

Objections, Rebuttals and Refutations

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ABSTRACT: This paper considers how the terms ‘objection’, ‘rebuttal’, ‘attack’, ‘refutation’, ‘rebutting defeater’ and ‘undercutting defeater’ (often referred to as rebutters versus undercutters) are used in writings on argumentation and artificial intelligence. The central focus is on the term ‘rebuttal’. A provisional classification system is proposed that provides a normative structure within which the terms can be clarified, distinguished from each other, and more precisely defined.

KEYWORDS: defeasible reasoning; objection; exception; rebuttal; attack; refutation; undercutter; logical argumentation; generalizations; arguments.

1. INTRODUCTION

For some time now I have been bothered about the way the terms ‘rebuttal’ and ‘refutation’ are commonly used in writings on argumentation, and also bothered by the way the comparable terms ‘undercutter’ and ‘defeater’ are used in writings on artificial intelligence (AI). It seems to me there is some confusion about these terms, and considerable ambiguity and variety of loose usage. At the same time, such terms are fundamental to argumentation theory and to attempts recently made in artificial intelligence to build an argumentation technology. The very notion of a rational argument itself would seem to be based on an underlying notion of conflict, or opposition between one argument and another. But although this notion of opposition is fundamental, clearly it is not possible to define it by using the traditional notion of classical negation. It may be a primitive notion that can only be defined by relating it to a group of other fundamental notions in argumentation theory.

There is a whole family of terms in argumentation that are closely related to each other and that are fundamental concepts in the field, but are also often used in vague and even confusing ways. All these terms refer to ways in which a given argument is attacked, rebutted or objected to by the offering of a reason that casts this argument into doubt, or even by the offering another reason to think that the argument is incorrect and must be given up. A list of such key terms comprises the following ones: attack, rebuttal, objection, undercutter, defeater and refutation. The term ‘rebuttal’ is often associated with the work of Toulmin (1958), while the terms ‘undercutter’ and ‘defeater’ are often associated with the work of Pollock (1995), and are commonly used in the AI literature. In this paper, I propose provisional definitions of the terms ‘objection’, ‘rebuttal’, ‘attack’ and ‘refutation’, with a central focus on the term ‘rebuttal’. These definitions are meant to

be useful for argumentation studies, and are meant to be open to critical questioning. My arguments for them are even meant to be open to attack and rebuttal.

2. OBJECTION, REBUTTAL AND REFUTATION

We begin by noting that the term ‘objection’ is quite a broad one. An objection does not necessarily have to be a counter-argument posed against an original argument. It could be merely asking of a critical question. Even when an objection is a counter-argument posed against an original argument, it does not have to be an argument that the original argument is weak, unsupported or incorrect. It could be a procedural objection, not implying that the argument it is addressed against is incorrect, insufficiently supported by evidence, or even questionable as an argument in itself. Such a procedural objection could merely claim that the argument, even though it might be reasonable enough, or well enough supported in itself, is not appropriate for use in the context of the given discussion. In law for example, an argument might be objected to on the grounds that the evidence it purports to bring forward has been obtained illegally, even though that evidence might otherwise be quite convincing in itself as a rational argument.

There may be a narrower sense of the word ‘objection’ however, that is used in logic. Govier (1999, 229) considers an objection to be an argument raised against a prior argument. Hence a question is not an objection: “On this view, a question purely considered as such does not itself constitute an objection”. On her account, an objection can be directed in one of two ways. The objection can claim that there is something wrong with the conclusion, or it can claim that there is something wrong with the argument. But these are not the only possibilities. She classifies five types of objections (231), depending on what the objection is specifically raised against: (1) against the conclusion, (2) against the argument in support of the conclusion, (3) against the arguer, (4) against the arguer’s qualifications, personal characteristics or circumstances, or (5) against the way the argument or conclusion was expressed. It is interesting to note that some of these categories of objection may correspond to or overlap with types of arguments associated with some of the traditional informal fallacies. The third category and two parts of the fourth the fourth may correspond to the *ad hominem* type of argument while the first part of the fourth may correspond to a common type of attack on arguments from expert opinion.

A somewhat different way of classifying objections to an argument has been put forward by Krabbe (2007, 55-57) who lists seven ways an opponent can critically react to a proponent’s expressed argument. (1) A request for clarification, explanation or elucidation may contain an implicit criticism that the argument was not clearly expressed to start with. (2) A challenge to an argument comprises an expression of critical doubt about whether a reason supports the argument. (3) A bound challenge raises a more specific doubtful point that offers some reason for entertaining doubt. (4) An exposure of a flaw poses a negative evaluation of an argument and requests further amplification. (5) Rejection is a kind of critical reaction by an opponent who may not deny that the proponent’s argument is reasonable, but takes up an opposite point of view. (6) A charge of fallacy criticizes the contribution of the proponent by claiming he or she has violated some rule of fair procedure. (7) A personal attack is a common kind of critical reaction that provides a means of defense against unreasonable moves by one’s opponent. Krabbe

(2007, 57) suggests that these critical reactions can properly be called objections, because they express dissatisfaction with an argument presented by a proponent. However, Krabbe (2007, 57) writes that to speak of a request for clarification or a pure challenge as an objection would be an overstatement, because objections presuppose a negative evaluation, whereas these other two types of reaction precede evaluation.

There are differences between these two views on what an objection is. Govier (1999, 229), requires that an objection be an argument when she wrote, "An objection is an argument, a consideration put forward, alleged to show either that there is something wrong with the conclusion in question or that there is something wrong with the argument put forward in its favor". Krabbe does hold the view that an objection has to be an argument. Ralph Johnson, in an unpublished manuscript shown to the author, has advocated the view that an objection is a response to an argument that can be in the form of a question or a statement, and does not have to be an argument. I will take it that objection is a wider category than rebuttal, so that while putting forward a rebuttal is making an objection in some instances, there are also many instances in which an objection to an argument should not be classified as a rebuttal.

Following this line, it seems like it should be simple to define the notion of a rebuttal. A rebuttal requires three things. First, it requires a prior argument that it is directed against. Second, the rebuttal itself is an argument that is directed against this prior argument. Third, it is directed against the prior argument in order to show that it is open to doubt or not acceptable.

What about the case where only a statement is directed against an argument? That seems to be a rebuttal, if the statement was directed against the argument and implies that the argument, or some part of it, is untenable, dubious or false. A statement is not an argument. Should that be considered a rebuttal according to the definition above? Yes, it should be, because when a statement is put forward in such a way, directed against an argument, there is an implied inference from the statement, taken as a premise, to the conclusion that the argument, or some part of it, is untenable, dubious or false. For example, if the statement offered is the negation of the conclusion or one of the premises of the original argument, it is implied that this conclusion is false or untenable. For the present then, let's accept it as working hypothesis that a rebuttal has to be an argument, and cannot be just a statement, even though we may find an exception in section 4 below.

So it seems now that we can define a rebuttal as one of a pair of arguments, where the two arguments are ordered, logically rather than temporally, so that the one precedes the other, and so that the second one is directed against the first one. What does "directed against" mean? It seems that one argument can have another argument as its target. The one can be meant to support the other, or can be meant to attack the other, or the two arguments can be independent of each other. Only in the middle instance would it be correct to say that the one argument is directed against the other. But something more is meant here. What seems to be implied is that a rebuttal is an argument directed against another argument to show that the first argument is somehow defective. To rebut an argument is to try to show that the argument is questionable, or that it is not supported by the evidence, or even that the evidence shows that it is untenable.

Is a refutation the same as a rebuttal? One way to define the relationship between these two terms would be to say that a refutation is a successful rebuttal. On this way of defining the two terms, a rebuttal is aimed to show that the argument it is directed against

is questionable or untenable. A refutation is a rebuttal that is successful in carrying out its aim. So define the one term would seem to be a subspecies of the other. A refutation is a species of rebuttal that shows that the argument it is aimed at is untenable. When an argument you have put forward is confronted with a refutation, it has to be given up. If the argument is confronted with a rebuttal, you may or may not have to give it up. Only if the rebuttal is a refutation do you have to give it up.

The notion of an attack is another concept that needs to be fitted into this system of classification. Is an attack the same thing as a rebuttal? At first, it seems that it is, because an attack on an argument is designed to show that the argument is questionable, that it is not supported by the evidence, or even that the evidence shows that it is untenable. On the other hand, it would seem that it is not, because asking a critical question could perhaps be classified as an attack on an argument, but it would not seem quite right to see that asking such a critical question as a rebuttal. This classification may be borderline, however. Asking a critical question casts doubt on an argument, but is casting doubt on an argument rebutting it? It does not really seem quite right to use the word 'rebutting'. This word seems to imply that the rebutting is being done by posing another argument, and not merely by asking a question about the original argument, even if it is a critical question that casts doubt on the argument.

3. ATTACK

The word 'attack' is also quite a broad notion as used in argumentation. An attack, it would seem, does not necessarily have to be an argument, nor does it have to be posed against a prior argument. One might, for example, attack a question or attack an assertion as unsubstantiated, vague, ambiguous etc. However, the term attack is often used in AI in such a way that it represents one argument, or a connected sequence of such arguments, posed against another argument, or connected sequence of such arguments. In an attack of this sort, the two sequences of arguments are seen as competing with each other, so that if one is stronger than the other, it will win over against the other. There is even a formal framework well known in AI (Dung, 1995) in which the notion of an attack is taken as a primitive

One finds it to be a widely held commonplace, with many variations in logic textbooks and writings on logic that there are only three ways to attack an argument. One is to argue that a premise is false or insufficiently supported. Another is to argue that the conclusion doesn't follow from the set of premises that were presented as supporting it. The third is to argue that the conclusion can be shown to be false by the bringing forward of a counter-argument opposed to the original argument. To attack an argument in the third way, it may be enough to simply question whether its conclusion is true, but if a given argument that is being attacked has a certain degree of strength, merely questioning its conclusion may not be sufficient. What the attacker needs to do in such a case is to put forward a second argument that is stronger than the original argument and that provides evidence for rejecting the conclusion of the original argument. Such an attack is sufficient to defeat the original argument, unless its proponent can give further reasons to support it. To these three ways we could add a fourth way. The fourth way is to argue that the given argument is not relevant to the ultimate conclusion to be proved in the case at issue.

To attack an argument in the fourth way, matters of how the argument was used for some purpose in a context of dialog needs to be taken into account. Even though the given argument may stand, having repelled all attacks of the first three kinds, its force as argument may be nullified if it is irrelevant. But is this kind of charge a rebuttal? Perhaps it is not, if it is not an attack on the argument itself, but rather a charge that the argument is not useful for some purpose. A charge of irrelevance is best seen as a procedural objection to the effect that the argument is not useful to resolve the ultimate issue under discussion. What is presupposed by a claim of relevance is that the given argument is supposed to be used to resolve some unsettled issue in a discussion that is being carried on in the given case. If an argument has no probative value as evidence to prove or disprove the thesis at issue in a particular discussion, it may be dismissed as irrelevant. However, although this attack may knock the argument out of consideration, it is not, strictly speaking a rebuttal. Nor is it an attack on the argument, if an attack is taken to be the same as a rebuttal.¹ It is a procedural objection.

Another qualification needs to be added. Although there may be three basic ways to attack an argument, asking a critical question should not, in general be seen as an attack on an argument. We should recall Govier's remark that a question "purely considered as such" does not itself constitute an objection. However, it has been shown that critical questions differ in their force. In some instances, merely asking a critical question makes the original argument default, while in other instances, asking the critical question does not make the argument default unless the question asker can offer evidence to back up the question (Walton and Godden, 2005).

We to be careful to recall that there can be other ways of making an objection to an argument that do not fall into the category of rebuttal. Thus the task of defining the notion of an objection precisely, and the task of classifying the various types of objections that can be made to an argument, remain open questions for future work. Still, in this section we have made some progress towards this investigation by carefully describing four basic ways to attack an argument, and by adding that asking a critical question may also often be seen as a way of attacking an argument by raising critical doubts about it. Argument attacks surely represent some of the central ways of raising an objection about an argument. However, as Krabbe's list of candidates for objections suggests, there appear to be many other ways of making an objection to an argument that need to be analyzed, discussed and studied.

There is also another way to attack an argument that has not yet been considered. This way of attack does not apply to deductive arguments. It only applies to defeasible inferences. Only the inductive and the plausibilistic types of inference are nonmonotonic, and are susceptible to this type of attack.² This method is highly familiar in the recent research on nonmonotonic logics for defeasible reasoning. It is to argue that there is an exception to the rule, and that the given case falls under the category of this type of exception. This third way of attacking an argument is very familiar in recent studies of defeasible reasoning, like the classical Tweety inference: birds fly; Tweety is a bird; therefore Tweety flies. This inference is based on the defeasible generalization that birds

¹ This point may be used to show that attack is wider than rebuttal. An objection that an argument is irrelevant may not strictly speaking, be a rebuttal, but it does, broadly speaking seem like an attack.

² Deductive reasoning is monotonic, meaning that a deductive argument always remains valid even if new premises are added.

normally fly, or it could also be analyzed as being based a conditional rule to the effect that if something is a bird it flies. Since such a conditional is open to exceptions, meaning that it will default in some cases. It can be questioned whether this kind of attack is really an attack on the argument. It can be argued that it is better classified as an attack on the assumption that the argument, or the rule of inference it is based on, is applicable to the fact of the particular case at issue. We return to this question in section 4.

For the present, let us say that ‘attack’ and ‘rebuttal’ may be treated as equivalent terms. Both refer to the situation of one argument (the attacking argument) directed against another (the target argument) to show that the target argument is somehow defective (questionable, not supported by the evidence, untenable, etc.).

4. REBUTTAL

Perhaps the best known use of the term ‘rebuttal’ in argumentation theory is Toulmin’s use of it in his argument model, containing the elements datum, qualifier, claim, warrant, backing and rebuttal. In the model (Toulmin, 1958, p. 101), the datum is supported by a warrant that leads to a claim that is qualified by conditions of exception or rebuttal. For example (p. 99), the claim that a man is a British subject might be supported by the datum that he was born in Bermuda, based on the warrant that a man born in Bermuda will be a British subject. The warrant appears to be similar to what is often called a generalization in logic. This example of an argument is defeasible, because the generalization is subject to exceptions, and hence the argument is subject to defeat if the information comes in showing that the particular case at issue is one where an exception holds. For example, although a man may have been born in Bermuda, he may have changed his nationality since birth (p. 101). Toulmin uses the word ‘rebuttal’, but other words like ‘refutation’ or ‘defeater’ might also be used to apply to such a case.

The meaning term of the term ‘warrant’ in Toulmin’s argument layout has long been the subject of much controversy (Hitchcock and Verheij, 2006). A Toulmin warrant is in typical instances general statement that acts as an inference license, in contrast to the datum and claim that tend to be specific statements. In logical terms, it could be described as a propositional function or open sentence of this form: if a person x was born in Bermuda, then generally that person x is a British subject.

Toulmin’s notion of a rebuttal seems simple at first. A rebuttal, on his Bermuda example, is simply an exception to a rule (warrant, in Toulmin’s terms). However, according to Verheij (2008, 20), rebuttal is an ambiguous concept in Toulmin’s treatment, and five meanings of the term need to be distinguished. First, rebuttals are associated with “circumstances in which the general authority of the warrant would have to be set aside” (Toulmin, 1958, 101). Second, rebuttals are “exceptional circumstances which might be capable of defeating or rebutting the warranted conclusion” (Toulmin, 1958, 101). Third, rebuttals are associated with the non-applicability of a warrant (Toulmin, 1958, 102). But a warrant could also be an argument against the datum, a different sort of rebuttal from an argument against the warrant or the claim. In traditional logical terms, this would be an argument claiming that a premise of the inference being rebutted does not hold. Verheij also distinguishes between the warrant that acts as an evidential support of the conditional and the conditional that is one premise in the inference. On his analysis

a rebuttal can attack the conditional or it can attacks the warrant that supports the conditional as evidence.

Judging by Toulmin's Bermuda example, the notion of rebuttal seems fairly simple. A rebuttal is an opposed argument that cites an instance in which the warrant in the original argument no longer applies. It cites an exception to the rule. But on Verheij's explication, Toulmin's account of rebuttal is more complex than it looks. Describing rebuttal as citing an exception to a rule of inference on which an argument was based sound similar to what is called undercutting in the literature on defeasibility (Pollock, 1995).

5. REBUTTERS AND UNDERCUTTERS

Pollock's distinction between two kinds of counter-arguments called rebutting defeaters and undercutting defeaters (often referred to as rebutters versus undercutters) is drawn as follows. A rebutting defeater gives a reason for denying a claim by arguing that the claim is a false previously held belief (Pollock, 1995, p. 40). An undercutting defeater attacks the inferential link between the claim and the reason supporting it by weakening or removing the reason that supported the claim. The way Pollock uses these terms, a rebutter gives a reason to show the conclusion is false, whereas an undercutter merely raises doubt whether the inference supporting the conclusion holds. It does not show that the conclusion is false.

To explain this distinction it is best to use an example. The classic example is the Tweety argument: Birds fly, Tweety is a bird; therefore Tweety flies'. If new information comes in telling us that Tweety is a penguin, the original Tweety argument is undercut. Generally speaking, the argument still holds. Generally birds fly, and hence, given that Tweety is a bird, it follows that Tweety flies. But in this particular case, we have found out that Tweety is a penguin. Hence in this particular case, since we know that Tweety is a type of bird that does not fly, we can no longer use the former inference to draw the conclusion that Tweety flies.

Pollock's original red light example (1995, p. 41) is also worth considering.

For instance, suppose x looks red to me, but I know that x is illuminated by red lights and red lights can make objects look red when they are not. Knowing this defeats the prima facie reason, but it is not a reason for thinking that x is *not* red. After all, red objects look red in red light too. This is an *undercutting defeater* (Pollock's italics in both instances).

To show how the red light example has the defining characteristics of a species of rebuttal, we analyze it as an initial (given) argument and a counter-argument posed against it. Let's call this pair the original argument and the attacking argument.

The Original Argument

When an object looks red, then (normally, but subject to exceptions) it is red.
This object looks red to me.
Therefore this object is red.

The Attacking Argument

This object is illuminated by a red light.

When an object is illuminated by a red light, this can make it look red even though it is not.

Therefore the original argument (the *prima facie* reason for concluding that this object is red expressed by the original argument) no longer holds.

Pollock (p. 41) states that the attacking argument should be classified as an undercutter rather than a rebutter because red objects look red in red light too. Even given the attacking argument, the object may be red, for all we know. Using Pollock's language, it would not be right to say that the attacking argument is a rebutting defeater that shows that the conclusion of the original argument is false. What it shows is that although the original arguments still holds as a *prima facie* reason for concluding that this object is red, because of the new information about the red light that has come in, the attacking argument, built on this new information added in, casts doubt on the conclusion of the original argument.

The red light example depends on a type of argumentation that has been called argument from appearance (Walton, 2006), while the Tweety example depends on a generalization that is subject to exceptions. Let's consider a third example, due to Prakken (2003): if something looks like an affidavit, it is an affidavit; this object looks like an affidavit; therefore it is an affidavit. This inference might fail if we are taking part in a TV series about a trial in which props are used. A document on a desk might look like an affidavit, but after all this is a TV series. It might not be an affidavit, but merely a prop made to look like one. In the context, the original argument fails to support the conclusion that the document in question is an affidavit. But maybe it is a real affidavit. An easy way to get such a prop for the TV series would be to ask someone who has access to real affidavits to get one for use it the TV series. Thus this example looks similar to the red light example.

There is one final issue that cannot be resolved here but that needs to be stated. It is often said that while the rebutter attacks the conclusion of the argument it was directed against, the undercutter attacks the inferential link on which the argument was based. What does this mean? Does it mean that the rebutter claims to show that the rule of inference on which the argument was based was not rightly applied? Or does it mean that the old rule of inference needs to be replaced with a more complex one, once the new knowledge has come in? This issue remains a troublesome one for understanding how rebutters work.

6. CONCLUSION

To sort out these terms in a way that could be useful as a way of offering an orderly and consistent way for argumentation theory to proceed, the following provisional tree of definitions can be proposed. Objection is the widest category of those we considered. It includes procedural objections, and many kinds of attacks that should not, strictly speaking, be called rebuttals. An objection does not have to be an argument even though it is comparable to an argument in that it assumes that there is something

negative about an original argument, or move in argumentation, that needs to be responded to, called into question and corrected. A rebuttal is a species of objection.

A *rebuttal* is an argument directed against another argument to show that the first argument is somehow defective. To rebut an argument is to try to show that the argument is questionable, or that it is not supported by the evidence, or even that the evidence shows that it is untenable. A rebuttal can attack a premise of the original argument, it can attack the conclusion, or it can act as an undercutter that presumably somehow attacks the inference from the premises to the conclusion. There are two kinds of rebuttals, called rebutters and undercutters. A *refutation* is a species of rebuttal that shows that the argument it is aimed at is untenable. It could be called a knock-down counter-argument. When an argument you've put forward is confronted with a refutation, it has to be given up. An *attack*, in the sense of the word as used in the field of argumentation, is an argument directed against another argument to show that the first argument is somehow defective. In other words, for purposes of argumentation study, the words 'rebuttal' and 'attack' can be taken as equivalent.

These provisional definitions are all defeasible, and the reader is encouraged to search for borderline cases and potential counter-examples. Some of the more fuzzy cases that need further study include objections of irrelevance of the original argument and the asking of critical questions in response to the original argument. It seems to be a good general principle that asking a critical question in response to an argument should not be classified as the making of an attack, rebuttal, or refutation on that argument. This conclusion is controversial, however, for there is a literature on critical questioning that seems to describe this activity, at least in some instances, using the nomenclature of attack and rebuttal. Also, there needs to be more study of the verb 'to criticize' in relation to the activity of critical questioning. So we invite the reader, in a friendly spirit, to try to attack, rebut or refute the classifications and definitions proposed.

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