the desk at t_1 and does not lie on the desk at t_1. The source of certainty with self-referential inconsistent statements is that the statements themselves provide the information that they are false. In short, self-referential inconsistent statements are undeniably false but not logically false. The source of logically false statements like contradictions is that they describe a logically impossible state of affairs that *cannot* be true. Analogously, the certainty of arguments by conclusive analogy has not the same *source*

of certainty as deductive arguments, even though they display the same certainty for their conclusions. The conclusion follows conclusively but not deductively. It would not be a *logical* incoherence to deny the conclusion at the same time as one affirms the premises of an argument by conclusive analogy. Secondly, an argument by analogy *always* involves a comparison of two or more objects; this is not true of other arguments. Their inferences are always from particular to particular, never from general to particular or from particular to general. This is reason to believe in genuine arguments by analogy.

A not uncommon suggestion has been that arguments by analogy are not real arguments but *de facto* are implicit deductive arguments with a concealed unstated universal premise. Consider the following:

(1) α has x, y, z.
(2) β has x, y, z.
(3) α is P.
(4) It is in virtue of x, y, z that α is P.
$\therefore$ Therefore, β is P.

One could easily think that premise (4) presupposes a *universal* statement 4*: *All* things which have x, y, z are P. We then have a deductive argument where premise (1) and (3) are redundant, and no analogical relationship is necessary in order to make a valid inference. The same could be done with regard to induction regarding *a posteriori* analogies; the inference could be seen to rely on a tacitly assumed inductive generalization. This would make the analogical relation between α and β unnecessary. If this could be done with all arguments by analogy then the positions of (A) and (B) above would be refuted. The truth of (D) however would not be vindicated, since (C) could still be true, and the truth of (D) seems to be required in order to refute that argument by analogy is a genuine type of argument. Unless it can be shown that arguments by analogy cannot be valid in their own argument structure then one cannot claim that there are no real arguments by analogy. Moreover, there are strong reasons to believe that one cannot find concealed unstated premises that would turn seeming arguments by analogy into deductive or inductive arguments. Since other thinkers already have convincingly shown that there are several strong reasons to doubt this, I will only discuss one argument here.[26] If (D) is true then it must be that for every argument by analogy one could always find the correct universal specification which makes the analogical relation redundant. That there is a true universal generalization of all relevant features is one thing, the claim that one must *know* it and have it explicit so the argument reduces to a deductive or inductive argument is another claim. It is the truth of the latter claim that is necessary in order to make the reference to analogy redundant. I think

that it is more plausible that we often do not know what the completely specified generalization of all relations between particular cases is. But that does not prevent us from perceiving analogical relations between particular cases. We can grant that we sometimes know the universal generalization better than the particular, but in many cases, all the relevant features of the subject matter are not and cannot be spelled out. Trudy Govier defends this thesis by giving several examples of arguments by analogy with a supplementary deductive interpretation and then asks whether the deductive interpretation is the most plausible one. Let us look at such an example by Govier:[27]

> "In seeking protection from Eastern's creditors in bankruptcy court, Lorenzo (Chairman of financially troubled Eastern Airlines) is like the young man who killed his parents and then begged the judge for mercy because he was an orphan. During the last three years, Lorenzo has stripped Eastern of its most valuable assets and then pleaded poverty because the shrunken structure was losing money"

Govier outlines this as:

(1) A young man might kill his parents and then beg the court for mercy because he was an orphan.
(2) The head of Eastern Airlines (Lorenzo) stripped Eastern of its most valuable assets and then pleaded poverty in bankruptcy court because the shrunken structure was losing money.
(3) The young man would not deserve mercy.
(4*) No one who creates his own bad situation deserves mercy or protection in that situation.
∴ Lorenzo does not deserve mercy or protection from the court.

In what follows in this Section I will first argue that this argument cannot plausibly be interpreted as an ordinary deductive argument, and even if it is interpreted as such, it is a much worse argument. (4*) is the universal generalization that would make the argument into a valid deductive argument. Firstly, two things should be noted. It is certainly not sure whether (4*) is the right specification of the universal generalization. Secondly, do we find (4*) convincing at all, even though we find the argument in the form of an analogy convincing? Thirdly, even if we find it plausible, do we really find the truth of the universal generalization (4*) *more certain* than the truth of the particular (3)? It would be a pointless deductive argument otherwise. A general problem with universal generalizations is shown with the frequent success of the method of counterexamples. To provide the *universal* claim, the problem is not just to specify all relevant features in the case of Lorenzo and the case of the young man who killed his parents. It is also necessary to specify *all relevant features in every possible hypothetical case*. If one needs to specify a universal generalization one has to find *all* features that are relevant, because they would affect matters *if* they were present. (4*) could easily be counter-exampled with concrete

examples of drug addicts, people who make clumsy blunders with grave implication for themselves, and so on. Perhaps a better specification of (4*) could be: "No one, *who by his own immoral* deeds creates his own bad situation, deserves mercy or protection in that situation". But this could also easily be counterexampled with a case where a not so serious immoral action causes *very* bad consequences. The universal generalization must then specify: "No one deserves mercy or protection from consequences of their own immoral actions if the consequences are not very bad and the immoral action serious". But then the "serious" and "not very bad" require further specification, and it would be no problem to provide a counter-example for such a universal claim as well. A counterexample might be a case where someone commits a serious wrongful act and later regrets it, regrets his way of living, and starts a new life. Later in life disproportionately grave consequences come over him caused by his acts before he changed his life. Another counterexample might be a case where other innocent persons suffer from the consequences as well. A universal generalization intended to avoid counterexamples must specify the *exclusion* of *all* such possible cases, not just the relevant features in the *actual* case. Perhaps the reader now is convinced that it is at least very dubious that all arguments by analogy should be reducible to inductive or deductive arguments.

3.6. *Argument by analogy and the interpretation of arguments*

I will now give an example of how the interpretation of an argument as an argument by analogy can have a substantial effect on the philosophical outcome. Chad and Sullivan have discussed the rationality of believing that each contingent being that comes to be needs a cause. Sullivan argued that:

" . . if we believe that at least one contingent entity is such that necessarily its coming to be has a cause, then we have no good reason not to believe this is true of all contingent entities that come to be [sic]. For all contingent entities agree with respect to the relevant property – being a contingent entity. It would be entirely arbitrary to say that a contingent entity needs a cause for its emergence provided it is blue, but not if it is red. The relevant property is not its colour or its size, but its contingency. . .it is arbitrary to insist that contingent entity e_1 needs a cause but contingent entity e_2 has no such need, that blue things, say, can just pop into existence, but not red things"[28] Chad interprets Sullivan's argument as:

> "Sullivan [. . .] is 'arguing that if we believe that at least one contingent entity is such that necessarily its coming to be has a cause, then we have no good reason not to believe this is true of all contingent entities that come to be.' This line of thinking seems to rest on the proposition: (C) We have good reason to think that all contingent entities come to be in the same manner [. . .] From (5) and (C), (6) everything has a cause."[29]

If we outline Chad's interpretation of Sullivan's argument then the following structure is displayed:

(1) The coming to be of at least one contingent entity necessarily needs a cause in virtue of its contingency
(C) We have good reason to think that all contingent entities come to be in the same manner
∴ Therefore the coming to be of every contingent entity necessarily needs a cause

For Chad (C) is the missing universal generalization that is necessary to make Sullivan's argument into a deductively valid deductive argument. Chad then argues against the plausibility of (C) with the method of counter-exampling:

> "[Sullivan's argument] is meaningless unless Sullivan introduces a principle like (C) . . [But] (C) cannot really be true, because it would imply that everything has exactly the same type of cause. If one thing comes to be from a union of sperm and egg, then it follows from a strict reading of (C) that all things come to be from union of sperm and egg. This is obviously false... No matter how Sullivan construes (C), then, it will not help him."[30]

If Chad's deductive interpretation is the only plausible way of interpreting Sullivan's argument Chad's criticism seems devastating. However, if we interpret it as an argument by analogy, then we will have another result. Sullivan's argument could instead be interpreted as:

(1) At least one contingent entity $e_{1(A)}$ necessarily needs a $\text{cause}_{(AP)}$ in virtue of its $\text{contingency}_{(\varepsilon_{1^*})}$
(2) The $\text{contingency}_{(\varepsilon_{1^*})}$ of e_1 is the counterpart of the $\text{contingency}_{(\varepsilon_1)}$ of other contingent $\text{entities}_{(TS)}$
(3) Thus, other contingent $\text{entities}_{(TS)}$ need a $\text{cause}_{(AP)}$

It *does* seem that the contingency of contingent entity e_1 is the counterpart of the contingency of another arbitrarily chosen entity, for example, contingent entity e_2. If one accepts that one entity necessarily must be caused because it is contingent, then it *does* seem not only arbitrary, but inconsistent[31] as well, to claim that entity e_1 does not need a cause, while another entity e_2 does, without showing a relevant difference between e_1 and e_2.[32]

Consequently, other contingent entities $e_2 \ldots e_n$ need a cause. Interpreted this way, Sullivan's argument will be much more difficult to criticize.[33] The question to Chad is: why should we make an exception and claim that e_2 happened without a cause? The burden of proof is now upon Chad and he cannot use the method of counterexamples. Chad must provide a relevant difference (i.e. show that the elements of contingency are not counterparts of each other) between the events that do not need a cause and those events that need a cause. This seems very difficult to do. The relevant metaphysical reason for believ-

ing that a thing needs a cause seems to be its contingency and the relevant epistemic reason is the unrivalled empirical experience that events and things have causes. Any other property seems irrelevant. As Sullivan argued, it seems counter-intuitive to argue that there is reason to believe that e_1 needs a cause and not e_2 because, for example, they differ in colour. Chad cannot reply as a relevant difference with any kind of *inductive* reasons for believing that e_1 has a cause while this is not the case with e_2. That will only postpone the predicament, since the same reasoning proves that *contingent entities* in general are caused. Why not via induction generalize that the contingent entity e_2 is caused, since *other contingent entities* are caused? Again Chad's criticism is in trouble. We already knew that the interpretation of an argument is a matter of vital importance as to whether the evaluation of it will be correct or not. However this example also clearly shows that it is easy to misinterpret an argument as to what *type* of argument it is. If some allegedly "refuted" "deductive arguments" will have to be reconsidered as arguments by analogy, then that may have a substantial impact on philosophical results. The method of refuting arguments needs also be reconsidered. If an argument is not a deductive argument then the method of counterexample will often be irrelevant as a tool of refutation. This will be more discussed in the sequel article *Refutation by Parallel Argument*, (forthcoming).

An easily predicted objection is that the interpretation of Sullivan's argument as an argument by conclusive analogy is less credible than the interpretation that it is an ordinary deductive argument. I have two things to say in reply. First, for me it is not *obvious* that the most plausible interpretation is a deductive argument, and such an objection I take as a further evidence of the perhaps too great influence of the deductive perspective in philosophy. Secondly, the objection is actually irrelevant, since the most plausible interpretation may not be the most *justified* one. Consider for the sake of the argument that none of two interpretations of an argument are implausible, only that one of them is more plausible than the other. Assume further that the less plausible interpretation will formulate the strongest argument. Does not the principle of charity affirm that the most *justified* interpretation would in this case be the less plausible interpretation? The only way to get by this is if the degree of plausibility is a very large one. I cannot agree that this is the case here. Thus, my "analogical" interpretation is justified.

4. SUMMARY AND CONCLUSION

Analogy is a relation consisting of a one-to-one correspondence between the elements of two objects – the Target-Subject and the Analogue – which makes it possible to project a new predicate from

the Analogue to the Target-Subject. The new predicate that is assigned from the Analogue to the Target-Subject is called Assigned-Predicate. An analogy can be between objects of the same domain or between objects belonging to different domains. The Assigned-Predicate will be the predicate that supervenes on the element which belongs to the domain of the Target-Subject and corresponds one-to-one with a counterpart element of the domain of the Analogue.

An analogy is either a correct analogy or an incorrect analogy, not a partially correct analogy with respect to the Assigned-Predicate. Argument by analogy has two basic structures; argument by conclusive analogy where the conclusion is inferred with conclusive certainty and argument by inconclusive analogy where the conclusion is inferred only with inconclusive certainty, i.e., plausibility. Arguments by analogy are arguments in their own right not reducible to any other type of argument. Arguments by analogy differ from other types of arguments by making the inference from particular to particular and by the fact that the conclusion never follows solely in virtue of the semantics or the syntactical structure of the argument. If one plausibly reinterprets allegedly deductive arguments as arguments by analogy, then the philosophical result may be very different from the original one.[34]

NOTES

[1] See for instance Copi, Burgess-Jackson, (1992) pp. 186, 195; Copi (1990) p. 363

[2] Unless there is a perfect induction where every member of a set is known, in which case the conclusion follows necessarily from the premises.

[3] Steinhart (2001) p. 190. "Plausibility is the degree to which a proposition is rationally supported by evidence. A proposition is implausible to the degree that its negation is more plausible than itself."

[4] Whether this type may be reduced to an inductive argument is another question that will not be discussed here.

[5] Walton (1996)

[6] Blair and Johnson (1987) call these criteria conditions of (1) Relevance; (2) Sufficiency; and (3) acceptability for a good argument.

[7] For a discussion about the relations of determination in analogical reasoning see Davies (1988)

[8] My view of analogy as a one-to-one correspondence and as a sameness of relation has been inspired most by Steinhart (2001); Burbidge (1990) and Weitzenfeld (1984).

[9] Mill (1889) quoted by Malcolm (1958)

[10] This argument is an argument by inconclusive analogy since there is only a correlation between people, outward behaviors and their inner mental states, not a relation of strict definite determination. See Section 3.4.2 for more about this.

[11] See Brown (1989) with references.

[12] Brown (1989) p. 163.

[13] I do not claim that similarity of properties never should be named 'analogical'. Thomas Aquinas made a distinction between what he called analogy of *proper proportionality* and the analogy of *intrinsic attribution* (Geisler, 1991). The former refers to a proper relationship between the attribute each object possesses and their respective nature. The latter refers to a

similarity where both objects possess the same attribute and the similarity is based on a causal connection between them. The cause conveys itself to the effect. For example, hot water causes an egg in it to be hot. One could of course object that it is all about relations, but of different types, where property similarity is still about relations; the relation between the property and the object which has the property. In that case also objects that have property similarity would be called analogous; they share the same relation to the property in question. It is ultimately about how we use the term 'analogy'.

[14] Holyoak and Thagard (1995) discusses these types of similarities.

[15] Hobbes (1946) p. 5.

[16] The scheme of correspondence is taken from Steinhart (2001) p. 5.

[17] Steinhart (2001) points that out pp. 5–6.

[18] For more on domain constraints on analogy see: Brown (1995).

[19] Woods and Hudak (1992); Brown (1995).

[20] Smith (1994) pp. 69–70.

[21] Prager (2003).

[22] Dave Thomasson discusses this in another *Townhall* article; Thomasson (2003).

[23] Dave Thomasson 23 alleges two other relevant differences. There is a difference in *intention* between the cases. When legislators approve of higher speed limits, they do not *intend* to cause anyone's death, while this is the case with the death penalty. But this difference fails to be relevant. The question was not whether anyone's death could ever be justified by the greater good of capital punishment or higher speed limits, but whether anyone's *innocent* death ever could be justified. Since the greater good of capital punishment by the very nature of the case consists of intentionally killing a *guilty* murderer and the consequences thereof, it begs the whole question to claim that this is a relevant difference in itself. Thomasson also claims that there is a relevant difference in that capital punishment concerns *punishment* for a crime unlike highways deaths. Thomasson believes this because the question of what justifies punishment in general is much more controversial than higher speed limits (i.e. is it justified on utilitarian or retributive grounds and so on); hence they cannot be compared. But this is clearly an *irrelevant* difference; why would the controversies of what justifies punishment in general be relevant for judging the *greater good* of capital punishment differently than the greater good of higher speed limits? Even if you are uncertain as to *what* justifies punishment one could still plausible consider punishment a higher good that justifies some unfair trials; one could hold that either retribution *or* good consequences justifies some unfair trials.

[24] This example is an instance of an argument by inconclusive same-domain analogy.

[25] Beardsley (1975); Also Derek Allen and Susan Stebbing are other proponents of this (see Govier 14).

[26] Govier (1989); Wisdom (1991); Barker (1989a, b).

[27] Letter to *Time Magazine*, April 10, 1989, after Govier (14) p. 143.

[28] Sullivan (1994) p. 330.

[29] Chad (1997) p. 558.

[30] Chad (1997) p. 560.

[31] More correctly it is not inconsistent but inconsequent which means that one violates the principle of relevant similarity. For more about this see *Refutation by Parallel Arguments*, forthcoming.

[32] Sullivan's argument is actually stronger than this. His argument, if successful, shows that every caused contingent being necessarily needed a cause for its coming to be and that it was in virtue of its contingency that the caused being necessarily needed a cause. That is because if causes are necessary conditions (which Sullivan gives arguments for, although they are not addressed here) and only contingent entities can be caused, then a caused entity *necessarily* had a cause in virtue of its contingency. If an entity is caused then it necessarily is contingent, contingence is a necessary condition for a caused being. Thus, contingency is a sufficient condition that a caused entity *necessarily* had a cause.

[33] It will be no different if we formulate the argument as a deductive argument with the analogical claim incorporated in a premise:

(1) Contingent entity e_1 necessarily needs a cause in virtue of its contingency
(2) All contingent entities are analogous with respect to contingency
∴ All contingent entities necessarily need a cause.

Still this would not change the problems for Chad, and the argument is still dependent on the analogical claim in premise (2).

[34] I'm deeply indebted to the anonymous reviewer for his comments, which helped me to improve the manuscript considerably.

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