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Le problème du caractère distinctif des arguments analogiques

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Article abstract

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The Distinctiveness Problem of Analogical Arguments

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Abstract: The orthodox view holds that analogical arguments are a distinctive type of argument, while the eliminative view and its enhanced variant proposed in this paper contend that analogical arguments can be reducible to non-analogical arguments by eliminating the similarities proposition. This paper shows that the existing defense for the orthodox view fails to tackle the challenge posed by the eliminative view and its enhanced variant. The novel defense for the distinctiveness of analogical arguments argues that an analogical argument is composed of both a conductive and principle-based argument. Consequently, analogical arguments remain irreducible, as the similarities proposition cannot be eliminated.

Résumé: Le point de vue orthodoxe soutient que les arguments par analogie constituent un type d'argument distinctif, tandis que le point de vue éliminatif et sa variante améliorée proposés dans cet article soutiennent que les arguments par analogie peuvent être réduits à des arguments non analogiques en éliminant la proposition de similitudes. Cet article montre que la défense actuelle du point de vue orthodoxe ne parvient pas à relever le défi posé par le point de vue éliminatif et sa variante améliorée. La nouvelle défense du caractère distinctif des arguments par analogie soutient qu'un tel argument est composé à la fois d'un argument conducteur et d'un argument fondé sur des principes. Puisque la proposition de similitude ne peut pas être éliminée, les arguments par analogie restent irréductibles.

Keywords: analogy, analogical argument, conduction, conductive argument, similarities

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1. Introduction

Analogical arguments (analogies) are usually viewed as one of the most important types of arguments.[1] The study of analogies has produced numerous pieces of literature in the past decades, but it is "far from evident" what such argument consists of and how it may be analyzed and represented (Ribeiro 2014, p. 1). Not surprisingly, scholars from various backgrounds, including argumentation theory, philosophy of science, psychology, and formal logic, have presented various structures of analogical arguments. For instance, argumentation theorists think that the analogical argument is that two things are analogous in a certain respect because they are analogous in some relevant respects. These scholars have developed various versions of schemes and critical questions to analyze such arguments (e.g., Groarke and Tindale 2004; Walton et al. 2008). Philosophers of science introduce the tabular representation of analogical arguments, which consists of horizontal relations concerning the similarities between two things and vertical relations representing the causality among different respects of one thing (e.g., Hesse 1966). In the realm of cognitive science, researchers aim to delineate the horizontal (similarity) relation using computational methods, primarily utilizing structure-mapping theories and case-based reasoning theories (e.g., Bartha 2010).

Despite the diversity in the structural constructions of analogies, they tend to share a *foundational presupposition*: the significance of similarities between two objects in analogical arguments. The sophisticated schemes of analogical arguments are developed through the characterization of the foundational presupposition in more precise and systematic ways, such as a tabular representation or a computational approach (e.g., Hesse 1966; Bartha 2010). I believe it is plausible to say that there is a fundamental structure for an analogy that just captures the common view. In this regard, Walton's argument scheme of analogical arguments (Walton et al.

[1] Analogies have different functions, such as argumentative, explanatory, and descriptive functions, but this paper focuses on the argumentative function (i.e., analogical arguments). In this paper, the term "analogy (analogies)" specifically refers to analogical arguments unless otherwise specified.

2008, p. 56), which succinctly embodies this foundational presupposition, can be perceived as the fundamental structure of analogy:

> Major Premise: Generally, case C_1 is similar to case C_2.
> Minor Premise: Proposition A is true (false) in case C_1.
> Conclusion: Proposition A is true (false) in Case C_2.

For ease of reference, C_2, seen as the argument target, can be termed the primary subject (or the target domain), and *C1*, compared with the primary subject, can be termed the analogue (or the subject domain). The major premise can be termed *the similarities proposition*. As a necessary premise, the similarities proposition represents the logical role of similarities between two cases in analogical arguments. More advanced schemes that build upon the foundation of this similarities proposition can be viewed as expanded versions of Walton's above scheme. In essence, while disagreements may arise regarding the precise structure of analogical arguments, there tends to be a consensus among theorists regarding the fundamental role of similarities as the bedrock of the structure. This fundamental role of similarities *differentiates* analogical arguments from other types of arguments, such as arguments from expert opinion, abductive arguments, causal arguments, and so on. In this sense, it is common to think that analogical arguments are *a distinctive type* of argument, which is termed *"the orthodox view"* (or simply "OV") in this paper.

However, some theorists argue that the similarities proposition has only an epistemic function and not a logical function so the similarities proposition can be *eliminated* (e.g., Agassi 1988; Waller 2001; Kaptein 2005). They think that the similarities of analogy only stimulate people to figure out certain underlying principles (i.e., the epistemic function) but do not provide support for the conclusion (i.e., the logical function). These theorists argue that the similarities proposition, often perceived as the distinctive aspect that sets analogical arguments apart, could be deemed logically redundant and thus could be removed from the structure of analogies. This viewpoint, termed "*the eliminative view*" (or simply "EV") in this paper, challenges OV that similarities, as

conventionally understood, inherently distinguish analogical arguments from other types of arguments.

To defend OV, some theorists endeavor to counter EV. They contend that the underlying principle should not be regarded as a premise within the logical structure of analogy (e.g., Govier 2002; Guarini 2004, Bermejo-Luque 2012). In the current landscape of discussions on analogies, certain topics, like the computational modeling of analogies, tend to attract much more attention, while the dispute between OV and EV might not receive equal attention. Nevertheless, I believe this dispute significantly shapes the distinctiveness of analogical arguments. This core issue, referred to in this paper as the "*distinctiveness problem of analogical arguments*," stands as a foundational concern in the logical status and structure of analogy. Should analogical arguments fail to be a distinctive type of argument (i.e., EV is correct), this would challenge OV on the distinctiveness of analogy, thereby necessitating a critical reconsideration of their logical foundation.

This paper aims to delve into a perhaps *underestimated* but *fundamentally significant* debate, revealing that EV and its potential variations might present even greater challenges than what proponents of OV initially anticipated. Therefore, the essential matter concerning the logical structure of analogy, referred to as the "*distinctiveness problem of analogical arguments*," remains unresolved, indicating a need for a novel defense of the distinctiveness of analogical arguments.

The structure of the following sections is as follows: In section 2, I will reconstruct EV and underscore its potential threat to the logical distinctiveness of analogical arguments. Section 3 will elaborate on how proponents of OV criticize EV and will discuss their failure to address the enhanced EV I propose. In section 4, I will introduce a novel defense for OV by reconstructing analogies as linear structures that are comprised of conductive arguments and principle-based arguments. I will also argue that this approach effectively counters the enhanced EV and provides an effective defense for OV. Finally, section 5 will offer a summary and explore the implications of the novel defense.

2. The challenge from the eliminative view

The main idea of EV is that the similarities of analogy *merely* have the epistemic function in the sense that they merely lead the arguers to think about underlying principles. According to Agassi (1988), "the fascination of analogy" lies in its inherent looseness and vagueness. However, these very qualities make analogies suggestive and heuristic, serving to stimulate thought processes and incite intellectual creativity. For instance, Agassi highlights how loose and vague analogies have historically led to the formulation of scientific hypotheses, like applying a mathematical theory about heat transfer to the realm of electrostatics. Moreover, Waller (2001) elaborates on how analogies contribute to the formation of ethical hypotheses (i.e., underlying principles) in moral reasoning. His analysis employs the example of "the violinist analogy," a renowned analogy in the field of moral philosophy introduced by Thomson (1971), which clearly illustrates the mechanics of EV.

The violinist analogy can be briefly stated as follows (Waller 2001, p. 201). Is it morally wrong to prohibit a woman who is pregnant due to rape from opting for an abortion? For people in some cultures, the issue of abortion might be highly controversial. To help people make a judgment, one can turn to the "violinist analogy." This hypothetical scenario unfolds as follows: Imagine awakening one morning to the realization that you have been abducted and are confined within a hospital room. Lying beside you is a famous yet severely ailing violinist, and your bodies are connected. The violinist is suffering from acute kidney failure, and if her blood is not purified, the toxins in her blood will soon kill her. Music fanatics somehow learn that you are currently single and that your blood type is an exact match for the violinist, so they kidnap you and connect your body to the violinist. Now your kidneys have dual responsibilities: to purify your blood and the blood from the violinist. This process will last about nine months and will cause inconvenience but no harm to your body. If you disconnect from the violinist now, she will die. Given this, the fanatics will force you to stay connected to the violinist to save her life.

Is it morally wrong for the fanatics to take such an action? Most likely—this action is widely regarded as unacceptable since com-

pelling someone to save another is ethically problematic. This decision might be easier to make compared to the complex issue of abortion. Crucially, if you find this coercion morally wrong, it seems to follow that preventing a woman pregnant due to rape from obtaining an abortion is also morally wrong *for the same reasons*. This is an analogical argument in ethics. Nevertheless, how exactly does the argument work? Waller reconstructs the argument as follows (*ibid.*):

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*.

According to Waller's structure above, "case *a*" refers to the violinist case, while "case *b*" refers to the abortion case. Premises 1 to 3 show that the purpose of case *a* is to prompt the arguer to identify principle *C*, which implies *b*. For the violinist case, Waller thinks that the principle might be that "we do not have an obligation to save or sustain a life when we have done nothing to take on the obligation" (2001, p. 202). Based on the principle, one can imply that a woman who is pregnant due to rape does not have an obligation to continue her pregnancy (i.e., it is immoral to force her to keep her pregnancy). It is worth noting that there is *no* similarities proposition in Waller's structure. According to Waller, the function of the analogy is to help us "recognize a principle that we already hold" rather than "establish the principle" (2001, p. 208). It clearly indicates that the analogy just has an epistemic function but not a logical one. Thus, the similarities proposition does not find a place as a premise in Waller's structure. In this sense, the similarity proposition is eliminated in Waller's structure.

In addition to analogies in ethics, analogies in law can also be analyzed by EV. Arguments from precedent, which can be viewed as a subtype of analogical arguments, play a fundamental role in the legal argumentation of common law systems. Precedents, referring to past cases, provide judges with authoritative reasons to

guide their decisions in present cases. There are two main approaches to arguments from precedent, namely the rule-based approach and the similarity-based approach (Stevens 2016, pp. 16-46). According to the rule-based approach, a judge decides if the present case aligns with a rule established or referenced by a precedent. Conversely, the similarity-based approach involves a judge comparing the precedent and the current case. If they are legally the same, the judge's decision for the present case will follow the precedent. The debate between these two approaches shows that the dispute regarding the distinctiveness of analogical arguments is reflected even in the subtype of analogical arguments, specifically arguments from precedent. While this paper does not specifically delve into arguments from precedent in law, the understanding of this subtype of analogical arguments can be enriched through the discussions surrounding the EV and OV dispute presented here.

I believe EV can further enhance the criticism of the similarity-based approach. One of the main criticisms of the similarity-based approach is that it would lead judges to act with a degree of unconstrained decision-making (Stevens 2016, pp. 32-46). However, EV takes this critique a step further by considering this unconstrained nature as not a minor flaw but a logical redundancy. Kaptein (2005, p. 501) asserts that the similarities proposition falls within the realm of "heuristics and rhetoric," bearing no relevance to argument justification. To illustrate this point, he employs the case of *Adams v. New Jersey Steamboat Co.* In this case, a male passenger on a steamboat sues the company for damages after losing money in the cabin. The court rules in this passenger's favor, citing similarities to the inn case, where innkeepers are liable for residents' belongings. Kaptein argues that the crux of the legal reasoning lies in the underlying principle that "if there is a general duty or obligation of care on parties offering night accommodation, then both innkeepers and steamboat companies are under such a duty or obligation (*ibid.*)." Consequently, he contends that the similarities between the two cases only serve as a "suitable starting point from a purely heuristic point of view," rendering them logically redundant in the structure of analogy (*ibid.,* p. 502).

From the perspective of EV, analogies in ethics and law can be reducible to *non-analogical* arguments. This viewpoint offers a significant theoretical advantage by enhancing the clarity of argument analysis and evaluation. The similarities between cases in analogies often possess a degree of vagueness, indefiniteness, or are what can be termed as "unanalyzed" (Gamboa 2008, p. 233). As a result, the evaluation of such arguments often relies on "rough intuitions" (Waller 2001, p. 210). In contrast, the underlying principle in these cases tends to be determinate, affording the evaluator a clearer understanding of the inferential connection within the argument. This advantage is particularly evident in Waller's structure when comparing an analogical argument with its counter-analogy, such as Thomson's violinist analogy versus Fischer's starveling analogy (*ibid.,* p. 209). In contrast to relying on rough intuitions when evaluating these competing analogies, the task of analyzing and comparing two underlying principles becomes significantly more *manageable* for the evaluator.

To conclude, EV presents a severe challenge to the logical foundation of analogy by eliminating the logical position of the similarities proposition and reconstructing the structure of analogy as a non-analogical (i.e., principle-based) structure. If the similarities proposition loses its logical role in analogical arguments, analogical arguments would not be a distinctive type of argument and become non-analogical arguments that rely on principles.

3. The defense for the orthodox view and the enhanced eliminative view

EV attacks OV by eliminating the logical position of the similarities proposition and instead justifying the underlying principle. On the contrary, in defense of OV, theorists try to attack the *legitimacy* of the underlying principle and justify the logical position of the similarities proposition. I will discuss three primary defenses put forth by these theorists and demonstrate that they do not effectively address the enhanced EV I propose.

Defense 1 (D1) for OV

Some theorists, like Govier (1989, 2002) and Guarini (2004), argue that EV fails to align with the original intention of the arguer, making the principle-based reconstruction unfair to them. Govier suggests that when someone employs an analogical argument, they usually aim to reason from one case to another without necessarily committing to a universal principle. Moreover, she says that arguers usually sense important resemblances between cases without being able to specify them clearly, which is "the trick and charm" about analogies (1989, p. 148). Guarini, drawing from his experience teaching about analogies, notes that some students are persuaded by analogical arguments without feeling compelled to endorse any principle because they "simply lose interest in generating and testing moral principles" (2004, p. 157). He maintains that even though underlying principles may play a role in the theory of analogical arguments, this does not automatically warrant their inclusion as premises in argument reconstruction *(ibid.).* In my view, while it is reasonable to acknowledge that arguers might not initially formulate principles when constructing analogical arguments, this does not necessarily conflict with the principle-based reconstruction.

Advocates for EV could respond to D1 by suggesting the following: Argumentative intention can sometimes be vague and dynamic, especially when an arguer relies solely on intuition to present their argument. Even though it might be intuitively fascinating to reason from one case to another case without appealing to an underlying principle, this approach unfortunately remains vague and unanalyzed. This indicates that the arguer's intention remains to be clarified. Notably, one might implicitly commit themself to an underlying principle, even if this principle is not explicitly mentioned in their original words. In fact, this is precisely the purpose of argument reconstruction—to reveal the underlying structure of the argument.

It is unsurprising that argument reconstruction reveals some unexpressed (implicit/unstated) premises that were not explicitly stated by the arguer. In fact, revealing unexpressed premises is a routine part of the argument reconstruction process, which in turn helps to enhance the clarity of the arguer's intention. For example, let us consider Tim's attempt to persuade his friends that Stanford

University is a world-class academic institution. He states, "Stanford University is consistently ranked among the top universities in the world because that is what Dr. Smith said." Argumentation theorists are likely to reconstruct Tim's statement as an argument from expert opinion, as shown below:

> Premise 1: Dr. Smith is an expert in the field of higher education containing the proposition that Stanford University is consistently ranked among the top universities in the world.
> Premise 2: Dr. Smith asserts that "Stanford University is consistently ranked among the top universities in the world" is true.
> Conclusion: Stanford University is consistently ranked among the top universities in the world.

The above argument reconstruction is based on the widely accepted schemes of argument from expert opinion proposed by Walton et al. (2008, p. 310). It is obvious that premise 1 is an unexpressed premise as it is not included in Tim's original words. Tim might implicitly commit to the premise, or he might not realize the importance of Dr. Smith's specific expertise and its relevance to her assertion. Theorists, however, tend not to say that the above reconstruction goes against Tim's argumentative intention. Why is this the case? According to the principle of charity, interpreters should generate the most plausible argument based on relevant contextual information. Compared to Tim's original words, the reconstructed argument is more plausible because premise 1 explicitly *fills the logical gap* between the premises and the conclusion (i.e., why Dr. Smith's utterance is right). The reconstruction will not be considered to distort Tim's argumentative intention unless there is good evidence that Tim does not accept premise 1.[2] In the realm of

[2] In this context, I am assuming Govier's concept of "moderate charity," which falls between truistic and strong charity. According to this perspective, when multiple factors such as context, logical pattern, professed intention, and indicator words provide equal support for several different interpretations, we should adopt the one that generates the most plausible argument (Govier 2018, p. 226). I am aware that various interpretations of the principle of charity exist (see

analogical arguments, the underlying principle acts as an unexpressed premise that is properly added. This addition perfectly fills the logical gap between similarities among objects and a certain property of the primary object, which makes the argument more analyzable and understandable (i.e., more plausible), as I previously argued.[3] The unexpressed premise containing the underlying principle will not be considered to distort the arguers' argumentative intention unless there is good evidence that the arguers do not accept the principles, though they do not state the principles in the beginning.[4] Therefore, the principle-based reconstruction does not go against the arguer's argumentative intention. Instead, it helps arguers to clarify and refine their intention.

Defense 2 (D2) for OV

EV isn't feasible in argument reconstruction because the underlying principle is generally difficult to formulate: (a) Typically, arguers find it easier to comprehend case similarities than to articulate the underlying principle (Govier 1989, p. 149; Botting 2012,

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Govier 2018, pp. 203-242), but it would be beyond the scope of this paper to discuss them respectively.

[3] Bermejo-Luque (2012, pp. 3-4) thinks that the dispute over analogical structure requires a model of argument reconstruction that "does not beg the question," which means that we should find a rationale for argument reconstruction that does not assume what the "real" structure of analogical arguments is. I agree with Bermejo-Luque. In my argument reconstruction, I do not presuppose that the principle-based structure is the real structure of analogical arguments. Rather, I give reasons for why this form of argument reconstruction is more convincing.

[4] Guarini (2004, p. 156) claims that his students are not interested in any principle when they are persuaded by analogical arguments. His observation is important because it shows that it is intuitively unproblematic to make analogical arguments without appealing to underlying principles. However, I do not take this as a good reason to support the position that the arguers do not accept the underlying principle for several reasons. First, Guarini's findings seem to come from his personal observation rather than a rigorous empirical study. Second, the students Guarini mentioned are the audiences rather than the arguers, and the students could implicitly accept the underlying principles though they do not figure it out in certain situations. Third, Guarini's concept of "principles" (*ibid*.) refers to "exceptionless principles," which is not necessarily accepted by the proponents of EV. I will discuss this later.

p. 113); (b) The similarities explicated by analogical arguments might not provide evaluators with enough material to obtain the principle (Stevens 2016, p. 61). However, these two concerns can be resolved by EV: (a) As Waller (2001, p. 205) said, it is undoubtedly difficult to formulate the underlying principle as critical thinking should not be easy. If arguers find articulating the principle challenging, they should strive for more profound reflection to extract the principle from case similarities. Thus, the difficulty of specifying the principle, while formidable, should not be an excuse for arguers to lower their standards. (b) However, argumentation theory predominantly views arguments as dialogues between arguers and audiences (e.g., argument schemes theory, pragma-dialectics). From this dynamic stance, evaluators, engaging in dialogue, can get more information to discern the principle and aid arguers in clarifying it.[5] Even in instances where direct communication with the arguer is not feasible, evaluators can make efforts to reconstruct the principle based on contextual information and the principle of charity.

Defense 3 (D3) for OV

EV turns all analogical arguments into deductive arguments, thereby resulting in analogical arguments not being capable of capturing varying degrees of argument strength (Govier 2002, p.156; Guarini 2004, pp. 156-161). This is a powerful defense because it is intuitively correct to think that analogical arguments have varying strengths of argument. For instance, "weak analogy" is a common logical fallacy in many logic textbooks. Furthermore, Guarini (2004, pp. 161-162) proposes an inductive structure for analogical arguments. He thinks that an important property of this reconstruction is that the premises do not entail the conclusion, thereby allowing for varying degrees of strength. However, I will seek to enhance EV by a) Arguing that even inductive analogies

[5] Some scholars (Bermejo-Luque 2012, p. 18; Shecaira 2013, p. 417) think that there are "bare analogies" that do not list relevant similarities and underlying principles, such as "Having sex with people with severe mental retardation is like having sex with children. It is morally unacceptable." From the dynamic perspective, however, it is plausible to say that bare analogies can also be reconstructed as principle-based arguments after further dialogical interaction.

can still be reducible to non-analogical arguments and b) arguing that EV does not necessarily require all analogical arguments to be transformed into deductive ones.

In the previous section, I have shown that analogical arguments in ethics and law can be analyzed by EV. Some might categorize the mentioned analogies as *deductive analogies* (Waller 2001) or *a priori analogies* (Govier 1989, 2002), but there is another type of analogy—*inductive analogies*. Deductive analogies, according to Waller, are deductions from principles, as illustrated by Waller's structure discussed earlier. A priori analogies, as defined by Govier, encompass analogies where analogues can be hypothetical cases and do not necessarily have to be real cases. While there is a classification debate over deductive analogies and a priori analogies (Waller 2001; Govier 2002), both Waller and Govier acknowledge the existence of inductive analogies as another type of analogy.[6] The question at hand is whether inductive analogies can evade the criticisms posed by EV. Unfortunately, they cannot. I contend that EV can still be applied to inductive analogies. A standard structure for inductive analogies is commonly represented as follows (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*.

In my view, the above structure can be reducible to the fundamental structure of analogy suggested by Walton. Premises 1 and 2 here illustrate the similarities between cases, which can be reformulated as "*D* is similar to *E* in terms of characteristics *e*, *f*, *g*, and *h*." In other words, premises 1 and 2 can be combined into premise 1*:

[6] It would be beyond the scope of this paper to discuss the classification dispute regarding deductive and a priori analogies. What matters here is to know that it is uncontroversial to say that inductive analogies are distinct from deductive or a priori analogies.

1*. *D* is similar to *E* in terms of characteristics *e*, *f*, *g*, and *h*.

1* functions as the similarities proposition (i.e., the major premise in Walton's structure) and 3 functions as the minor premise in Walton's structure. According to EV, 1* and 3 will be eliminated because the function of 1* and 3 is to stimulate the arguer to figure out the underlying principle, namely premise 4. The conclusion (i.e., 5) can be inferred from premises 2 and 4. In short, 1* and 3 are logically redundant as they only have epistemic but not logical functions. It is worth noting that the subject of principles might differ depending on the types of analogies. In the case of deductive or a priori analogies, these principles tend to be ethical or legal norms, whereas in inductive analogies, they often involve empirical generalizations.[7] Inductive analogies can be reducible to non-analogical arguments as follows:[8]

1. Having characteristics *e*, *f*, *g*, and *h* is relevant to having characteristic *k*.
2. *E* has characteristics *e*, *f*, *g*, and *h*.
3. Therefore, *E* will probably also have characteristic *k*.

If the idea that inductive analogies can be reduced to non-analogical arguments holds true, it is not difficult to conclude that Guarini was proposing that inductive analogies can be reducible to non-analogical arguments. Consequently, Guarini's structure will fail to protect OV.

Another enhancement I suggest for EV is that it does not necessarily need to transform all analogical arguments into deductive arguments. Does EV really fail to allow for varying degrees of

[7] The term "principle" should be understood in a broad sense in this paper.

[8] It is important to note that analogies in everyday life are often inductive analogies. For instance, when we go shopping, we usually make arguments like, "These shoes are from the same brand, have the same style, and are made of the same materials as the ones I have now. Since my shoes are durable, it can be inferred that these shoes will be durable." It is clear that this inductive argument can be reducible to a non-analogical argument with a principle about empirical generalization. This means that EV is applicable to analogical arguments in everyday life.

argument strength? Some scholars do not think so. Shecaira (2013, pp. 427-429) argues that Guarini misunderstands the move from 1 to 2 in Waller's structure as the strength of analogical arguments will vary according to the plausibility of 2 in Waller's structure. In this sense, the deductive account of analogical arguments can still capture varying degrees of argument strength by different acceptability of premises. Drawing inspiration from Toulmin's theory of inference and employing a Toulmin-style approach to analyzing arguments, Bermejo-Luque (2012) contends that certain analogical arguments can be "deductive but defeasible."

Shecaira's response shifts the focus of argument strength to the acceptability of premises rather than the conventional notion of argument strength related to the degree of support between premises and conclusion. In fact, Shecaira adopts the same strategy as deductivism to show that deductive arguments can still capture varying degrees of argument strength. However, this approach might lead to a shift in the debate towards another complex issue—deductivism.[9] Shecaira's stance could potentially trigger a new debate about why the conventional understanding of argument strength should be replaced by this new perspective and whether any theoretical or practical advantages arise from this shift. Unfortunately, Shecaira does not explicitly justify this conceptual transition.

On the other hand, Bermejo-Luque's argument adopts the conventional sense of argument strength and endeavors to justify the seemingly self-contradictory claim that an argument can be both deductive and defeasible within Toulmin's framework. However, I believe this argument relies on a specific interpretation of warrant and assumes a clear distinction between warrant and implicit premises. That will likely involve controversies regarding the

[9] Deductivism typically holds that all arguments should be analyzed as deductive arguments, and the degrees of argument strength can be characterized by different acceptability of premises. However, the deductivist perspective has been the subject of substantial debate, as explored by scholars like Groarke (1999), Godden (2005), and Govier (2018). It would be beyond the scope of this paper to discuss the controversies. Although Shecaira (2013, p. 408) claims that he is not "arguing for deductivism in general," his understanding of argument strength is deeply connected with deductivism.

understanding of warrant and the subtle distinction between warrants and premises.[10] Although I do not think that Shecaira's and Bermejo-Luque's responses are unsuccessful, it is plausible to say that both positions carry substantial theoretical burden. They may require additional explanations and justifications, especially considering the potential controversies they touch upon.

Unlike the perspectives of Shecaira and Bermejo-Luque, I contend that EV does not necessarily lead to a deductive account of analogical arguments at all, even though theorists (e.g., Govier 1989, 2002; Waller 2001; Guarini 2004; Bermejo-Luque 2012; Shecaira 2013) tend to associate EV with a deductive account of analogical arguments. In this way, my stance might bear a *lighter* theoretical burden as it avoids the contentious discussions surrounding deductivism and warrants. So, how is it possible that a principle-based argument is not a deductive argument? To answer this question, I need to introduce a distinction between strict and defeasible modus ponens proposed by Verheij (2000, as cited in Walton 2005):

> Strict Modus Ponens (SMP)
> As a universal rule not subject to exceptions, if *A* then *B*.
> *A* is true.
> Conclusion: *B* is true.
>
> Defeasible Modus Ponens (DMP)
> As a rule subject to exceptions, if *A* then *B.*
> *A* holds as true.
> It is not the case so far that there is a known exception to the rule that if *A* then *B*.
> Conclusion: *B* holds tentatively, but subject to withdrawal should an exception arise.

[10] Toulmin (2003, pp. 91-92) acknowledges that the distinction between data (i.e., premise) and warrants is "far from absolute" to some extent. There are different accounts of warrants offered by scholars such as Toulmin, Hitchcock, Freeman, and Bermejo-Luque (e.g., Freeman 1991, Hitchcock 2003, Bermejo-Luque 2006). Again, it would be beyond the scope of this paper to discuss these controversies.

Interestingly, most theorists, including proponents of EV, tend to frame the structure of analogical arguments using SMP only, which is a form of deductive reasoning. Due to the deductive validity, SMP does not allow for varying degrees of argument strength. In contrast, DMP is a plausible but deductively invalid form of argument that accommodates degrees of argument strength. Introducing DMP offers an alternative approach: when evaluators perceive that an arguer is proposing a principle with exceptions, they should employ DMP to characterize the analogical argument. Conversely, if the arguer's intention seems to involve a principle without exceptions, then SMP is appropriate. Through this approach, a principle-based argument is not necessarily bound by deductive validity. Consequently, EV allows for varying degrees of argument strength. For instance, in specific contexts, the way an arguer presents the violinist analogy can impact the reconstruction of the principle within the analogy. If presented categorically, it would be reasonable to reconstruct the principle as universal and exceptionless, indicating the use of the SMP in analyzing the principle-based argument. Conversely, if the principle is presented with a tolerance for exceptions (i.e., this principle holds in general but not necessarily in all cases) based on contextual information and the principle of charity, it is reconstructed using the DMP. Therefore, according to the enhanced EV, Waller's argument structure can be revised as follows:

1. We both agree with the violinist case.
2. The most plausible reason for believing the violinist case is the acceptance of principle that "we do not have an obligation to save or sustain a life when we have done nothing to take on the obligation."
3. The above principle implies the abortion case (by SMP or DMP).[11]
4. Therefore, consistency requires the acceptance of the abortion case.

[11] It indicates that premises 2 to 4 can be analyzed as either SMP or DMP.

The revised structure of Waller's argument illustrates that a principle-based argument can be either deductive or non-deductive (defeasible), depending on the specific context. This distinction between SMP and DMP helps EV accommodate varying degrees of argument strength.

So far, I have explored and criticized three main defenses of OV and explained how they fall short in countering the enhanced EV I have proposed. To clarify, these enhancements to EV have been focused on several key aspects:[12]

1) Argument reconstruction and clarity: It is unsurprising that argument reconstruction reveals some unexpressed premises that are not explicitly stated by arguers. Argument reconstruction is an interaction between the evaluator and the arguer by which the evaluator can reconstruct an argument as clearly as possible based on the principle of charity. In this process, the argumentative intention of the arguer can be further clarified. The unexpressed premise containing the underlying principle does not distort the arguer's argumentative intention unless there is good evidence that the arguer does not accept the principles.
2) The dynamic view of argument: Argument analysis is supposed to be conducted from the dynamic view of the argument so that the evaluator can get more information by dialogical interaction to discern the arguer's intention and reveal the unexpressed premise.
3) The reducibility of inductive analogies: The inductive structure of analogies can still be reducible to non-analogical arguments with principles regarding empirical generalization.
4) DMP and SMP: The distinction between DMP and SMP offers a flexible approach. According to the contextual information (e.g., arguer's intention) discerned by the evalu-

[12] While the content I have enhanced in the EV can be traced back to the earlier paragraphs in this section, I have aimed to present a more detailed and explicit account of these elements. It is also important to clarify that this does not suggest that EV theorists have entirely neglected these aspects; they might have alluded to them indirectly.

> ator and the principle of charity, the evaluator reconstructs the argument by applying DMP or SMP, which enables the principle-based argument to allow for degrees of argument strength.

Overall, enhanced EV undermines the existing defense for OV, providing analogical arguments with a more logically analyzable and clearer argument structure that allows for different degrees of strength.

4. A novel defense for the orthodox view

In previous sections, I have critically examined the dispute between EV and OV, asserting that the current defenses for OV fail to counter the challenges presented by EV and enhanced EV. This suggests that we need a novel defense for OV if we want to rescue the distinctiveness of analogical arguments. I will try to propose a novel defense for OV in what follows.

OV's difficulty is that it fails to overturn the claim that the similarities between cases can be reducible to the underlying principle. Thus, the crux of the defense for OV is to justify the irreducibility of the similarities between cases. A key insight in this direction is provided by Gamboa (2008). He admits that numerous arguments commonly labeled as analogical could indeed be reducible to non-analogical forms (i.e., principle-based arguments), as contended by EV. Nevertheless, he contends that EV is not exhaustive, and it is possible that "legitimate resemblance-based analogical inferences"—i.e., real analogical arguments—can still be constructed (p. 234).[13] The main idea of his argument is that, in some cases, the similarities between cases cannot be eliminated and have their logical function. To elaborate the argument, he offers an example of biological experiments, summarized as follows (pp. 235-238).

Animal experiments are very common in biological research. For instance, scientists usually use animal models to investigate possible effects of external factors (e.g., environments, drugs, etc.)

[13] Within the scope of this paper's main concern, no distinction is made between "inference" and "argument."

on humans. In a scientific study on human male reproductive fertility, scientists investigate possible effects of environmental toxins and environmental estrogens on humans by using animal models. Scientists inject the test animals (e.g., mice) with the test substance and observe what happens in their reproductive systems. Based on the reactions of the test animals after the injections, scientists can infer what will happen in human male reproductive systems under similar conditions. Within this context, the pivotal question that engages argumentation theorists is: How can we infer human male reactions from those observed in the test animals? The answer appears to be evident—through analogical arguments. According to EV, these analogical arguments can be reducible to non-analogical arguments, namely statistical inductive arguments:

1. *Z%* of sampled mammals exposed to test substance developed fertility-related properties *P*.
   ∴ *Z%* of mammals exposed to test substance develop fertility-related properties *P*.
2. *Z%* of mammals exposed to test substance develop fertility-related properties *P*.
3. Human males are mammals.
   ∴ *Z%* of human males exposed to test substance will develop fertility-related properties *P*.

In doing this, the similarities between the test animals and human males are reducible to a principle that *Z%* of mammals exposed to the test substance develop fertility-related properties *P* (i.e., premise 2). Gamboa, however, contends that EV misinterprets animal models in science because it captures only the common features (e.g., mammals) but *ignores* the differences.[14] In the study of reproductive fertility, the test animals and human males have important differences in reproductive systems, such as the shape of sperm, fertility levels, weight, the efficiency of sperm production, and so on. In view of common features and differences between cases, scientists have developed a rigorous tool called interspecies

[14] Obviously, in Gamboa's view, enhanced EV also commits the same misinterpretation.

extrapolation factors (IEFs) to characterize the inference from the dose necessary to produce toxic effects in test animals' reproductive systems to the dose that produces the same effects in human's reproductive systems. Put succinctly, the common features and differences between cases need to be considered in analogical arguments in animal models. In essence, the conception of "similarity" implies that two cases have both commonalities and differences. In this sense, the similarities proposition representing that case *a* is similar to case *b* cannot be eliminated and replaced by the underlying principle only capturing the common features between cases. Consequently, Gamboa (2008, pp. 235-241) concludes that the similarities proposition does have a logical function, ensuring that analogical arguments are a distinctive type of argument.

Does Gamboa's argument above successfully defend against EV (including enhanced EV)? In other words, are real distinctive analogical arguments possible? In my view, Gamboa's effort is inspiring because it makes important progress in countering EV; however, it might not be entirely sufficient. One potential counterpoint that Gamboa overlooks could be formulated like this: Even in Gamboa-style analogical arguments (where the proposition represents both commonalities and differences between cases), the similarities proposition could still be eliminated. This proposition might merely prompt scientists to explore the underlying principle; for instance:

> "If the test animals are exposed to a specific dose of test substance *t* to achieve a certain level of toxic effect on reproductive systems, then human males will be exposed to a dose *f(t)* that is positively correlated with the dose *t* of the same test substance to achieve an equivalent level of toxic effect on reproductive systems."[15]

Compared to the principle that *Z%* of mammals exposed to test substance develop fertility-related properties *P*, the above principle takes commonalities and differences between cases into con-

[15] Indeed, the interspecies extrapolation factors (IEFs) mentioned earlier could potentially serve as the analytical formula for *f(t)*.

sideration. The above principle does not simply characterize the analogical relationship between cases in terms of "mammals" (i.e., similarities), but rather in terms of a more complex functional expression considering both commonalities and differences. This is to say that the consideration of commonalities and differences between cases can still be analyzed as an underlying principle, although such a principle is more complex. In this way, Gamboa-style analogical arguments can be reducible to non-analogical arguments under EV:

1. If the test animals are exposed to a specific dose of test substance *t* to achieve a certain level of toxic effect on reproductive systems, then human males will be exposed to a dose *f(t)* that is positively correlated with the dose *t* of the same test substance to achieve an equivalent level of toxic effect on reproductive systems.
2. The test animals are exposed to a specific dose of test substance *t* to achieve a certain level of toxic effect on reproductive systems.
3. Therefore, human males will be exposed to a dose *f(t)* that is positively correlated with the dose *t* of the same test substance to achieve an equivalent level of toxic effect on reproductive systems.

Thus, from the perspective of EV (including enhanced EV), the similarities proposition, even when encompassing both commonalities and differences, serves solely an epistemic function. Its function is to stimulate the arguer to figure out the underlying principle at play. This indicates that, despite taking a significant step forward in defending OV;, Gamboa ultimately failed to fully address the challenges posed by EV. If we aim to further refine and salvage Gamboa's argument, the current task at hand is to address the following question: What is the logical function of the consideration of commonalities and differences between cases?

I propose that its logical function is manifested in the process of weighing the commonalities and differences between cases. While the logical structure of analogical arguments remains to be disputed, it goes without saying that analogical arguments depend on

similarities, where commonalities outweigh differences. In order to substantiate the logical function of similarities, it is necessary to provide a brief introduction to *conductive arguments*. First, there is a paradigmatic example of conductive arguments from Wellman: "Although your lawn needs cutting, you ought to take your son to the movies because the picture is ideal for children and will be gone by tomorrow" (1971, p. 57).

Conductive arguments are a type of argument in which some conclusion is drawn from both positive and negative considerations. Also known as conduction, pro-con arguments, or balance-of-considerations arguments, they were first identified by Wellman (1971) and have been developed by theorists in recent years (e.g., Blair and Johnson 2011).[16] Conductive arguments consist of pro-reasons (PR, i.e., considerations supporting the conclusion) and counter-considerations (CC, i.e., considerations undermining the conclusion). The basic structure of conductive arguments can be shown as follows:

PR: Pro-reasons 1, 2, 3…
CC: Counter-considerations 1,2,3…
Conclusion

In comparison to other types of arguments, what sets this argument apart is its inclusion of counter-considerations weakening the conclusion. In analogical arguments, if we are required to consider both commonalities and differences between cases, believing that such a consideration aids in revealing the underlying principle, it follows that a process of weighing these aspects must occur before arriving at the principle. Given that the act of weighing can be characterized using conductive arguments, it is plausible to consider the weighing process in analogical arguments in the same light. Thus, the logical structure of the weighing process in analogical arguments can be characterized as follows:

[16] Wellman (1971, pp. 55-57) comes up with three patterns of conductive arguments, with the third pattern, known as pro-con arguments, generally considered the most interesting and significant. The term "conductive arguments" or "conduction" will specifically refer to pro-con arguments in this paper.

PR: In terms of the subject of the conclusion, cases C_1 and C_2 share relevant commonalities S_1, S_2, S_3, and so forth.
CC: In terms of the subject of the conclusion, cases C_1 and C_2 have relevant differences D_1, D_2, D_3, and so forth.
Conclusion: The underlying principle C.

The above structure shows that the logical function of the commonalities and differences between cases is substantiated in conductive arguments. Specifically, it is self-evident that the commonalities' logical function is represented by PR supporting the conclusion, which are positive considerations in a conductive argument. By contrast, CC, which weaken the conclusion, are negative considerations in a conductive argument. Indeed, as previously mentioned, the presence of CC is a distinct and unique feature specific to conductive arguments. The logical function of the differences is effectively represented through CC—they weaken the conclusion so that it plays an indispensable role in the evaluation of argument strength. When evaluating a particular conductive argument, it becomes necessary to evaluate the extent to which CC weaken the conclusion and determine whether PR outweigh CC in relation to the conclusion.[17] From the above discussion, it follows that the commonalities and differences between cases of analogical arguments possess their own distinct logical functions within the structure of conductive arguments. This suggests that commonalities and differences between cases, each with distinct logical functions, cannot be eliminated. They serve not only epistemic functions by stimulating ideas but also fulfill crucial logical functions by affecting argument strength.

I have argued that the inference to the underlying principle can be viewed as a conductive argument. In addition to this conductive argument, an analogical argument consists of a principle-based argument as well. As argued before, a principle-based argument

[17] Xie (2017) thinks that CC only serve a rhetorical function, enhancing the persuasive effects of an argument by making it appear to be well-considered. While I concur that CC indeed possess a rhetorical function, I think they also carry a logical function. For a more comprehensive understating of the logical role of CC, see Liao (2020).

characterized by DMP or SMP allows for varying degrees of argument strength. In this way, an analogical argument has a linear structure, containing a conductive argument (1, 2, 3) and a principle-based argument (3, 4, 5):

1. In terms of the subject of the conclusion, cases C_1 and C_2 share relevant common features S_1, S_2, S_3, and so forth.
2. In terms of the subject of the conclusion, cases C_1 and C_2 have relevant differences D_1, D_2, D_3, and so forth.
3. The underlying principle C is that if a then b (by SMP or DMP).[18]
4. a is true.
5. Therefore, b is true.

Let's refer to this as the "*conductive-principle structure*" of analogical arguments or simply "C-P analogical arguments" or "C-P framework/structure." These C-P analogical arguments are irreducible so that the distinctiveness of analogical arguments can be defended. According to the C-P framework, the analogical argument in the animal experiment proposed by Gamboa can be reconstructed as follows:[19]

1. In terms of the toxic effect in animal reproductive systems, the test animals and human males share relevant common features S_1 (germ cell development), S_2 (spermatogenesis), S_3 (ejaculation).
2. In terms of the toxic effect in animal reproductive systems, the test animals and human males have relevant differences D_1 (the shape of sperm), D_2 (the fertility levels).
3. If the test animals are exposed to a specific dose of test substance t to achieve a certain level of toxic effect on reproductive systems, then human males will be exposed to a dose $f(t)$ that is positively correlated with the dose t of

[18] It indicates that premises 3 to 5 can be analyzed as either SMP or DMP.
[19] Gamboa (2008, pp. 235-237) provides a detailed list of relevant common features and differences between the test animals and human males. For simplicity, only a few of them will be mentioned in the following reconstruction.

the same test substance to achieve an equivalent level of toxic effect on reproductive systems.

4. The test animals are exposed to a specific dose of test substance *t* to achieve a certain level of toxic effect on reproductive systems.
5. Therefore, human males will be exposed to a dose *f(t)* that is positively correlated with the dose *t* of the same test substance to achieve an equivalent level of toxic effect on reproductive systems.

It is widely acknowledged that arguments in empirical science are typically *probabilistic* rather than deductively valid. Arguments within the animal model of biomedical research are certainly no exception. As noted by Gamboa (2008, p. 238), they are inherently probabilistic. This suggests that the principle characterizing the relationship between test animals and human males holds generally but not necessarily in all cases. Therefore, the principle-based argument in this reconstruction (3, 4, 5) should be reconstructed using DMP, considering contextual information and applying the principle of charity.

There could be potential objections and doubts about C-P analogical arguments, particularly regarding the conduction aspect. I will address these concerns in the following discussion.

First, it is unsurprising to think that the two cases of analogy have both commonalities and differences. So, what unique advantage does the C-P analogical argument offer in this context? At first glance, the presence of both similarities and differences between the two cases in an analogy might seem to be commonly understood. However, what distinguishes the C-P analogical argument is not just the recognition of this fact but the provision of a unique perspective that addresses a specific challenge. This challenge arises when facing the task of justifying the logical function of both commonalities and differences within analogical arguments, particularly when countering the criticisms of EV. The C-P analogical argument offers a framework grounded in conductive

arguments that provides justification for the logical function of both commonalities and differences in analogies. [20]

Second, another objection might arise concerning the integration of conductive arguments into analogical arguments stemming from the work of Wellman. Wellman (1971, pp. 51-52), who first systematically introduced the concept of conduction, considers analogical arguments to be parallel to conductive arguments. For this objection, we should realize that this paper does not employ the concept of conduction in the same manner as Wellman did. As a moral philosopher with a focus on moral reasoning and justification, Wellman (1971, p. 52) defines conduction as that sort of reasoning in which 1) there is a conclusion about some individual case; 2) the conclusion is drawn non-conclusively; 3) the conclusion is drawn from one or more premises about the same case; 4) the conclusion is drawn without any appeal to other cases. However, current argumentation theorists typically do not adhere to all of Wellman's restrictions on conduction but rather adopt a broader sense of the concept of conduction, referring to it as a defeasible argument that includes considerations and counter-considerations (Blair 2011, pp. 1-4). This paper aligns with that broader understanding and employs the concept of conduction in this manner. Based on that, it would not be problematic to include conductive arguments as a part of analogical arguments.

A third potential objection pertains to the structure of conduction, which is a subject of dispute. Some might question the legitimacy of the specific conduction structure outlined earlier and seek justification for its use. In response, it can be argued that the presented conduction structure is relatively less controversial compared to alternative constructions. Therefore, its application within the scope of this paper is reasonable. One common objection is perhaps about the concept of on-balance consideration (OBP). Some scholars argue that OBP, indicating that positive considerations outweigh negative considerations, should be integrated into the conduction structure. This, however, has led to significant

[20] Guarini (2004, pp. 160-161) also notices that cases in analogy have "similarities" (i.e., commonalities) and "differences," but he proposes an inductive structure of analogy based on this. As I argued previously, this inductive structure would, unfortunately, still be reducible to non-analogical arguments.

controversy (e.g., Hansen 2011, Zenker 2011, Jin 2011). Conversely, the inclusion of both positive and negative considerations in the conduction structure, as presented earlier, is widely accepted and less disputed, as it aligns with the foundational characteristic of conduction. Moreover, even if OBP were incorporated into the conduction structure, it would not alter the argument put forth in this paper. This is because the PR and CC have already accounted for the logical functions of similarities and differences between cases. The addition of OBP does not diminish this point.

Fourth, even though C-P analogical arguments may defend OV, it appears that they are primarily applicable to analogies in science (e.g., animal experiments) but may not be as relevant to other analogies in ethics, law, and even everyday life. In analogical arguments of animal experiments, the principle drawn by the conductive argument represents the correlation of variables between cases (e.g., "*t*" and "*f(t)*"). However, in the fields of ethics, law, and everyday life,[21] the principles of analogical argument do not seem to take this form. Instead, they represent a shared norm or law for both cases (e.g., "we do not have an obligation to save or sustain a life when we have done nothing to take on the obligation" in the violinist analogy). Consequently, while C-P analogical arguments can defend scientific analogies, they might not be as suitable for analogies in other domains.

To this objection, I admit that the principles of analogical arguments in the scientific domain differ from those in the fields of law and ethics. Nevertheless, I believe the logical structures used to produce the principles are the same though the specific subjects of the principles are different.[22] By the same token, the C-P struc-

[21] As discussed earlier, the principles in analogies in everyday life are often empirical generalizations. These principles typically indicate a shared empirical law (or a shared rule of thumb) for both cases.

[22] Alternatively, we could just accept this objection. We admit the scarcity of distinctive (irreducible) analogical arguments, primarily found in scientific contexts such as in animal experiments. Many analogical arguments in ethics or law, such as the violinist analogy and the inn-steamboat analogy, are not distinctive analogical arguments. Therefore, the number of "real" or "legitimate" (distinctive) analogical arguments remains quite limited. As a result, the application scope of C-P analogical arguments is, unfortunately, very restricted. This is what Gamboa probably would do. Gamboa's (2008, pp. 240-241) focus is on

ture is also applicable to analyze the inference to principle regarding a shared norm or law. This norm or law is drawn by the weighing process of the commonalities and differences between two cases. For instance, in the case of the violinist analogy, if we want to obtain a shared norm governing the two cases, we should consider both their relevant commonalities and differences, such as:

The relevant commonalities:

1) The violinist's illness and the pregnancy are not caused by the individuals involved;
2) Both the violinist's life and the fetus's life are valued;
3) The violinist and the fetus will face severe consequences if not assisted;
4) Both the kidnappee and the female victim are forced to maintain their situations.

The relevant differences:

1) The violinist and the kidnappee lack a blood relationship, while the fetus and the female victim share one;
2) The violinist is an autonomous adult, while the fetus is not yet capable of autonomy.

If we take both relevant commonalities and differences into consideration and think that the commonalities outweigh the differences, we might infer a shared norm from the conduction. For instance, the shared norm, "we do not have an obligation to save or sustain a life when we have done nothing to take on the obligation," as proposed by Waller in the violinist analogy, could be derived from this conduction. The strength of the conduction depends on how much the commonalities support the conclusion and how much they outweigh the differences—the greater the degree, the stronger the conduction. With a slight adjustment, the

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demonstrating the mere "possibility" of legitimate analogical arguments, without necessarily intending to explore the scope of legitimate analogical arguments. However, the goal of this paper is more ambitious in arguing that the C-P structure can be used in analogies in ethics, law, and even everyday life.

C-P framework can accommodate analogical arguments in ethics, law, and even everyday life:

* Presupposition: we believe case C_1.
1. Cases C_1 and C_2 share relevant common features (i.e., the common features that are positive for drawing premise 3) S_1, S_2, S_3, and so forth.
2. Cases C_1 and C_2 have relevant differences (i.e., the differences that are negative for drawing premise 3) D_1, D_2, D_3, and so forth.
3. The most plausible reason for believing case C_1 is to accept principle C.
4. C implies believing case C_2 (by DMP or SMP).
5. Therefore, we should believe case C_2.

The structure above retains the C-P structure, albeit slightly different from the one shown earlier, as it still comprises a conductive argument (1, 2, 3) and a principle-based argument (3, 4, 5). It goes without saying that the presupposition that we believe case C_1 in a specific context of presenting an analogy serves as the pragmatic foundation for inferring the underlying principle (i.e., the conductive part of the C-P structure). In other words, the inference to the underlying principle can be appropriately conducted only if the proposition that case C_1 is accepted is presupposed in a given context. Accordingly, the violinist analogy can be reconstructed by the above variant of C-P framework as follows:

1. The violinist case and the abortion case share relevant common features S_1 (no involvement of the individual), S_2 (the value of life), S_3 (severe consequences), S_4 (coercion).
2. The violinist case and the abortion case have relevant differences D_1 (blood relationship), D_2 (autonomy).
3. The most plausible reason for believing the violinist case is to accept the principle that we do not have an obligation to save or sustain a life when we have done nothing to take on the obligation.
4. The above principle implies believing the abortion case (by DMP or SMP).

5. Therefore, we should believe the abortion case.

Therefore, in addition to analogies in animal experiments in a scientific context, analogies in ethics, law, and even everyday life can be analyzed using the C-P framework, albeit in a variant form. The distinctiveness of analogical arguments in different fields can be defended in *a unified way*.

Fifth, some may raise concerns about whether individuals typically realize or explicitly mention relevant differences when presenting analogies. I argue that the key insights from my responses to D1 and D2 in sec. 3 can generally apply to this doubt, despite the different focuses (i.e., while the former discussions address seeking principles, the current concern is about identifying differences). It is crucial to analyze arguments from a dialogical and dynamic perspective. Therefore, potential dialogical interactions and specific context analyses are likely to bring out relevant differences that may have been implicitly expressed or vaguely considered by arguers. A more challenging follow-up question might be: what if the above analysis fails? What if an arguer only sees common features and completely overlooks differences? In such a case, I concede that the EV would likely prevail. The arguer would be merely engaging with the principle based on the common features between cases, indicating that the common features serve an epistemic function only. Consequently, this so-called analogical argument could be reducible to a principle-based argument. As Waller (2001, p. 205) noted, however, formulating a principle within an analogy is difficult since critical thinking is not easy. Similarly, I believe that presenting a legitimate analogical argument is not easy and requires certain reasonable threshold conditions, such as considering relevant differences. The arguer in such a case, unfortunately, fails to meet this threshold condition. Hence, it is possibly a reticent but important acknowledgement that while "analogies" are indeed prevalent in everyday communication (bearing in mind that they serve multiple functions beyond the logical function), legitimate analogical arguments may not be as widespread as commonly assumed.

Sixth, the C-P structure indicates that an analogical argument comprises two types of sub-arguments. But how can this complex

structure justify the distinctiveness of analogical arguments? In response, it is necessary to reiterate that the distinctiveness of an argument type depends on whether its key elements have logical functions. For example, arguments from expert opinion are widely considered to be distinctive because propositions concerning expert opinion clearly have logical functions.[23] The distinctiveness of analogical arguments, as mentioned earlier, depends on whether the similarities proposition has a logical function. If the C-P structure substantiates the logical function of the similarities proposition by justifying its irreducibility, as argued in this paper, then it is sufficient to claim that analogical arguments are a distinctive type of argument. Regarding whether an analogical argument is simple or complex (e.g., a linear argument as proposed), this depends on the relationship among the premises, and it is a matter of argument structure. This issue is irrelevant to the logical distinctiveness of the argument, which concerns the logical function of the premises. Therefore, it is consistent to assert that analogical arguments are both logically distinctive and structurally complex.

It is worth noting that Shecaira (2013) introduces a different perspective on the principles behind analogies in ethics and law. He proposes that the principle of analogies in ethics and law is drawn by an "inference to the best explanation" (or simply "IBE"). The structure he suggests for IBE based is built upon a modified version of Waller's structure (p. 429):

1. It's true that *a*.
2. The most plausible (i.e., the best) reason for believing *a* is the principle *C*.
3. Therefore, it is true that *C*.

Interestingly, the conduction structure I have proposed within analogies is *compatible* with Shecaira's IBE structure. Specifically, the conduction structure can be embedded in this IBE by specifying that the most plausible explanation (i.e., the principle) is inferred from the combined consideration of commonalities and

[23] Based on the widely accepted scheme of the argument from expert opinion proposed by Walton (Walton et al., 2008, p. 310), I do not find the premises concerning expert opinion in the scheme to be logically redundant.

differences between cases. In this sense, the conduction structure more explicitly represents the logical process of the inference to principle within analogical arguments, laying a foundation for the logical structure of analogies.

In summary, the novel defense I propose for OV contends that the distinctiveness of analogical arguments can be defended by a unified framework, namely C-P analogical arguments. In this framework, an analogical argument is constructed as a conductive argument and a principle-based argument. The logical function of the similarities (i.e., commonalities and differences) between cases are substantiated by the structure of the conductive argument. As a result, analogical arguments remain distinctive as they cannot be reduced to non-analogical arguments.

5. Conclusion

The main ambition of this paper is *twofold*. First, it aims to critically analyze the ongoing debate between EV and OV regarding analogical arguments. The dispute focuses on whether the similarities between cases in analogies hold only an epistemic function (stimulating thought about the underlying principle) or also a logical function (being a component of the logical structure of the argument). According to EV and my proposed enhanced EV, analogical arguments across various contexts like science, ethics, law, and everyday life can be reducible to non-analogical arguments by eliminating the similarities proposition. This suggests that analogical arguments are not distinctive types of arguments. On the other hand, OV argues that the similarities between cases in analogies possess both epistemic and logical functions. However, this paper demonstrates that the existing defenses of OV fail to tackle the challenges posed by EV, particularly the enhanced version.

Second, to uphold the distinctiveness of analogical arguments and defend OV, this paper proposes a novel logical framework termed ‘C-P analogical arguments.’ In contrast to the earlier OV defense that rejects the principle within analogies, C-P framework acknowledges the crucial role of the principle within analogical arguments. This framework conceives of an analogical argument

as a linear argument containing a conductive argument and a principle-based argument. The former is an inference to principle characterized by a conductive argument, and the latter is an inference based on principle characterized by either SMP or DMP. Within C-P analogical arguments, the logical function of the similarities (i.e., commonalities and differences) between cases is substantiated by the structure of the conductive argument, so the similarities proposition cannot be eliminated. In this way, the distinctiveness of analogical arguments has been defended.

While there are some ongoing theoretical controversies regarding the conductive argument, as mentioned earlier, it is important to highlight that the structure of conduction provides a novel perspective to substantiate the logical function of similarities between cases of analogy. Although there are two types of principles in analogies, namely principles representing the relationship between variables of cases and principles representing a shared law or norm governing both cases,[24] all the inferences to these principles can be characterized by conduction. Based on this, the nature and the structure of analogies have undergone critical reflection and reshaping. Given that the weighing process of commonalities and differences between cases plays an important role in analogical arguments, it is promising to further analyze analogical arguments from the perspective of conduction.

In addition to addressing the distinctiveness problem of analogical arguments, I believe that the perspective provided by the C-P framework has the potential to offer distinct insights into other important issues of the study of analogies, such as applied case studies across different fields, the weighing process between similarities and differences, classification methods, critical questions, formal modeling, and so forth. This paper provides preliminary applications of the C-P framework through examples like the violinist analogy in ethics and the animal model in science. I believe that these examples effectively demonstrate the framework's promising potential to reconstruct legitimate analogical arguments.

[24] I am open to the possibility that there might be other types of principles in analogies. However, this paper concentrates on analyzing analogies with the two types of principles that are prevalent in fields such as science, ethics, law, and everyday life.

However, further investigation into more paradigmatic cases in diverse fields is necessary to fully understand its scope and applicability. Moreover, more detailed discussions on the weighing process of conduction are anticipated to provide a deeper understanding and refinement of the conduction part within the C-P framework. While this topic extends beyond the scope of this paper, which focuses on the distinctiveness problem of analogies, it warrants further exploration. The efforts made in this paper can serve as a foundation for such endeavors, providing new insights and pathways for further investigation.

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References

Agassi, Joseph. 1988. Analogies hard and soft. In *Analogical reasoning*, ed. David. H. Helman, 401-419. Dordrecht: Kluver Academic Publishing.

Bartha, Paul F. A. 2010. *By parallel reasoning: The construction and evaluation of analogical arguments*. Oxford: Oxford University Press.

Bermejo-Luque, Lilian. 2006. Toulmin's model of argument and the question of relativism. In *Arguing on the Toulmin model*, eds. David Hitchcock and Bart Verheij, 71-85. Dordrecht: Springer.

——2012. A unitary schema for arguments by analogy. *Informal Logic* 32(1): 1-24.

Blair, J. Anthony. 2011. Conductive reasoning/argument: A map of the issues. In *Conductive arguments: An overlooked type of defeasible reasoning*, eds. J. Anthony Blair and Ralph. H. Johnson, 1-9. London: College Publications.

Blair, J. Anthony and Ralph. H. Johnson, eds. 2011. *Conductive arguments: An overlooked type of defeasible reasoning*. London: College Publications.

Botting, David. 2012. The paradox of analogy. *Informal Logic* 32(1): 98-115.

Freeman, James B. 1991. *Dialectics and the macrostructure of argument. A theory of argument structure*. Berlin-New York: Foris/de Gruyter.

Gamboa, Steven. 2008. In defense of analogical reasoning. *Informal Logic* 28(3): 229-241.

Godden, David M. 2005. Deductivism as an interpretive strategy: A reply to Groarke's recent defense of reconstructive deductivism. *Argumentation and Advocacy* 41: 168-183.

Govier, Trudy. 1989. Analogies and missing premises. *Informal Logic* 11(3): 141-152.

—— 2002. Should *a priori* analogies be regarded as deductive arguments? *Informal Logic* 22(2): 155-157.

——ed. 2018. *Problems in argument analysis and evaluation (updated edition)*. Windsor: University of Windsor.

Groarke, Leo and Christopher W. Tindale. 2004. *Good reasoning matters! A constructive approach to critical thinking*. Oxford: Oxford University Press.

Groarke, Leo. 1999. Deductivism within pragma-dialectics. *Argumentation* 13: 1-16.

Guarini, Marcello. 2004. A defence of non-deductive reconstructions of analogical arguments. *Informal Logic* 24(2): 153-168.

Hansen, Hans V. 2011. Notes on balance-of-consideration arguments. In *Conductive arguments: An overlooked type of defeasible reasoning*, eds. J. Anthony Blair and Ralph. H. Johnson, 31-51. London: College Publications.

Hesse, Mary B. 1966. *Models and analogies in science.* South Bend, IN: University of Notre Dame Press.

Hitchcock, David. 2003. Toulmin's warrants. In *Anyone who has a view*, eds. Frans H. van Eemeren, J. Anthony Blair, Charles A. Willard and A. Francisca Snoeck Henkemans. Dordrecht: Springer.

Jin, Rongdong. 2011. An attempt at unifying natural language argument structures. In *Conductive arguments: An overlooked type of defeasible reasoning*, eds. J. Anthony Blair and Ralph. H. Johnson, 10-30. London: College Publications.

Kaptein, Hendrik. 2005. Legal progress through pragma-dialectics? Prospect beyond analogy and e contrario. *Argumentation* 19: 497-507.

Liao, Yanlin. 2020. The legitimacy of conductive arguments: What are the logical roles of negative considerations? In *From Argument schemes to argumentative relations in the wild argumentation*, eds. Frans H. van Eemeren and Bart Garssen, 255-267. Cham: Springer.

Ribeiro, Henrique Jales. 2014. Introduction. In *Systematic approaches to argument by analogy*, ed, Jales Henrique Ribeiro, 1-22. London: Springer.

Shecaira, Fábio Perin. 2013. Analogical arguments in ethics and law: A defence of a Deductivist analysis. *Informal Logic* 33(3): 406-437.

Stevens, Katharina. 2016. *Reasoning by precedent* [Doctoral Dissertation, McMaster University]: <https://macsphere.mcmaster.ca/bitstream/11375/20021/2/Stevens_Katharina_finalsubmission201607_PhD.pdf.pdf>

Thomson, Judith Jarvis. 1971. A defense of abortion. *Philosophy and Public Affairs* 1(1): 47-66.

Toulmin, Stephen. 2003. *The uses of argument (updated edition)*. Cambridge: Cambridge University Press.

Waller, Bruce N. 2001. Classifying and analyzing analogies. *Informal Logic* 21(3): 199-218.

Walton, Douglas, Chirs Reed and Fabrizio Macagno. 2008. *Argumentation schemes*. New York: Cambridge University Press.

Walton, Douglas. 2005. Justification of argumentation schemes. *Australian Journal of Logic*, 3: 1-13.

Wellman, Carl. 1971. *Challenge and response: Justification in ethics*. Carbondale, IL: Southern Illinois University Press.

Xie, Yun. 2017. Conductive argument as a mode of strategic maneuvering. *Informal Logic* 37(1): 2-22.

Zenker, Frank. 2011. The structure of pro and con arguments: A survey of the theories. In *Conductive arguments: An overlooked type of defeasible reasoning*, eds. J. Anthony Blair and Ralph. H. Johnson, 74-85. London: College Publications.