# Classifications of Arguments by Analogy Part I.
# A comprehensive review of proposals
# for classifying arguments by analogy

## Clasificaciones de los argumentos por analogía, Parte I.
## Una reseña comprehensiva de las propuestas
## para clasificar los argumentos por analogía

**André Juthe**
Amsterdam University, Amsterdam, The Netherlands
andre.juthe@gmail.com

**Abstract**: This paper, composing of two parts, is an attempt to systematically review proposals by authors for classifying arguments by analogy. A closer to 700 documents (journals, books, etc.) have been read and the aim is to provide a comprehensive review in order to give the reader a clear overview of various subdivisions and classifications of analogical arguments made by various theorists. The review should be beneficial for any scientific discipline that employs analogical argument in some way or other. The second part follows continuously and both should be read as one unit in order to fully grasp the content.

**Keywords**: Argument by analogy, analogical arguments, subtypes, division, classification, taxonomy.

**Resumen**: Este trabajo, compuesto por dos partes, es un intento de reseñar sistemáticamente las propuestas de autores por clasificar los argumentos por analogía. Cerca de 700 documentos (revistas, libros, etc.) han sido leídos y el objetivo es proveer una reseña comprehensiva para dar al lector un claro panorama de las distintas subdivisiones y clasificaciones de los argumentos por analogía hechas por distintos teóricos. Esta reseña debiera ser beneficiosa para cualquier disciplina cientíífica que emplea argumentos analógicos de una u otra forma. La segunda parte continúa este trabajo y ambas debieran ser leídas como una unidad para entender el contenido.

**Palabras clave**: Argumento por analogía, argumentos analógicos, subtipos, división, clasificación, taxonomía.

## 1. Introduction

There exists not only a large body of accounts of analogical argumentation but also a large body of suggestions of subtypes of analogical argumentation. Hitherto there has been no attempt to provide a comprehensive overview of the various proposals of the subtypes and the criteria for distinguishing them. This work is an attempt to remedy that lack. The aim of this paper, which consists of two consecutive parts, is to provide a comprehensive review of various author's divisions of various subtypes of what is called comparative or analogical arguments. It aims to systematically review proposals by authors for classifying or making distinctions between subtypes of arguments by analogy. The primary goal in this paper not to provide the *correct* classification or provide a *true* taxonomy, but rather to map, catalog, and provide a comprehensive systematic overview of various proposals of distinctions and classifications of analogical arguments made by various theorists. My own classification well be discussed to some extent in part II section [2.3.2] and further clarified as the sections follow one another.

### 1.1. Aim of the Study

The aim of these papers is to provide a comprehensive overview of the various criteria and terminology used by various theorists to distinguishes subtypes of analogical arguments. The research question addressed is: *Which types of argumentation by analogy have been distinguished in the literature?*
   The subquestions are:

   (1a) What various types are being distinguished and by what author?
   (1b) By what criteria are they distinguished?

In order to accomplish the aim and to answer the research question, a qualitative content analysis with inductive meaning categorization has been performed on a large quantity of texts consisting of almost 700 journals and books. The result is commented on as well as summarized in tables. The aim of the chapter is to provide an *overview,* not a *review;* it aims to

systematically map various authors' proposals for distinguishing and classifying subtypes of arguments by analogy and the labels and terminology therewith, not to provide a systematic classification. The chapter contains an exploratory mapping of classifications made by various authors. I attempt to interpret and clarify what subtypes of analogical arguments have been suggested or used in the literature, what parameters have been used as criteria by various authors for making the subtypes and what terms have been used to label the subtypes. My work aims to help the reader by providing an overview of the terminology and the criteria that have been used by various authors. I should emphasize that this study does not claim to be final in any sense, but rather is a tentative map of the territory which provides a foundation for further research.

## 1.2. Method

### 1.2.1. Inductive Qualitative Content Analysis

The method employed in this study is *inductive qualitative content analysis*. Qualitative content analysis is a research method that has come widely in use in various fields. It is one of many research methods used to analyze text data (Cavanagh, 1997). Other methods include "ethnography", "grounded theory", "phenomenology" and "historical research". Qualitative content analysis focuses on the typical features of the text as communication with attention to the contextual meaning of its content (Hsieh and Shannon, 2005).

Qualitative content analysis is a method that sorts written or oral materials into identified categories of similar meanings (Moretti et al., 2011; Elo et al., 2014). The inductive variant extracts the meaning categories directly from the data (Cavanagh, 1997; Moretti et al., 2011; Elo et al., 2014). The method has three characteristics: it reduces data, it is systematic and it is flexible. It requires the researchers to center on those parts that relate to the overall research goal (Schreirer, 2014). If content analysis is properly conducted, it will yield trustworthy results (Elo et al., 2014).

In this work, the meaning categories that were searched for were the criteria used to distinguish the subtypes of analogy argumentation. These criteria were not predetermined but inductively extracted from the texts.

However, the *idea* that there existed criteria used for distinguishing various subtypes of course preceded the study. It was assumed that if there are claims of subtypes, then there are also claims of criteria – explicit or implicit – that distinguish the subtypes.

Any type of classification or division between various arguments will employ some kind of distinguishing criterion. Thus, it was these classifications "criteria" or "parameters" that were extracted into meaning categories, and the subtypes were clustered under the criteria that were used to distinguish the subtypes. Every author who has talked about or used various subtypes of analogical arguments has explicitly or implicitly employed such a criterion to some extent. However, a subtype of an argumentation type may be classified by virtue of several parameters, and it may be difficult to distinguish exactly what feature is working as a criterion in distinguishing between types. Thus, although I was looking for criteria of classification prior the study, I had certainly not determined *which* criteria they were. After inductively identifying the meaning categories, I attempted to identify subcategories of each criterion. For instance, one meaning category into which the subtypes of many authors could be sorted is the criterion of *function*. However, this general criterion is usually not stated explicitly. The authors rather differentiate various subtypes based on whether they have predictive or classificatory function, or whether they have a supportive or refutative function and so on. Such textual clues provide information not only that a certain function is used as a distinguishing criterion but also about the subcategorizations that distinguish between various types of function.

### 1.2.2. Extracting and Defining the Meaning Categories

My grounds for cataloging a subtype under the heading of a certain criterion for subdivision have been the author's own explicit claims. For example (the reader can see this in section [2.2.3] table 5) both "pointing out a common principle" and "heuristic" fall under the class function because the authors concerned have distinguished or described a certain type of analogy argumentation by appealing to their difference in function. Brown, for one, clearly uses difference in function in order to distinguish between two types of analogical arguments, which he calls "proportional" and "predictive" (Brown, 1989, p. 163):

> Even in those cases where a proportional analogy and a predictive one may be paraphrases of each other or equivalent to each other in underlying logical form, the two [arguments] are not used interchangeably. This is true because the two forms do not have the same function either in reasoning or in discourse.

Thus, Brown's subtypes proportional analogy and predictive analogy are clustered under the criterion of function (section [2.2.3]). However, often it may not be entirely clear whether a theorist really uses a given criterion as ground for a distinction or not. For example, Louise Cummings writes that argumentation by analogy is used in public health reasoning:

> As a form of presumptive reasoning, analogical arguments have a valuable role to play in closing epistemic gaps in knowledge. This heuristic function of these arguments is illustrated through an examination of some uses of analogical reasoning in recent public health crises. (Cummings, 2014, p. 169).

Does this mean that Cummings uses *function* as criterion to distinguish between various analogical arguments? Or is this just an application of the same argumentation in a certain context? Of course, I have in many instances been forced to make a decision based on an uncertain interpretation of what the author seems to think or is committed to. In this case I decided that it is not completely unreasonable to claim that Cummings is talking about a certain type of analogical argumentation used in public health. Given that, she uses a type of analogical argumentation in public health divided on the basis of its function. Therefore, I have included her argumentation in the table of function.

If an explicit claim is missing, I have tried to make a plausible interpretation of what seems to be the basis for the author's distinction. The most salient feature the author uses that could explain the subdivision is taken as the criterion. This means giving attention to how the author uses the contrasting subtypes or how the author describes them. Although this judgment is based on a particular assessment of the material, whenever there is ambiguity between different criteria I have given precedence to an interpretation that gives rise to a new criterion in order not to exclude any criterion that has been employed. Since many authors often employ

many features together as grounds for classification and these features are often interrelated. I try to interpret the meaning categories of criteria in a *broad* manner. Furthermore, since this an article overview of how analogical arguments have been distinguished and classified both in theory and in actual practice, there is no guarantee that the criteria in my overview have been used in a coherent or consistent way or that the author has used a criterion deliberately.

There are several challenges involved making this kind of comprehensive overview. One problem is that various philosophers may use the same term but mean different things or vice versa, or they may not really name the subtypes at all, only describe or use them. Sometimes the terminology is misleading. For example, several philosophers who think that argumentations by analogy are irreducible to the inductive or deductive type of argument still subdivide argumentation by analogy into an "inductive" type and a "deductive" type, which has caused others to make faulty classifications.

Another problem is that various philosophers use contrasting criteria and taxonomically dissimilar axes, focusing on contrasting criteria as grounds for classification. Several classifications are based on different parameters and made from dissimilar perspectives.

Yet another problem is that the authors may focus on different dimensions of an argumentation. Thus, some divisions or classifications appear to coincide even though they have different criteria for classification, while others cut across contrasting classifications.

Another problem is, of course, that authors often may use more than one criterion at a time in order to divide types into distinguishable subtypes. In such cases I have put the subtypes into more than one category of criterion. Various authors make their distinctions in a cross-categorical way. The criteria I have found not only take into account different dimensions of analogical arguments, but are also on different levels. Various authors have focused on various aspects, which has yielded classifications based on contrasting levels of an argumentation. For example, the criterion *function* refers to the use of the argumentation, which probably has different logical patterns, which can be rooted in different epistemological accounts.

Another philosopher may look at the same argumentation but base his distinction on logical patterns or the contrasting epistemological account.

I have not discussed further sub-classifications of using a *combination* of criteria unless the author him-/herself makes such distinctions. For instance, nothing prevents you from first distinguishing two types of argumentation by analogy by virtue of their dissimilar function in the discourse, and then subdividing these sub-arguments according to their mode of inference and subdividing these sub-sub-arguments according to their logical structure, and so on. You could apply the same criterion again for each new subtype. Perhaps sub-subtypes can be divided according to contrasting functions.

### 1.2.3. Scope and Limits

### 1.2.3.1. Material search and Databases

The overview covers all arguments that in some way reason via some kind of similarity, analogy or comparison. I wanted to provide a genuinely comprehensive input to the field and therefore I did not limit myself only to argumentation theorists. Argumentation by analogy ("argument by analogy") is defined by the *Stanford Encyclopedia of Philosophy* as: "an explicit representation of a form of analogical reasoning that cites accepted similarities between two systems to support the conclusion that some further similarity exists." (Bartha, 2011, p. 1). This overview has focused on those authors who accept arguments by analogy as genuine arguments and on how different subdivisions are made of argumentation by analogy.

An important terminological issue in the study is the fact that the contemporary use of analogy does not always have the same meaning as in the classical uses. The classical Greek term for analogy (analogia or αναλογία) is sometimes translated as "proportion", which would include ratios (3 is to 6 as 4 is to 8). Many of the contemporary uses of analogy simply refer to some kind of comparison between similar things in order to justify an inference based on similarity. Terms like "proportion", "similarity", "same", "figure", "simile", "metaphor", "comparison" "case-based-reasoning", may

all refer to analogy in some sense. Analogy is sometimes used in this broad sense referring to any comparisons of similarities between two or more objects, and sometimes in a more qualified sense, referring to a certain kind of similarity.[1]

This work brings together research from different fields to provide an overall picture of different ways of classifying arguments by analogy. It attempts to deal with different understandings of arguments by analogy in a broad sense. The research reviewed includes, but is not limited to, work from argumentation theory, artificial intelligence (AI), cognitive science, linguistics, archeology, mathematics, natural sciences, philosophy, psychology and (other) social sciences. A vast number of kinds of arguments from comparison have been referred to as analogies or as analogous, and analogy has been studied from a number of disciplinary perspectives.[2] An extensive literature search was designed to identify and retrieve primary studies relevant to the project's major research goal. Articles ranging from artificial intelligence to archeology have been taken into account. The database Philosopher's index was used although most of the retrieval work was carried out using the web search engine Google. The search was very broad. The keywords used were "analog*", or "analogy", or "argument*" + "analog*" or "reasoning" + "analog*", or "argument*" + "comparison" or "case-based reasoning", in order to not miss anything that could be relevant for the study. I made a further search for "analog*" on the *Informal Logic* website and on the *Argumentation* website.[3]

The working process of selection consisted of three steps: first, a collection of articles and books that matches the searches for analogy in general, second, a selection of those articles that concern argumentation by analogy in particular, and third, a selection of those articles that are relevant for distinguishing various subtypes of argumentation by analogy. The follow-

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[1] The more qualified sense is stated well by Holyoak's view on analogy: "Analogy is a special kind of similarity.. . two situations are analogous if they share a common pattern of relationships among their constituent elements even though the elements themselves differ across the two situations. " (2005, p. 117).

[2] Even environmental ethics employs argumentation by analogy to a large degree, see Eggleston (2011).

[3] Informal Logic: http://ojs.uwindsor.ca/ojs/leddy/index.php/informal_logic/index; Argumentation: http://link.springer.com/journal/10503

ing inclusion criteria were used: (a) accessibility — the study must be publicly available or archived;[4] (b) relevance — the study must at least contain arguments or reasoning by analogy; (c) sufficiency—it must not be too difficult to identify what kind of classification an author implicitly or explicitly employs in his/her discussion/treatment of analogical arguments; (d) language — the material must be in English.

A mere reference to or use of analogy or any of these other concepts is insufficient for a work to be included in this overview. The works I have included attempt to theorize about or otherwise explicate one or more of the uses of analogy as *arguments*. However, the exact distinction between analogical reasoning in arguments and other types of analogical reasoning is not always entirely clear and, as a result, sometimes works that discuss analogical inferences as such are included. However, analogical reasoning used to explain something, or for the purposes of illustration or elucidation, have in general been excluded.

There are at least two differences in purpose between an argumentation and an explanation. The goal of an argumentation is that the premises give support for *accepting* the standpoint, whereas the goal of an explanation is to give an *account of how* the conclusion came about. Secondly, an argumentation aims at establishing *new* truth or determining controversial truths, whereas explanations give an account of truths that are supposed to be *already accepted* (Bex & Walton, 2012). Thus, when analogical means are used to give an account of how the conclusion of already accepted truths came about, it is a case of analogical *explanation*, and when analogical means are used to support the belief in new or controversial truths, it is a case of analogical *argumentation*. However, explanations can be used as arguments in certain contexts. For example, in a situation where it is claimed that a theory is unclear or incoherent, an explanation can show that it can be clarified and coherently elucidated, and the epistemic value of explanatory power is something that can be employed in an argumentation. Moreover, the indicators necessary to discern whether reasoning is explanatory or argumentative may be lacking or ambiguous or the author may simply discuss analogical reasoning in very broad and general terms.

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[4] The reason for this is that I want other researcher to be able to assess my work and continue to build on the foundation that I have laid.

I have included other but less comprehensive attempts to analyze the literature concerning subtypes of argumentation by analogy, as well as their sources (because the reviewers' classification could differ from the original source). I have not, for obvious reasons, analyzed every possible article that *uses* argumentation by analogy and from that discovered or extracted a new subtype of argumentation by analogy. Another limit is that the overview will be restricted to literature in English. I have rejected articles that claim that argumentation by analogy can be reducible to another type of argumentation; it is meaningless to review classifications of an argumentation type that *ex hypothesi* does not exist. I will therefore assume that arguments by analogy are an irreducible type of their own, which means that the ideas about analogy of authors such as Keynes, Nagel, Hempel, Allen, Kaptein (2005), Agassi (1988), Botting (2012), Beardsley (1950), Johnson (1989) and to some extent Waller (2001) and Shecaira (2013), will not be discussed.[5] These authors think that arguments by analogy are inherently flawed or reducible to inductive, deductive or abductive arguments or some combination thereof, and will only be discussed insofar as their work has particular relevance to the idea that analogical arguments are an authentic type of inference. I have also avoided articles that explicitly discuss arguments from metaphor. The relation between metaphor and analogy is interesting and important, but cannot be included in a discussion that focuses on subtypes of analogical argumentation. The relation between analogy and metaphor has been discussed by a number of other authors (Gentner & Bowdle, 2008; Gentner et al., 1987; Gentner et al., 1988; Musolff, 2006; Thagard & Beam, 2004). I have only made an exception for cases where *metaphor* is used in the sense of "figurative analogy" and not "genuine" "metaphorical arguments".[6] Analogical reasoning must also be

[5] Allen's position is mentioned in Botting (2012). The views of Hempel (1965); Keynes (1957); Nagel (1961) are mentioned in Gamboa (2008). Shecaira (2013) thinks that *a priori* analogies in ethics and law should be understood as composite argumentation made up of (i) one (sub)argumentation that resembles an inference to the best explanation and (ii) one deductive argument (personal communication 2014-02-19).

[6] It is, however, not always easy to make a clear-cut distinction between argumentation from metaphor and analogy argumentation. See for example Musolff (2006) who focuses on arguments by metaphor, but ones which are very similar to arguments by analogy using distant domains of comparisons. The distinction between arguments by metaphor and analogy argumentation depends on which conceptual apparatus and what conceptual perspective is used in the terminology.

distinguished from arguments that employ *extensive interpretation* in law, which may be reminiscent of analogical reasoning but which are something else.[7]

### 1.2.3.2. Terminology

Various terms have been used by different authors for distinguishing the objects of comparison, such as Source vs. Target, Source Case vs. Target Case, Primary Subject vs. Analogue, Source domain vs. Target Domain, Case vs. Parallel Case, Analogue vs. Target Subject. The Analogue, Source, Source domain etc is that which is known from which a predicate is transferred to the Target Subject, Target Case, Primary Subject, Source Domain etc.

### 1.3. Organization of the Result of the Study

The search for meaning categories resulted in a discovery of a total of nine criteria for subtype categorization (which can be combined) that have been used by various authors (consciously or unconsciously). These are: (1) Status of the Analogue, (2) Function or purpose, (3) Logical form, (4) Domain constraint, (5) Mode of inference, (6) Variants of the determining relation, (7) Quantity of analogues, (8) Contrasting elements of comparison, (9) Contrasting testing procedures. I will explain each criterion in more detail under each separate heading. I have organized the overview so that all subtypes that employ the same criterion for subdivision are clustered together under the same criterion in sections [2.2], [2.3], [2.4], and the rest of the criteria will be discussed in part II. In each of these sections (in both part I and part II) the subtypes, their authors and the criterion they employ to distinguish the subtypes are commented and explained.

In the end of each section is a table that catalogs the subtypes and the authors in order to make it easier for the reader to grasp the overview. If an author employs more than one criterion for the classification or if it is unclear which of two criteria an author has used, then the subtypes are

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[7] For a discussion about the difference and how it relates to the philosophy of law, see Canale and Tuzet (2014).

clustered under more than one criterion. In the tables, one can see the label of each subtype, the author, and by which criterion the subtypes are classified. An empty cell in the table means that the author has not formulated any further subdivided argumentation (although the author has used the criterion for those arguments that are in other cells).

Arguments in the same column are the same "type" of arguments *insofar that they are distinguished by the same criterion.* That is, given the actually used criterion, they belong to the same subtype of analogy argumentation. As stated above, this does not exclude them from also being classified as another type of analogical argumentation if another criterion is applied; the criterion for my listing is the criterion the various theorists *themselves* seem to employ. There is a limit, however, to how precise and specific these criteria can be. The reason for this is that in an inductive quality content analysis (in contrast to a deductive quality content analysis), the meaning categories are extracted *from* the texts and not theoretically constructed and defined *prior* to the analysis (Cavanagh, 1997; Moretti et al., 2011; Elo et al., 2014). The study is a study of actual claims and actual use, which are not always well-defined. Therefore, in extracting the meaning categories from the text and defining them, the definitions of the criteria need to be broad enough to encompass any plausible interpretation of authors' actual use. Moreover, it seems more reasonable to systematize the result of the overview into clusters under a limited number of more general concepts than to make a category for each small specified difference of arguments that is a possible interpretation.

In section [2.3] I discuss the relationship between these criteria that was treated in the preceding sections. In this section I will provide some tentative normative remarks on the classification of arguments and argue that contrasting testing procedure is the most important criterion for distinguishing types and subtypes of arguments. In section [2.4] I provide a summary and the conclusions of this chapter.

## 1.4. Previous Attempts

There have not been many attempts to produce systematic overview of proposals of subtypes of analogy argumentation. The reason for this is, I think, besides all the challenges of such an attempt, that it has always been con-

troversial whether arguments by analogy are a genuine class of arguments irreducible to the standard pattern of inductive or deductive arguments. Marianne Doury, however, is an exception (Doury, 2009). She has attempted to provide non-exhaustive inventory of the main parameters identified in academic works that permits sub-division of arguments by analogy (or comparative arguments, which is the term she uses for them as a general class) (Doury, 2009). Her discussion is a methodological overview and its goal is to provide a systematic typology for the argument schemes of 'comparative arguments', based on actual argumentative practices. Doury discusses various criteria used to classify different subtypes and found four main parameters used as grounds for typology by authors in argumentation studies: (1) Domain constraint (whether the objects of comparison belong to the same domain of not), (2) Qualitative/Quantitative Orientation (whether the analogy concerns quantitative or qualitative considerations), (3) The Epistemic Status of Premises (how the analogue is known or justified), (4) The Dialectical Orientation of the Argument (whether the argumentation aims at supporting or refuting something). In the next section I will discuss what criteria this overview has discovered.

## 2. Classification Criteria found in the Literature

### 2.1. The View of John Wisdom

Before we focus on the various subtypes that have been claimed by various authors, we will discuss the unorthodox view of John Wisdom that *all* reasoning cases are types of analogical reasoning. Wisdom had a unique view of arguments by analogy, or "case-by-case procedure", or "arguments by parallels", as he called them. According to Wisdom a case-by-case procedure is the foundation not only of all kinds of reasoning but also of knowledge itself; it is all ultimately based on our ability to compare and discern similarities and differences (Wisdom, 1991). This means that induction and even deduction in the end come down to a case-by-case procedure. Thus, one who offers a deductive proof does not offer more than what he could have done with a case-by-case proof (Wisdom, 1991). The only way to show that an inference is correct is to look at another particular case and show that it is parallel. Wisdom even claimed that the difference between induc-

tive reasoning, deductive reasoning and case-by-case reasoning is really a matter of the form of the argumentation, or in other words, how it is formulated (Wisdom, 1991, p. 105). In the end, any reasoning can be reduced to basic case-by-case reasoning: "The Justification of the premise in the end will rest on cases. . . " (Wisdom, 1991, p. 106). Yalden-Thomson summarizes Wisdom's view well:

> When we are wondering whether the object before us is a spade, whether the right legal decision was reached, whether the firm of Baker and Sons is bankrupt, or whether it is true that love is always in part hate, we look at parallels; we notice affinities and dissimilarities between objects or cases before us, and the similar instances we can see or conceive . . . as to whether an action was or would be right or wrong . . . people often argue by pointing out comparable action; and they do so whether they have in mind general moral principles or not (Wisdom, 1991, pp. xv-xvi).

Wisdom stipulated a distinction between what he labeled arguments by analogy, which are confined to actual cases, and arguments by parallels (or "case-by-case procedure"), which encompass imaginary cases as well. His peculiar view was that inductive and deductive arguments are reducible to, or at least dependent on, a basic analogical (or case-by-case) reasoning. Wisdom's view can be interpreted as displayed in the table 1:

**Table 1**. The classification by John Wisdom.

| Basic case-by-case reasoning | | | | Wisdom (1991) |
|---|---|---|---|---|
| Inductive arguments Reducible to/ Dependent on basic case-by-case reasoning) | Deductive arguments (Reducible to/ Dependent on basic case-by-case reasoning) | Argument by analogy (Case-by-case reasoning with actual cases) | Reasoning by parallels (Case-by-case reasoning with imaginary cases) | |
| | | | | |

Even if few other authors have accepted such a view, some think that analogical reasoning is much more prevalent than received opinion holds. For instance, John Burbidge, who does not think that reasoning by analogy is the basis for all kinds of reasoning, but still thinks that induction, even statistical induction, is just another form of argumentation by analogy (Burbidge, 1990). The only difference is that there are fewer dissimilari-

ties between the objects of comparison, so that one may talk of categories or populations, like "cows", "people", or "mammals", etc (Burbidge, 1990, pp. 41-79).

## 2.2. Status of the Analogue

"Status of the analogue" refers to subdivision is based on a difference in the "status"; it can be normative status or something else. If it is normative status it means that the subtypes are distinguished because one type of argumentation solely has descriptive content whereas the other type of argumentation has normative content as well (in premises and conclusion). This criterion for subtypes in this cluster is defined as follows:

> The status of the Analogue is the criterion employed for subdivision if and only if two analogical arguments are distinguished as two types based on whether the Analogues differ with respect to a certain "status" (descriptive vs normative etc.).

A variant of this criterion is strictly epistemological: whether the Analogue is known *a posteriori* or known *a priori* – a hypothetical invented case. In that case the criterion would read:

> The status of the Analogue is the criterion employed for subdivision if and only if two analogical arguments are distinguished as two types based on the *epistemic* "status" of the Analogue – whether it is known *a posteriori* or *a priori.*

According to the epistemological variant, a comparison can obtain between two factual cases, or between one hypothetical invented case and a factual case, or between two hypothetical invented cases. I have subsumed these variants under the same criterion because they are so exceedingly intertwined and are always mentioned together.

Wisdom's distinction between "Argument by analogy" and "Reasoning by parallels" made in lectures he gave in the 1960s, was historically the inspiration for the similar distinction between empirically grounded "argument by inductive analogies" and "noninductive argument by analogy" by

Steven Barker (S.F. Barker, 1989) and Everlyn Barker (E. Barker, 1989).[8] Stephen Barker distinguishes between "inductive argument by analogy" and "non-inductive arguments by analogy". The inductive argumentation by analogy does not depend on our being able to establish any generalization that all or most F's are G's, but on a case being similar to other cases. Thus, inductive analogies have the following general structure (Barker, S.F., 1989, p. 175):

(1) a, b, c ... each has been observed to have property F and G;
(2) n is observed to have property F;

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(3) Therefore, probably n has property G.

According to Doury, this criterion is the reason for Trudy Govier's distinction between inductive analogies and *a priori* analogies (Doury, 1999). Govier made the same division but labeled noninductive analogies as *a priori* analogies (Govier, 1989, 2010). She has written about various types of arguments by analogy. The most salient subdivision is however between argument by *a priori* analogy and argument by *inductive analogy* (Govier, 1989, 2010, pp. 333-335).

According to Govier there are three main differences between these two types of argumentation by analogy. Inductive analogies are predictive, they make inferences of what to expect in the target subject, whereas *a priori* analogies are not making predictions. Govier follows the terminology of E.M. Barker and S.F. Barker and Wisdom in which the Analogue in an inductive argumentation by analogy is a real instance with features that are ascribed to it by empirical means (Govier, 1989, 2010, pp. 333-335). The similarity between the Target-Subject and the Analogue are factual empirical similarities (Govier, 1989, 2010, pp. 333-335). It is possible (in principle) to acquire evidence in order to assess whether the conclusion of an inductive analogy is correctly predicted independently of the similarities cited in analogy. According to Govier (1989, p. 143), "argumentation by inductive analogy" has the following scheme:

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[8] Wisdom's lectures were transcribed by Barker and published as a much-delayed book in 1991.

1. A has x,y,z.
2. B has x,y,z,
3. A is W.

_____

4. Therefore, B is W.

An argumentation by *a priori* analogy, on the other hand, is a comparison in which the Analogue may be entirely hypothetical or fictitious without weakening its argumentative merit (Govier, 1989, 2010, pp. 327, 333-334, 349). The purpose is to make us perceive things in a certain way. Arguments from *a priori* analogy, in contrast to inductive ones, often appeal to what Govier calls consistency (and what Reidhav 2007 calls the formal principle of justice): that relevantly similar cases should be treated similarly (Govier, 2010, pp. 320-325). The idea that the one type of analogical argumentation is connected to this principle is very close to Frans van Eemeren's and Bart Garssen's claim about the subtype argumentation by normative analogies being connected to the principle of consistency (Garssen, 2009; van Eemeren & Garssen, 2014). (Their position is clarified later). A good example of an *a priori* analogy would be Judith Thomson's famous analogy between killing an unconscious violinist and abortion (Govier, 1989). It should be stressed that *a priori* analogies are not necessarily deductive; the conclusion does not follow in virtue of its logical form, they are *a priori* but non-deductive arguments. Her reconstruction of *a priori* analogical argument schemes is as follows (Govier, 1989, p. 144):

1. A has x,y,z.
2. B has x,y,z.
3. A is W.
4. It is in virtue of x,y,z that A is W.

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Therefore, B is W.

Govier also mentions other subtypes but these are discussed under other headings since she employs other criteria in distinguishing these subtypes. It is not always the case that the inductive analogy is contrasted with some other type. For instance, John S. Mill has a well-known discussion about

inductive analogy but never contrasts it with some non-inductive type (Mil, 2013 [1882]). Another concept which is very often intertwined with the idea of empirical vs. non-empirical content of the Analogue is the difference that an inductive analogy, in contrast to a non-inductive analogy, makes a *prediction*. However, this does not inevitably change the criterion for division; the prediction follows from the fact that an inductive analogy has empirical content. Inductive analogies are based on empirical experience. They are always making a prediction that the target subject will also have a certain property. Given that two or more objects share certain properties, it is then expected that they also share another property.

This is not the case with so called "*a priori* argument by analogy", where the relevant similarities between the analogue and target subject are often *invented a priori* independent of reality *in order to make an appeal to treat or think about them similarly*. *A priori* analogies characteristically have a normative content beyond a purely empirical content. A certain class of analogical argumentation used in law falls under this category. Katja Langenbucher maintain that there are two kinds of argumentation by analogy, one which we may call "empirical" that aims at establishing a physical quality of the compared items which arrives at a probabilistic conclusion; another type are arguments by analogy in law, which are *normative* rather than descriptive. Langenbucher states that this type of analogy implies that the two items are to be treated alike since they share a number of deontic qualities, which justifies the applicability of a certain norm (1998, pp. 487-488). The same distinction is made by Reidhav (2007, pp. 32-51). Sunstein summarizes the structure of legal argumentation by analogy in four steps:

> (I) Some fact pattern A has a certain characteristic X, or characteristics X, Y, and Z; (2) Fact pattern B differs from A in some respects but shares characteristics X, or characteristics X, Y, and Z; (3) The law treats A in a certain way; (4) Because B shares certain characteristics with A, the law should treat B the same way. For example, someone asking for protection against domestic violence is requesting affirmative government assistance, just like someone asking the government for medical care; it is said to "follow" from the medical care case that there is no constitutional right to protection against domestic violence. (Sunstein, 1993, p. 745).

In law there is an important distinction between extracting a rule, ap-

plying it, and contrasting analogical (case-based) reasoning. The contrast can be seen in table 2.

**Table 2**. The methods of rule extraction and case comparison in law.

| Rule extraction method | Case comparison method |
|---|---|
| (1) Extracting rules from decided cases | (1) Selecting relevant case facts, cases |
| (2) Showing that rule conditions are satisfied | (2) Establishing an analogy between cases |
| (3a) Applying extracted rules to the case at hand (3b) Pointing out exceptions to extracted rules | (3a) Following decided cases in the case at hand (3b) Distinguishing decided cases from the case at hand |

David Reidhav has made a study on analogy-based arguments in law and therefore has a judicial perspective (Reidhav, 2007). He claims that argumentation by analogy in reality refers to a family of arguments of which some are inductive, some are normative (Reidhav, 2007, p. 22). If the conclusion derived from the other propositions states how the target case ought to be treated it is a "normative argument from analogy", otherwise it is an "inductive argument from analogy" (Reidhav, 2007, pp. 22-23). The normative argumentation from analogy is used to justify either equal or different treatment of legal cases. This suggests that function also is used as a criterion for distinction, which is why his division is included under that criterion as well (see next section). What is essential to arguments from analogy is that they proceed from case to case. He, however, claims to propose a model in which arguments by analogy are given a form so that they come out as deductively valid (Reidhav 2007, p. 16 onward). According to Reidhav, an "inductive argument from analogy" has the following form (2007, p. 33):

(1) The entities $a$ and $b$ share properties $P_1$ and $P_2$ but not property $P_4$
(2) $P_1$ and $P_2$ preponderate over $P_4$
(3) $a$ has the further property $P_3$
_____
(4) Thus, $b$ has the property $P_3$

The probability of an "inductive argument from analogy" is a function of the amount of common properties and their relevance to the inferred property (Reidhav, 2007, p. 33). Normative arguments from analogy can be subdivided into "normative arguments from *positive* analogy" and "normative arguments from *negative* analogy". The "argument from positive analogy" can be given the following preliminary form:

(1) $C_1$ [source case] ought to be treated as $Q$.
(2) $C_2$ [target case] is relevantly similar to $C_1$.
_____
(3) $C_2$ ought to be treated as $Q$.

The similarity between the source case and the target case is employed to justify the inference of the same legal consequence. A "normative argument from negative analogy" works in the opposite way: it is concluded that the target case ought not to be treated like the source case since there is relevant dissimilarity between the cases. Normative arguments from analogy will, together with principle of formal justice, turn into deductively valid arguments. The principle of formal justice can be formulated (Reidhav, 2007, p. 48):

(PFJ) Treat relevantly similar cases alike and relevantly unlike cases unlike.

Since this is a universal generalization the "argument from positive analogy" can be amended as follows (Reidhav, 2007, p. 50):

(1) If two cases are relevantly similar, they ought to be treated alike.
(2) $C_1$ [source case] ought to be treated as $Q$.
(3) $C_2$ [target case] is relevantly similar $C_1$
_____
(4) $C_2$ ought to be treated as $Q$.

As Reidhav points out, this is a deductively valid argument: the conclusion follows necessarily from its premises in virtue of its syntactical form (Reidhav, 2007, pp. 36-40). However, as the reader can see in premise (3) the

reference to analogy ("relevantly similar") is retained as an essential part of the argumentation. According to Reidhav, the principle of induction is to inductive arguments from analogy what the principle of formal justice is to normative arguments from analogy (Reidhav, 2007, pp. 50-51). Mostly argumentation from analogy in law works via precedent, which is a relevantly similar case which has already been resolved. What Reidhav (2007) calls "normative argument by analogy", and Sunstein labels "analogical reasoning in law", are basically what Govier calls "*a priori* analogy" and what Stephen Barker (1989) labels "noninductive argument by analogy", with the exception that the arguments are employed in the context of jurisprudence. Even if the case comparison method is a *method*, and not an argumentation, it would probably be classified as a "normative argument by analogy" by authors using this kind of criterion for classification, at least when the *result* of the method is formulated in an argumentative context.

Van Eemeren and Garssen argue that there are two genuine subtypes of argumentation by analogy (or argumentation by comparison) and figurative analogy, which only seemingly utilizes a comparison but in reality does not (Garssen, 2009; van Eemeren & Garssen 2014). The genuine subtypes are "argument by descriptive analogy" and "argument by normative analogy" (Garssen, 2009; van Eemeren & Garssen, 2014). In the "descriptive argument by analogy" there is a prediction-based extrapolation of common properties and "both the standpoint and premise are descriptive in nature: in both propositions a state of affairs is expressed." (Garssen, 2009, p. 136). The second type of argumentation by analogy is combined with the principle of consistency, and both the standpoint and premise are normative in nature. Garssen describes the difference in this way (Garssen, 2009, p. 136):

> There is, however, an important difference with the former type of comparison argumentation: application of the principle of consistency does not involve an extrapolation of characteristics. The central issue is whether the two elements (persons, groups etc.) really belong to the same category and whether this category is really relevant to the claim made in the standpoint. Another difference with the first variant of comparison argumentation is the fact that in this case the standpoint is by definition normative in nature: in the standpoint the claim is made that some person (or some group) should be treated in a certain way.

This might give the impression that it is the "status" of the Analogue that is the crucial criterion.[9] However, even though it is one of the criteria, it is not the most important; it is rather something that follows from a difference in the operating inference principle. Although a difference in the content of the Analogue (descriptive versus normative content) is part of the criterion, the most important is "different uses of the pragmatic principle of analogy and the slight difference in the critical questions that is the consequence of these differences (the principle of extrapolation for descriptive analogy and the principle of consistency for normative analogy)" (Garssen, 2014, personal communication 2014-02-18; see also van Eemeren & Garssen, 2014). Garssen and van Eemeren follow the pragma-dialectical criterion that a typology of argument schemes should be based on difference in the inference operating principle (a position I sympathize with) since that is what defines the evaluation procedure (Garssen, 2009; van Eemeren & Garssen, 2014). The critical questions are part of the testing procedure of argument schemes, but critical questions will be different if and only if the type or mode of the schemes' inference configuration is different. Thus, Garssen's and van Eemeren's subtypes will also be clustered under the criterion *mode of inference* in section [2.2.6], and under the criterion *contrasting testing procedures* in section [2.3].[10] The criterion mode of inference has an intimate connection with the criterion of testing procedure, which will be further discussed in section [2.3].

Waller uses the same terminology as Govier. According to Waller (2001) there are three types of analogies: inductive analogies, figurative analogies and *a priori* analogies. However, there is only one genuine argumentation by analogy: "argument by inductive analogy". Waller stresses that the failure to distinguish between these types results in problematic and wrongful

[9] Some authors (Barker for instance) mention the content of premises as the basis that determines the subtypes, but that amounts to the same as asserting that the content of the conclusions is the crucial criterion. The standpoint can only be normative in an analogical argumentation because the Analogue is normative-loaded and transfers a normative-loaded predicate to the Target-Subject. Thus, asserting the difference of normative versus descriptive standpoints as the criterion is the same criterion as the difference in normative versus descriptive status of the premises.

[10] As stated, the criteria should be interpreted in a broad sense. Thus, "mode of inference" includes whatever might be "subtypes of inference" within a type of inference and not just variation of the strength of the inference.

analysis of argumentation. The function of figurative analogies is not to argue but to elucidate and illustrate something, but often are they treated as flawed inductive arguments by analogy. Waller quotes Samuel Johnson's illustration of the difference between *argument* and testimony (quoted by Waller, 2001, p. 200):

> Argument is argument. You cannot help paying regard to their arguments, if they are good. If it were testimony you might disregard it . . . Testimony is like an arrow shot from a long bow; the force of it depends on the strength of the hand that draws it. Argument is like an arrow from a cross-bow, which has equal force though shot by a child.

This illustration marks the difference between testimony and argumentation by employing figurative analogy. This analogy *illustrates* but does not *argue* for that distinction and to attempt to treat all analogies as if they were arguments means that you ignore figurative analogies which have an entirely other function. In short, Waller thinks there are two major types of analogies, figurative analogies and arguments by analogy, and these should not be muddled. Garssen and van Eemeren hold a similar position on figurative analogies but view figurative analogies as presentational devices for the causal or symptomatic argument scheme (Garssen, 2009; van Eemeren & Garssen, 2014). In Waller's view, the genuine arguments by analogy that really argue for a conclusion are divided into inductive and deductive kinds, and a further problem is that these different types also are muddled (Waller, 2001). Waller asserts that "deductive arguments by analogy" are the more important of the two and that they are often used in philosophical disputes and courts of law. Waller's "deductive argument by analogy" would be what Govier labels "argument by *a priori* analogy", what S.F Barker and E.M. Barker label "argument by noninductive analogy", what Garssen calls "argument by normative analogy" and Reidhav calls "normative argument by analogy" but reinterpreted as a *de facto* deductive argument. A problem, according to Waller, is that deductive arguments by analogy are often confused with inductive ones. Waller asserts that deductive arguments by analogy have the following argument scheme (Waller, 2001, p. 201):

1. We both agree with case a.
2. The most plausible reason for believing a is the acceptance of principle C.

3. C implies b (b is a case that fits under principle C).

_____

4. Therefore, consistency requires the acceptance of b.

What is notable in Waller's account of the argument scheme is that it reduces "deductive argument by analogy" to a *purely* deductive argument. It seems meaningless to call this "argument by analogy" since the reference to analogy is gone; what it is left is a deductive argument. Although Waller's "deductive argument by analogy" agrees with Reidhav's "normative argument by analogy" in that in both arguments the conclusion follows in virtue of its syntactical form, there is an essential difference, since Reidhav's formulation keeps a reference to *analogy* ("relevant similarity"). Waller's conception of "inductive argument by analogy" seems to be the same as that of Govier. It has the following scheme (Waller, 2001, p. 202):

1. D has characteristics e, f, g, and h.
2. E also has characteristics e, f, g, and h.
3. D also has characteristic k.
4. Having characteristics e, f, g, and h is relevant to having characteristic k.

_____

5. Therefore, E will probably also have characteristic k.

Waller's position appears to result into just two kinds of analogies – "figurative analogy" which is not an argumentation at all but serves to illustrate and explain – and "inductive argument by analogy". Deductive arguments by analogy are analyzed in terms of common deductive arguments. What Waller labels "deductive argument by analogy" is "*a priori* argument by analogy" in Govier's terminology. The position that certain arguments by analogy should be reinterpreted as deductive arguments has been criticized by Govier (1989), Guarini (2004), and me (chapters 3, 5, 6), S.F. Barker (1989), E.M. Barker (1989), and Bermejo-Luque (2014).

Walton also argues for an inductive type of argumentation by analogy. The argument scheme has in one of the premises a requirement that there be a similarity between the two cases (Walton, 2006, pp. 96-100; Walton et al. 2008, p. 55-57), which Walton contrasts with a type of analogy argumentation based on classification (Walton et al., 2008, pp. 69-70). The

criterion seems to be of the same type as the criterion for the distinctions made by E.M. Barker, SF Barker, Govier, Waller, Reidhav, and van Eemeren and Garssen.

Shecaira (2013) tries to reduce the non-deductive analogy to a composition of abductive and deductive argument, but appears to leave open that there may be genuine inductive analogies (although he never explicitly makes that claim). Several authors use different names, although they use the same criterion for the subdivision, as is shown in table 3.

**Table 3**. Analogical arguments distinguished by their difference in status of the Analogue.

| Criterion for classification: status of the Analogue (whether normative vs. descriptive, whether *a priori* or inductive) | | | Author |
|---|---|---|---|
| **Is known *a posteriori*/has empirical content** | **Is known *a priori*/has normative content** | | |
| Inductive analogy | *A priori* analogy | | Govier (1989, 2002, 2010) |
| Argument by descriptive analogy | Argument by normative analogy | | Garssen (2009) |
| Everyday analogical reasoning | Analogical reasoning in law | | Sunstein (1993) |
| Inductive analogy | - | | Mill (2013) |
| Argument by Inductive Analogy | Noninductive argument by analogy | | Barker, S. F. (1989) |
| Inductive analogy | (The non-inductive argument is reducible to a deductive argument) | | Waller (2001) |
| Inductive argument from analogy[11] | Argument from analogy based on classification | | Walton, (2006, 2010, 2012; Walton et al. 2008) |
| Argument by empirical analogy[12] | Argument by normative analogy[13] | | Langenbucher (1998) |
| Inductive arguments from analogy | Normative arguments from positive analogy[14] | Normative arguments from negative analogy | Reidhav (2007) |
| Argument by Inductive Analogy | Noninductive analogy | | Barker, E.M (1989) |
| Inductive analogy | The non-inductive argument is reducible to a composition of abductive and deductive argument | | Shecaira (2013) |

[11] This label is mine, Walton never really labels the argumentation. His argumentation could arguably also be classified on the basis of logical form; see section [2.2.4]. Sometimes he uses the term "basic form".

[12] Langenbucher never labels the types so this label is mine.

[13] Langenbucher never labels the types so this label is mine.

[14] Normative argument from positive analogy: (I) C1 (source case) ought to be treated as Q. (ii) C2 (target-case) is relevantly similar to C1. (iii) C1 ought to be treated as Q. (Reidhav, 2007, p.40). Such an argumentation does not work from induction but from what Reidhav calls the principle of formal justice: treat relevantly similar cases alike. These, however, seem to be distinguished based on function.

The distinction between analogical arguments based on whether the Analogue has normative versus purely descriptive content does not appear problematic. However, the variant that distinguishes between *a priori* purely invented analogies versus inductive analogies seems problematic, since several analogical arguments fall outside this taxonomic criterion. Many analogies have empirical content while simultaneously making no prediction but is still making an appeal to treat or think about them in a similar way. An invented example:

> You say that it is wrong for government to make abortion illegal because it will increase the total amount of deaths by increasing the number of women who die in illegal abortion. But that is like saying that government in South Africa should not have made apartheid illegal because it might increase the total amount of deaths due to riots and increased racial conflicts.

This clearly is an analogical *normative* argumentation that appeals to treat two cases in a similar way and it does not predict anything. However, the argumentation is obviously not *a priori* – without the data from South Africa the argumentation would fail. (For more about this, see Guarini's criticism of Govier's division in the next section.) Therefore, the same arguments can be classified by what they do, their function, which is discussed in the next section.

### 2.3. The Function or Purpose of the Analogy

The content analysis has revealed that many subtypes are classified with a functional or teleological criterion in a broad sense. The philosophers who employ this criterion for the taxonomy classify the subtypes in accordance with the purpose, use or function they have in the discourse or how the function of the analogy works in the argumentation (which in a sense classifies analogies in accordance with their effect). The result from the content analysis justifies this definition:

> *Function* is the criterion employed for subdivision if and only if two analogical arguments are distinguished as two types based on whether

they have contrasting functions, use or purpose in the discourse or inference.

For example, Brown asserts that there are two types of argumentation by analogy: *predictive* analogy and *proportional* analogy (Brown, 1989).[15] Arguments which utilize a predictive analogy make a comparison between two objects (events, ideas, classes of objects, etc.) and infer from the fact that the objects have attributes in common that they most likely have some other attribute in common. If two Cadillacs are in the same price range, you may infer by analogy that they are on the same level of quality.

The proportional analogy states that two objects have the same (or a similar) relation to each other as two other objects have to each other. For example: "As Porsche is to Volkswagen, so is Cadillac to Chevrolet." Since an inference is made, and as such may support an argumentation, proportional analogies may be employed in arguments. Although many variants of proportional analogy can be reduced to and reformulated as predictive analogies, there are those that cannot be formulated as such, because their logical structure is essentially different (see section [2.2.4]). Therefore, according to Brown, there are at least two legitimate different classes of analogy arguments.[16] But even in those cases where they have the same logical form, they cannot be used interchangeably since they have different *functions* either in reasoning or in argumentative discourse (Brown, 1989, p. 163). The function of a predictive analogy is to *predict* that an object has a certain attribute, whereas the function of a proportional analogy is to *point out a common principle* between two pairs of objects. It should be noted that there is nothing in the criterion itself that prevents it from yielding several more subtypes beyond these. For instance, arguments with the distinctive functions of *refuting* in contrast to *supporting* an analogy

[15] Brown (1989) also mentions figurative analogy, which he regards as a weakened version of proportional analogy. Furthermore, Brown claims that an analogy is never merely illustrative, explanatory, metaphorical, or literary. Analogies always play *some* role in an argumentation (p. 164).

[16] Brown (1989, p. 164) states: "I can think of no way to transform a proportional analogy involving an ordered pair of attributes into predictive form: 'As the Porsche surpasses the Volkswagen in speed, so does the Cadillac surpass the Chevrolet in luxury'. In fact, such a transformation is impossible because Porsche and Cadillac are not said to have any property in common."

would yield more subtypes. Other authors have made the same distinctions as Brown but with a different terminology. For example, Ehninger and Brockriede use "analogy" for "proportional analogy" and "parallel case" for "predictive analogy" (Ehninger & Brockriede, 1969).[17] Cummings (2004), who was mentioned earlier, talks about the heuristic function of analogical arguments in public health.

Emiliano Ippoliti and many others argue that there are two kinds of argumentation by analogy: demonstrative and non-demonstrative reasoning by analogy (Ippoliti, 2006). The distinction *demonstrative vs. non-demonstrative,* however, refers not to any difference in the nature of justification, but to the dissimilarities in function. "Demonstrative reasoning" by analogy means that it is a means of justification, in particular in the proving of theorems and in processes of corroboration of conjectures and hypotheses, while "non-demonstrative reasoning by analogy" is analogy used to formulate conjectures and hypotheses and has a purely creative function. Van Dormal has a "counter-factual analysis" of analogical inference instead of a justification-oriented approach (van Dormael, 1990). Dormael denies that analogical reasoning is about *proving* a *conclusion*; rather, he says, it is about *finding* a *solution*. An analogy between a source $x$ and a target $y$ is the result of thinking about $x$ as if it were $y$, and thinking $x$ is $p$ (where $p$ is a property of $y$). Dormael concludes that the success of analogical reasoning depends neither on the amount of shared properties nor on any structural similarities but on the "lack of differentiating between planes of reality" (van Dormael, 1990, p. 72). Van Dormael's analysis does not concern subtypes of analogical argumentation but rather an analysis of analogical reasoning *per se*. The subtypes of Dormael are distinguished from other reasoning (like inductive and deductive) by its creative function and seems very close to Ippoliti's non-demonstrative reasoning; the only difference seems to be that van Dormael emphasizes the counter-factual aspect. Although it can be contested that van Dormael and Ippolitis' subtypes in analogical reasoning really can be interpreted as subtypes of analogical argumentation, they are included under the criterion function for sake of completeness.

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[17] It is not clear that all these different types of reasoning can be used as analogical arguments.

Guarini questions Govier's classification of arguments by analogy. Govier's position (which several philosophers have followed) involves making a distinction between "argument by *a priori* analogies" and "argument by inductive analogies". Guarini accepts that some analogies can only be evaluated by means of empirical investigation, and he also accepts that such analogies make predictions (Guarini, 2004, p. 164-165). Thus, those two criteria that mark the difference in Govier's classification of inductive versus *a priori* analogies appear to hold.

However, the third criterion, that "*a priori* argument by analogy" makes use of hypothetical cases, is faulty, according to Guarini. He points out that whether the analogue needs to be actual depends on *how* the analogy is *employed*, and gives an example of an obvious *a priori* analogy that appeals to consistency but still must be actual in order to work.[18] Thus, he refutes Govier's classification with the method of counterexampling.

Guarini provides his own classification based on two criteria: whether the analogies support a judgment regarding how a case should be treated or classified or whether they support a prediction. This is clearly a functional/teleological taxonomy. "Classificatory analogical arguments" would in many cases coincide with what Govier and others a call *a priori analogy,* although the basis for subdivision is different. The same applies to "inductive analogies"; they would in many cases coincide with predictive analogies. Doury's criterion, *The Dialectical Orientation,* appears to fall into this category (Doury, 1999, pp. 147-148). This criterion is based on whether the argumentation has a positive purpose (supporting the arguer's argumentation or standpoint) or a negative purpose (refuting the opponent's argumentation). For instance, Reidhav's distinction between positive and negative arguments by normative analogy is made by difference in function (Reidhav, 2007).

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[18] The example was an analogy that used discrepant treatments of real similar cases to argue for the actual problematic treatment of black women by the U.S. courts. Further, as Guarini remarks, one cannot claim that the difference is that *a priori* analogies sometimes can make use of hypothetical cases, while inductive never can, since some inductive analogies work well even when the source analogue is hypothetical.

The application of analogy argumentation to other arguments occurs if an argumentation is criticized or supported by presenting a parallel to it, which means that the arguments must be accepted or rejected together. Juthe holds that "refutation by parallel argumentation" is a species of argumentation by analogy applied especially to another argumentation, with the purpose of refuting the attacked argumentation or supporting it against an attack by means of a parallel argumentation (Chapter 6 and Chapter 7). In its negative form it has been labeled "logical analogy" (Govier, 1985); "refutation by logical analogy" (Govier, 2010, pp. 325-327); "arguments from analogy" (Woods & Hudak, 1989); "counterexampling parallel arguments" (Hitchcock, 1992); "analogical arguments" (Guarini, 2004); "arguments by parallels" Hugon (2008); "refutation by logical analogy" (Copi & Burgess-Jackson, 1992; Copi, 1990); "method of logical analogy" (Krabbe, 1996); "refutation by parallel argumentation" (Chapter 6); "arguments by parity of reasoning" (Finocchiaro, 2007); "negative analogy" (van Eemeren et al., 2007, pp. 144, 155, 157); "rebuttal analogy" (Whaley, 1998; Whaley & Wagner, 2000; Whaley & Holloway, 1997; Whaley et al., 2015; Colston & Gibb, 1998; Colston, 1999, 2000; Hoffman et al., 2009); "refutational analogy" (Jansen, 2007a; 2007b). This dialectical dissimilarity seems to be the ground for identifying Govier's type "refutation by logical analogy" as a separate class different from inductive and *a priori* arguments by analogy.

Cameron Shelly has made a taxonomy of four types of analogical counterarguments (false analogy, misanalogy, disanalogy, and counter-analogy) that he classifies along two dimensions: orientation and effect (Shelley, 2004, 2002a, 2002b, 2002c). Orientation refers to whether we reject or accept that the analogy is a correct analogy, whereas effect refers to whether or not the counterargumentation provide a new conclusion. A *false analogy* counterargument rejects the original analogy by showing relevant differences between the source and the target case, arguing that the analogy is incorrect and has a destructive effect since it does not replace the criticized conclusion with a new one. A misanalogy refutes an analogy in the same

way as a false analogy but in showing the relevant differences also suggests a revised construal of the analogy which yields a new conclusion.

In the other two types (disanalogy and counter-analogy), according to Shelley, the analogy is accepted as a correct analogy, but the counterarguments operate by overriding the original analogy, through presenting further relevant data that motivate an alternative conclusion instead of the original one. While it is accepted that the analogy is correct, these two types operate on the principle that the analogy does not represent *all* information relevant to the conclusion. What Shelley calls "counter-analogy counterargument" is basically the same as Govier's "technique of counteranalogy" (see above); the difference is that Shelley asserts, contrary to Govier, that the effect of a counter-analogy is not to undermine the original analogy but to provide superior reasons for accepting an alternative conclusion (Shelley, 2004, p. 234). The disanalogy counterargument works in the same way. The difference, according to Shelley, is that counter-analogies add knowledge from a *different source domain* than the original argumentation, while disanalogies use the same source domain (Shelley, 2002b). Shelly also labels the "rebuttal analogy" as a counteranalogy, that is, an analogy used to rebut an analogical argumentation (Hoffman, Eskridge & Shelley, 2009, p. 139). This labeling may cause confusion since "rebuttal analogy" is often used as a method in which an argumentation is refuted by presenting a flawed parallel to it.

By which criterion should one classify these arguments as subtypes of analogical arguments? Shelley does not say. However, one feature stands out: they all *function* as counterarguments against other analogical arguments. They are a special kind of "analogy counterargument", or "analogical anti-analogical argumentation", that solely works against other analogical arguments and not against other types of arguments. Thus, I think that the most salient feature is the *refutative/criticizing function* against other analogical arguments. However, only disanalogy and counter-analogy are analogical arguments themselves; false analogy and misanalogy, although directed against analogical arguments, cannot themselves be characterized as analogical arguments.

Other examples of subtypes of analogical argumentation in which the author division is based on its criticizing function are Brewer's "argument by disanalogy" as well as Reidhav's division between "normative arguments from positive analogy" and "normative arguments from negative analogy", (Brewer, 1996, pp. 1006-1018; Reidhav, 2007, pp. 38-44). These appear to be identical with what Shelley labels "false analogy". Brewer also writes about "competing analogies" (Brewer, 1996, pp. 1012-1015) as common legal analogy argumentation, which is the same as the "counter-analogy counterargument" in Shelley's terminology (Shelley, 2004, 2002c). Brewer, however, sees "competing analogies" as a species of "argument by disanalogy" (i.e "false analogy" in Shelley's terminology).

**Table 4**. Shelley's classification of analogical counter-arguments.

| Effect | Orientation | |
|---|---|---|
| | Reject | Accept |
| **Destructive** | False analogy | Disanalogy |
| **Constructive** | Misanalogy | Counter-analogy |

Garssen's distinction between a descriptive and normative argument by analogy in which the latter operates by appealing to the principle of consistency is very similar to the classification of Govier and Guarini and some philosophers of law. The normative version has been subdivided into those arguments that appeal to the *principle of consistency* and those that appeal to the *principle of reciprocity* (van Eemeren et al., 2007, p. 139; Garssen, 2009). Still, Van Eemeren and Garssen do distinguish the subtypes by difference in function, in contrast to Guarini. The various labels of the subtypes are displayed in table 5.

**Table 5**. Analogical arguments distinguished by their difference in function.

| Predictive function | Supportive function | Classificatory function | Refutative function | | | Creative function | Pointing out common principle | Heuristic function | Author |
|---|---|---|---|---|---|---|---|---|---|
| | | | Criterion for classification: function or purpose of analogy in argumentation | | | | | | |
| | | | Criticizing: | | | | | | |
| | | | Arguments | | Claim/premise | | | | |
| | | | Not analogies | Analogies | | | | | |
| | | | | | | | | Presumptive analogical argument[19] | Cummings (2004, 2014) |
| | | | | | | Counter-factual analysis[20] | | | van Dormael (1990) |
| | Demonstrative reasoning by analogy | | | | | Non-demonstrative reasoning by analogy | | | Ippoliti (2006) |
| | | | Refutation by logical analogy | Counter-analogy | | | | | Govier (1985, 2010) |
| | Refutation by parallel argument | | Refutation by parallel argument | | | | | | Juthe (2009) |
| | Normative arguments from *positive* analogy | | | | | Normative arguments from *negative* analogy | | | Reidhav (2007) |
| Predictive analogical arguments | | Classificatory analogical arguments | | | | | | | Guarini (2004) |
| Predictive analogy | | | | | | | Proportional analogy | | Brown (1989) |
| Parallel case | | | | | | | Analogy | | Ehninger and Brockriede (1963) |
| | By parity of reasoning | | By parity of reasoning | | | | | | Woods and Hudak (1989) |
| | Basic logical form | | Refutation by logical analogy | Competing[21] analogies | Argument by disanalogy | | | | Brewer (1996) |
| | *A priori* analogy | | Counterexampling parallel arguments | | | | | | Hitchcock (1992) |
| | Argument by analogy | | Refutation by logical analogy | | | | | | Copi (1990) Copi and Burgess-Jackson (1992) |
| | | | Rebuttal analogy | | | | | | Whaley (1998); Whaley & Wagner (2000); Whaley & Holloway (1997); Whaley et al. 2015; Colston & Gibbs (1998) ; Colston (1999, 2000); Hoffman et al. (2009) |
| | | | Method of logical analogy | | | | | | Krabbe (1996) |
| | | | Negative Analogy | | | | | | Van Eemeren et al. (2007) |
| | | | Arguments by Parallels | | | | | | Hugon (2007) |
| | | | | Counter-analogy[22] | | | | | Shelley (2004) |
| | | | | Disanalogy | | | | | |
| | | | Refutational analogy | | | | | | Jansen (2007a, 2007b) |

[19] This label is mine.

[20] Van Dormael never labels analogical reasoning, so the label is mine based on his analysis.

[21] Brewer's argument by disanalogy shows that two cases are dissimilar. Although it could be an indirect criticism of an analogy, is not *essentially* against other analogies. Competing analogies, on the other hand, assuming his description, are essentially anti-analogical, since they compete with another previous analogue showing it to be inferior compared to the new (competing) analogy.

[22] The reader may object that Shelley himself claims that a counter-analogy or disanalogy does not undermine analogies, and therefore should not be in the column that criticizes analogies. However, these analogical counterarguments are still *applied* to other analogies. That is, they say something negative *about* other analogies: that the analogies in question are not providing the most warranted conclusion. Thus, in a sense, they do have the function of criticizing analogies.

As the astute reader may notice, several of the arguments distinguished by the previous criterion (the "differ in status" criterion), could be classified by this criterion as well, as having either a classificatory, supportive or predictive function. The reason that they are not included this table is that the *author* of those arguments did not classify them with that criterion. As stated in the beginning, this review is primarily intended to display how different theorists *have* made distinctions of subtypes of argumentation by analogy, not to display how subtypes *could* or *should* be classified. If the position of an author is unclear or employs several criteria, however, I have incorporated them in several tables.

## 2.4. Logical Form

This criterion distinguishes the subtypes by reference to differences in the *intrinsic logical structure* or *differences in logical constants* of the argument scheme. The criterion can be defined:

> *Logical form* is the criterion employed for subdivision if and only if two analogical arguments are distinguished as two types based on whether they have contrasting logical form or logical constants.

By dissimilar "logical form", I mean that the inferences of the scheme flow in different directions, "different pathways of inference", or that the schemes have contrasting logical patterns, like the form of *modus ponens* differs from the logical form of *modus tollens* or the disjunctive syllogism. By "difference in logical constants" I mean both in the standard sense like truth-functional connectives and first-order quantifiers,[23] but also in a broader sense, the sense that the division is based on some kind of conceptual distinction between the arguments.

Henri Prade, Gilles Richard, and Laurent Miclet distinguish between three types of analogical reasoning (Prade & Richard, 2010, 2009; Miclet et al., 2011). The standard type of analogical reasoning is what they call analogical proportions, which are statements of the form *a* is to *b* as *c* is to

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[23] For a discussion on how to determine the logical constants, see Warmbrod (1999).

*d*, which implies that the way *a* and *b* differ is the same as the way *c* and *d* differ.[24] The next type is the *reverse analogy*, which states that what *a* is to *b* is the *converse* of what *c* is to *d*. The third type is *paralogical proportion*, which states that what *a* and *b* have in common, so do *c* and *d*. These contrasting inferences are divided by virtue of having a separate logical form and employing different logical principles and/or "pathways of inference". For instance, analogical proportion utilizes (1) *reflexivity;* (2) *central permutation,* and (3) *symmetry,* while paralogical proportion utilizes (1) *bireflexivity*, (2) *even permutation,* and (3) *symmetry*. These cases of analogical reasoning are not clear-cut examples of argumentation by analogy. However, since they can at least be used as arguments in certain contexts, they are included in this work.[25]

Wreen distinguishes between two logical forms (neither of which corresponds to the logical forms distinguished by Prade and Richard) and argues that it is wrong to think that there are two different types of analogical arguments that share the same form. It is rather a spectrum of diverging argument schemes, with two clearly-identified contrasting logical forms at the end point of the spectrum (Wreen, 2007). Thus, according to Wreen, except in terms of logical form, there are no different "kinds" of arguments by analogy, only one scheme which can be expressed in two differing logical forms. According to Wreen, the received opinion among philosophers is that there are two kinds of argumentation from analogy, which apparently have the same form, but are categorized on the basis of propositional content (e.g., future-oriented or not), differing modes of epistemic access (e.g., *a priori* or empirical), epistemic function (e.g., prediction or classification), or strength of inference (e.g., inductive or non-inductive). The different forms Wreen simply labels Form *A* and *B* (Wreen, 2007, pp. 221-222, 227):

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[24] These types of analogical inferences can be said to be analogical reasoning, and not specifically analogical *arguments*, since they are about the identity of two relations: a is to b as c is to d. However, since such reasoning could be part of an analogical argumentation, they are included.

[25] The reader may object that the same could be said of analogical explanations, but explanations may stand completely alone, being sufficient on their own. However analogical reasoning of proportion does usually not stand alone; it is usually part of either an analogical explanation or an analogical argumentation.

(Form A)

(1) X has characteristics a, b, c ....
(2) A has characteristics a, b, c....
(3) A also has characteristic x.
(4) A's having x is caught up with its having a, b, c...
(5) B has characteristics a, b, c...
(6) B also has characteristic x.
(7) B's having x is caught up with its having a,b, c....
... .........
... .........
(C) Therefore, X has characteristic x.

Form B:

(1) X has characteristics a, d, g....
(2) A has characteristics a, b, c.
(3) A has characteristic x.
(4) A's having x is caught up with its having a, b, c.
(5) B has characteristics d, e, f.
(6) B has characteristic x.
(7) B's having x is caught up with its having d, e, f.
(8) C has characteristics g, h, i.
(9) C has characteristic x.
(10) C's having x is caught up with its having g, h,
(11) ...........
(12) (C) Therefore, X has characteristic x.

Wreen makes a critical examination of Barker's view as a backdrop in order to identify and clarify the second argument form (Wreen, 2007, p. 222). He has critical objections to Barker's classification. Barker did not base it on the ordinary dichotomy in the *type of inference* (deductive vs. inductive), but rather on a mixture of content of the conclusion (predictive vs. non-predictive) and the relation between premises and a conclusion (whether a conclusion goes beyond what is contained in the premises or not). Wreen's most important objection is that Barker's analysis does not result in any

argument scheme for the assumed categorically distinct type of argumentation by analogy which Barker claims is neither inductive nor deductive.[26] He suggests that, in reality, the other argumentation Barker sought was another *logical form,* which Wreen names 'Form B'.

Brewer discusses arguments by analogy in a legal setting where the main purpose of reasoning by analogy is to discover rules or to determine whether a rule applies or not (Brewer, 1996). According to Brewer, arguments by analogy utilize a reasoning process that belongs to a broad family of example-based arguments that are irreducible to argument from rules (i.e. ordinary inductive, deductive or abductive arguments) (Brewer, 1996, p. 983). The logical form of an analogy is thus (Brewer, 1996, p. 966, see also Weinreb's interpretation of the Brewer's logical form, Weinreb, 2005, p. 29):[27]

(1) z has characteristics F, G . . .
(2) x, y, also have characteristics F, G . . .
(3) x, y, also have characteristic H.
(4) The presence in an individual of characteristics F, G . . . provides sufficient warrant for inferring that H is also present in that individual. (AWR - Analogy Warranting Rule).

_____

(5) Therefore, there is sufficient warrant to conclude that H is present in z.

This basic formula can be changed by modifying some premises into an inductive analogy (Brewer, 1996, p. 968):

(4') The presence in an item of F and G makes it (sufficiently) probable that H is also present (inductive analogy-warranting rule).
(5') Therefore, it is (sufficiently) probable that H is present in y.

[26] The other two objections of Wreen argue that several arguments which on Barker's definition are non-deductive are clearly inductive. However, his objection misses that they could be said to be *abductive,* which would avoid the objection.
[27] Weinreb's formulation is more concise and he also criticizes Brewer's position, arguing that his analogy warrants a rule nullifying the analogical part in the inference, making the argumentation deductive or inductive.

or into a analogy argumentation with a deductive step (Brewer, 1996, pp. 969-971):

(1") y has F and G.
(4") All items that have F and G also have H.

———————————

(5") Therefore, y has H.

Brewer's "argument by *dis*analogy" has the following logical form (Brewer, 1996, p. 1010):

(1) x and y both have F;
(2) X has G;
(3) y does not have G (y has not-G);
(4) x also has H;
(5) any F is H unless it also has not-G (all things that are both F and G are H) (DWR – disanalogy-warranting rule)

———————————

(6) Therefore, the presence of F and H in x does not provide a sufficient basis for inferring the presence of H in y.

Brewer's "argument by disanalogy" can be given in both a deductive and an inductive form similar to his ordinary "analogical argument". Ulrich Klug characterizes various types of analogical arguments (he also makes subdivisions by another criterion which is discussed in section [2.2.6]). First, there is analogical reasoning that proceeds from a precedent to a case which is very similar but does not obviously fall under a rule.[28] This is similar to Hage's case vs. case comparison (see section [2.2.9]). The second main type of analogical reasoning, according to Klug, is based on *proportion*, a relation between the terms and the predicates; it seems to be the same as what other authors have called "proportional analog*y*" or "analogical proportions". The third type is defeasible reasoning, a kind of imperfect "deductive reasoning" with the following scheme:

———————————

[28] The information on Klug's position is taken from Hage (2005) and Macagno and Walton (2009).

(1) M is P.
(2) S is similar to M (in virtue of the properties a, b, c. . .).
_____
(3) Therefore S is P.

Peczenik has argued that the application of statutory analogy "analogia legis" is needed as a result of a gap in the law (Peczenik, 1971, 1989). According to him such an argument scheme should be constructed (Peczenik, 1989, p. 39; Peczenik, 1971, p. 331):

1. If the fact F or another fact, relevantly similar to F, occurs, then obtaining of G is obligatory
2. H is relevantly similar to F
3. If H occurs, then obtaining of G is obligatory

Peczenik asserts that there are two versions of *analogia legis* (P="decided in a way W"):

Direct version:

1. M ought to be P (a legal norm quoted).
2. C is $S_M$ (means "essentially similar to M")
_____
3. Hence: C ought to be P.


Indirect version:
1. M ought to be P.
2. X is $S_M$ (means "essentially similar to M")
_____
3. Hence: X and M ought to be P (a general principle)

It appears as if Peczenik bases his divisions on a logical criterion. The subtype "direct version" seems almost identical to Klug's analogical reasoning that proceeds from a precedent to a similar case, whereas the indirect version is strikingly similar to Klug's "imperfect deduction."

Gerhard Minnameier claims that there are two kinds of analogical inferences, which he never labels but can be labeled "abductive analogy" and "inductive analogy" because one of them appears abductive. Both types have an inductive part, but the inductions work in contrasting parts of the inferential processes and can be divided into two types because they represent different inferential paths (Minnameier, 2010).[29] Douglas Walton claims that there are two schemes of argumentation by analogy (Walton 2014) that seem to be distinguished based on a logical criterion. The difference between the schemes is that only one of them makes any reference to similarity, whereas the other is very "inductive". The basic argument scheme has in one of the premises a requirement that there is a similarity between the two cases (Walton, 2006, pp. 96-100; 2014, pp. 24-30; Walton et al., 2008, p. 56):

(1) Generally, case C1 is similar to case C2. (Similarity premise)
(2) A is true (false) in case C1. (Base premise)
_____
(3) A is true (false) in case C2. (Conclusion)

The other scheme, according to Walton, is an inductive form of argumentation by analogy, which requires no reference to similarity, and can in that respect be sharply contrasted with the first scheme:

(1) A has attribute a, b, c and z.
(2) B has attributes a, b, c.
_____
(3) Therefore, B probably has z also.

---

[29] It should be noted that these labels are mine and that Minnameier is an uncertain case, because it is unclear whether he thinks that analogical reasoning is a genuine category of reasoning of its own or whether it is a combination of inductive and abductive reasoning. Sometimes he gives the impression that builds on Peirce's suggestion that analogy is a combination of abduction and induction. If that interpretation is correct, then Minnameier thinks that analogical reasoning has two subtypes because the inductive and abductive reasoning can be combined in two dissimilar ways. For reasons of being inclusive, his subtypes are included.

Walton also maintains that one must use both these schemes in order to solve some philosophical and juridical problems.[30] The reader should note that the argument scheme Walton calls "inductive argument by analogy" is strikingly similar to what Brewer labels "basic logical form" of "argument by analogy", whereas that which Walton calls "basic scheme" is strikingly similar to what Klug calls analogical "defeasible reasoning" or "imperfect analogical deduction". However, Walton also proposes a scheme in which the notion of relevance is part of the scheme (Walton et al., 2008, p. 58):[31]

1) Generally, case C1 is similar to case C2. (Similarity premise)
2) The similarity between C1 and C2 observed so far is relevant to the further similarity that is in question.
3) A is true/false in case C1. (Base premise)
_____
4) A is true/false in case C2. (Conclusion)

Having relevant similarity as part of the scheme is criticized by Brewer (1996, p. 933) because it is a too unclear concept. Bipin Indurkhya talks about three types of analogy (Indurkhya, 1989, 1992). First there is analogy by rendition, which is when a creative act abstracts similarities between objects which did not exist prior that act. It is to place a certain perspective on two different objects so that one can perceive them as having similarities although this is only a subjective projection. Thus, a new level of description is created.[32] Secondly there is "proportional analogy", which refers to

[30] It is ambiguous what criterion Walton has as ground for the distinction. However, taking into account a number of his writings and in particular his later writings, I have the impression that the most justified criterion would be "logical form".

[31] It seems difficult to discern the criterion for the division between this and his "basic scheme". Since it uses contrasting concepts I presume that a logical distinction is a good suggestion.

[32] Indurkhya gives this example: "It was not that the researchers first noted some similarities between the paintbrush and the pump, and then imported more features from pump to paintbrush; but rather the act of viewing the paintbrush as a pump created the similarities - similarities that were not there before".

relations having the form "A is to B as C is to D", as in "gills are to fish as lungs are to man." Thirdly, there is "predictive analogy", which involves concluding that there are further similarities between two objects or situations based on some actual similarities.[33] He also calls this analogical inference and analogical reasoning. It is doubtful whether these distinctions regard analogical argumentation in contrast to other kinds of analogical reasoning. However, for the sake of completeness they are included since nothing prevents their being used in an argumentative manner. The reader should note that Indurkhya's divisions are almost identical to divisions made by other authors (see the subtypes by Henri Prade, Gilles Richard, and Laurent Miclet in section [2.4]), although these other authors have used the function or status of the analogue to make the divisions. The various proposed subtypes can be seen in Table 6.

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[33] Although Indurkhya admits that analogy pervades our thinking, he denies that any true justification can ever be found for predictive analogy. He even thinks that predictive analogy may hinder cognition by preventing one from seeing things as they are.

**Table 6.** Analogical arguments distinguished by their different logical form.

| Criterion for classification: logical form of argument | | | | | Argument by disanalogy[34] | | Basic logical form | | Author |
|---|---|---|---|---|---|---|---|---|---|
| Form A | Form B | | | | Inductive disanalogy | Deductive disanalogy | Inductive analogy | Deductive analogy | |
| | | | | | | | Inductive analogy | Deductive analogy | Wreen (2007) |
| | | | | | Inductive disanalogy | Deductive disanalogy | | | Brewer (1996) |
| | Paralogical proportion | Reverse analogy | Analogical proportion | | | | | | Prade and Richard (2010); Miclet, et al. (2011) |
| | Analogy by rendition[35] | Predictive analogy[36] | | Proportional analogy | | | | | Indurkhya (1989), Indurkhya (1992) |
| | | | | Imperfect analogical deduction / Analogy based on proportion | | | | | Klug (See Walton et al. (2008) |
| Analogia legi Direct version | Analogia legi Indirect version | | | | | | | | Peczenic (1989; 1971) |
| Abductive analogical inference / Inductive analogical inference | Abductive analogical inference / Inductive analogical inference | | | | | | | | Minna |
| | | | | Basic scheme | | | | Inductive argument from analogy[37] | Walton et al. (2008); Walton (2012, 2014) |

Reasoning from rule to similar case

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[34] Brewer never explicitly defines any "argument by inductive disanalogy", but it seems clear that a version of this could be formulated following the same line of thinking *mutatis mutandis* with the argument by deductive disanalogy.

[35] This is also labeled "interpretive analogy".

[36] This is also labeled "analogical inference".

[37] This label is mine, Walton never really labels the argumentation. His argumentation could arguably also be classified on basis of logical form, see section [2.2.4]. Sometimes Walton uses the term "basic scheme".

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