

ARGUMENT SCHEME THEORY¹

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I propose to study what we might call the theory or the meta-theory of argument schemes. Such a study will highlight not only the theoretical problems but also the practical problems for matters of understanding and argument making. The subject is studied under the headings of comparison with formal logic, functionality, comprehensiveness, completeness, genesis, normativity and effectiveness. Previous publications by Walton Garssen, Hitchcock, Blair, Pinto and Prakken, serve as points of departure.

KEYWORDS: argument kinds, argument schemes, descriptive schemes, logical constants, schematic constants.

In this essay I want to pursue two questions belonging to Argument Scheme Theory. Part 1 considers the differences and similarities between logical forms and argument schemes; Part 2 speculates about the relationship between argument schemes and argument kinds.

1. SCHEMES AND FORMS

Walton, Reed and Macagno, in the most comprehensive study of the subject, define argument schemes as follows:

Df W1 ARGUMENTATION SCHEMES are [i] forms of argument (structures or inferences) [ii] that represent structures of common types of

¹ I dedicate this essay to the memory of my friend and teacher, Dr Robert C. Pinto (1934 - 2019). Earlier versions were presented in 2019 at CRRAR in the University of Windsor and the European Conference on Argumentation at the University of Groningen. For helpful discussion of the issues in this essay I thank J.A. Blair, Jose Gascón, David Hitchcock, Catherine Hundleby, Douglas Walton, Christopher Tindale, and Waleed Mebane.,

arguments used in everyday discourse as well as [iii] in special contexts like those of legal argumentation and scientific argumentation. [iv] They include the deductive and inductive forms of argument that we are already so familiar in logic. However [v] they also represent forms of argument that are neither deductive nor inductive, but that fall into a third category, sometimes called defeasible, presumptive, or abductive. (Walton et al. 2008, p. 1)

Just two years earlier Walton gave a slightly different definition of argument schemes that neglected some of these conditions but introduced some others. Argumentation schemes, he wrote,

Df W2 [i] are distinct forms of argument ... [ii] [that are] ... inherently presumptive and defeasible, and thus [iii] they are different in nature from deductive and inductive arguments. Each of the forms of argument ... [iv] is used as a presumptive argument in a dialogue that carries a weight of plausibility. [v] If the respondent accepts the premises, then that gives him a good reason also to accept the conclusion ... [vi] They are used to shift a burden of proof to one side or the other in a dialogue (Walton 2006, p. 84)

Combining the ideas contained in these two definitions, we can make an overview of the several proposed aspects of argument schemes as follows.

ARGUMENT SCHEMES AND THEIR INSTANTIATIONS	
PROPERTIES	ASPECT
1. schemes are patterns of arguments	- meta-logical aspect
2. schemes are ordered sequences of sentence forms	- syntactic aspect
3. instantiations of schemes are defeasible arguments	- logical aspect
4. instantiations of schemes are common types of arguments	- social (empirical) aspect

5. instantiations of schemes have a weight of plausibility	- normative aspect
6. conclusions of instantiations of schemes are presumptions	- linguistic / semantic aspect
7. instantiations of schemes are used to shift a burden of proof .	- interactional / dialogical aspect

It is especially properties 3 to 7 that are claimed to be characteristic of the kinds of arguments that have drawn the attention of scheme theorists studying argumentation. Properties 1 to 3 hold for inductive argument schemes as well as for presumptive argument schemes.

There are, however, noticeable differences between Df-W1 and Df-W2. The first definition informs us, in neutral terms, that argument schemes are of common types of arguments and also of some of the types of arguments in specialized fields. This is not emphasized in the second definition. More striking it is that whereas Df-W1 explicitly includes deductive and inductive logical forms as argument scheme structures, Df-W2 is equally explicit in excluding them. As well, it is noticeable that whereas the second definition tells that argument schemes have a weight of plausibility, i.e., that arguments that fit the schemes give some support to their conclusions, the first definition makes no such claim. These two definitions were given at different times by different sets of authors in a rapidly evolving field of research. Nitpicking would not be appropriate. Nevertheless, the points of difference in the two definitions does bring two questions to the fore that are of great importance to informal logicians. Question 1 concerns the difference between logical forms and argument schemes, if any there is. Question 2 is about whether or not arguments instantiating the schemes are normative, i.e., have a weight of plausibility in virtue of being instances of the schemes. It is then the second and third dimensions of schemes mentioned above that I want to explore: the syntactic and normative aspects.

1.2

Why are we interested in the difference between logical forms and argument schemes? It is because they are similar kinds of patterns of arguments that are used for the analysis and evaluation of natural language arguments, but it is unclear what it is that makes them different from each other.

In Robert Audi's *Dictionary*, John Corcoran (1999, p. 818) writes that a scheme is a "a metalinguistic frame or template used to specify an infinite set of sentences, its instances, by finite means, often taken with a side condition on how its blanks or placeholders are to be filled." Corcoran's definition does not mention arguments; he speaks only broadly of metalinguistic frameworks that can be used to generate sentences. David Hitchcock (2010, p. 157) adopts schemes to arguments like this:

Df H An ARGUMENT SCHEME² is (i) a pattern of argument, (ii) a sequence of sentential forms with variables, with (iii) the last sentential form introduced by a conclusion indicator like 'so' or 'therefore'.

We must be clear that schemes are not themselves arguments, but patterns of arguments. They are patterns built not from sentences but from sentence forms. A sentence form is not a sentence itself (and thus neither a premise nor a conclusion) but a pattern or structure made of fixed words (constants) and variables such that when the variables are appropriately replaced by words, a well-formed sentence results. One of the sentence forms in the scheme is designated as the one that will become an argument's conclusion once it is turned into a sentence; the other sentence forms in the scheme when they become sentences will turn into premises. When all the variables in all the sentence forms in a scheme are replaced by appropriate words (there are restrictions on this), the sentences collectively become an argument as is made explicit by the presence of a conclusion indicator word.

However, what Hitchcock has said about argument schemes applies as well to the logical forms of symbolic logic. How, then, shall we distinguish forms and schemes? One suggestion is that argument schemes are "not so abstract that they become purely formal schemes like the valid scheme for modus ponens arguments" (Hitchcock 2010, p. 157). The difference between forms and schemes is to be found in the level of generality of the argument patterns, the forms being too general to be schemes, and the schemes insufficiently general to be forms. Nevertheless, this distinction is vague. Let us consider what might underlie it.

1.3 About logical forms

Modus ponens and tollens, hypothetical syllogisms, disjunctive syllogisms and constructive and destructive dilemmas are well-known valid forms of sentential logic. They are forms (patterns, structures) of arguments or

² I have changed 'argumentation scheme' to 'argument scheme'.

inferences consisting of logical constants and sentential (propositional) variables. (Going forward I will try to stick with the language of sentences.) In sentential logic, the most basic kind of modern formal logic, the only constants are sentence connectives and the only variables are sentential variables. The sentence connectives are constants because they are specified as always have the same (constant) meaning; the sentential variables are variables because they can be replaced by any indicative sentences, long or short, true or false. When the constants are combined with sentences substituted for the variables, compound (or molecular) sentences result; when all the variables in a logical form have been replaced with sentences, an argument results. The constants chosen for sentential logic are truth-functional constants, most often these: '&', 'v', '~', and '⊃'. They are selected because each one of them resembles a natural language sentence connective: 'and', 'or', 'not', and 'if-then', respectively. When the logical constants are combined with propositional variables, p , q , r , ..., logical forms result, e.g.,

If p then q	p or q	p and q
p	Not-p	so, q
so, q	so, q	

When we move up to the next level of formal logic, predicate logic, (or quantification theory, or first-order logic), the vocabulary is still divided between constants and variables. Here predicate letters, F, G, H, etc., are introduced and assigned a constant meaning in a given context of argument. They can stand for properties (one-place predicates, e.g., 'Fx') and relations (multiple-place predicates, 'Gxy', 'Hxyz', etc.) Also needed are variables for individual things (u, v, w, ...). Since predicate logic incorporates propositional logic it already has a stock of constants and variables with which to begin. It adds more: the new logical constants are the quantifiers '∃', and '∀' – they always have the same meaning, 'some' and 'all'³. Also added is identity ('='). When the ambit of logic reaches even further into modalities – alethic, epistemic, temporal, deontic, etc. – it is just a matter of adding more constants and variables. In alethic modal logic, for example, we add the constants 'necessary' (□) and 'possible' (◇), and a new range of variables for possible worlds (w_1 , w_2 , w_3 , etc.). I apologize for compressing so much technical detail into a very few sentences. The details are not important, it is the general point

³ These logical symbols are not at all necessary for the deployment of forms in logic, they are just very convenient, and because their meanings are stipulated they avert discussion of what they mean.)

that matters: logical forms, of all manner of complexity, are made of constants and variables (and punctuation devices).

1.4 About argument schemes.

Let us then consider schemes also in their syntactical aspects. Like argument patterns in the various formal logics, argument schemes also consist of constants and variables. However, the constants of *scheme logic* (as we might call it) are different than the constants of formal logic. We can call them 'schematic constants'. Examples of argument schemes are:

X's cause Y's	X indicates that <i>p</i>	<i>It is false that</i>
X obtains	So, <i>p</i> .	there is evidence that <i>p</i>
So, Y will obtain .		So, <i>not-p</i> .

In the left-most scheme are 'cause' and 'obtains' (is /will be present) which have the roles of constants; X and Y are variables ranging over individual events or states. In the centre-scheme, 'indicates that' is a schematic constant, and X is a variable for a person and *p* is a variable for a proposition. In the example on the far right, 'there is evidence that' is a schematic constant combining with the truth-functional constants in italics, 'it is false that' and 'not', and *p* is a variable for propositions. In the first example it is clear that 'cause' and 'obtains' are not truth-functional constants because the variables in their range are not propositions; hence there is no truth-value to compute. In the second and third example, although the inputs are propositions, at least one of the constants in each instance is not truth functional: even with substitutions made we would not be able to calculate the truth value of *p*, or come to a justified belief about *p*, from 'A indicates that *p*', or from 'it is false there is no evidence for *p*'. Thus, each of the schemes above contains at least one constant that does not belong to logic (as reviewed above) but some of them do contain a logical constant. Let us call these non-logical constants, schematic constants. Like the logical constants, the schematic constants are to be considered as always having the same meaning⁴ in whatever argument results from when substitutions are made on the variables.

Some schemes are not distinguished by the nature of their constants, but by the nature of their quantifiers. Consider this scheme for argument from sign, modelled on Walton et al., 2008 (p. 329).

⁴ Doug Walton, in conversation, has cautioned me against taking this constancy too strictly.

Generally when A (is true) then B (is true);
A is true;
So, (presumably) B is true.

‘Generally’ is not the universal quantifier of formal logic (\forall), and it is not a statistical quantifier like ‘most’ or ‘ $n\%$ ’ either. Some quantifiers seem especially well suited for presumptions and plausible propositions, and ‘Generally’ is one of them. It allows for some exceptions to the conditional in its scope, as do alternative quantifiers ‘normally’ and ‘usually’. Since these quantifiers are found in connection with presumptive reasoning, I will call them ‘presumptive quantifiers’.

1.5 Comparison of logical forms and argument schemes.

	Formal Logic	Schematic Logic
Constants	and (&); or (\vee); not (\sim); if-then (\supset) predicates (F, G, H, ...)	says that; causes; is an expert; is similar to; means that; correlates with; is between; is committed to; is a part of; is widely accepted; is plausible; is a part of; can be classified as; is a means to; is a sign of ... etc. properties / predicates
	QUANTIFIERS: some (\exists); all (\forall); identity ($=$); necessarily (\Box); possible (\Diamond)	QUANTIFIERS: generally; normally; usually
Variables	propositions (p, q, r, ...) individuals (u, v, w, ...) world variables (w1, w2, w3, ...)	propositions persons; objects; events (states); actions; cases (situations)

There are no important differences in the variables of formal logic and schematic logic: they both use propositional variables and the variety of variables occurring in schemes (for causes, events, cases, persons, etc.) can all be subsumed under the variables for individuals in predicate logic. Hence,

the difference between formal logic and schematic logic is found in the difference of their respective constants and quantifiers.

If we want to define 'argument scheme' in such a way that it does not include logical forms we will need to introduce a distinction. It is between using and mentioning a schematic constant. The sentence form "X said that p" uses the schematic constant '... said that ...'. But the sentence form "X's speech was a boring analysis of ... *said that* ..." only mentions it. Thus, argument schemes are those argument patterns that use at least one schematic constant or one schematic quantifier; whereas logical forms are argument patterns that use no schematic constants or quantifiers (only the specified logical constants and quantifiers). Let us then define 'argument scheme' as follows.

Df Sc. An ARGUMENT SCHEME is (i) a pattern of argument, (ii) made of a sequence of sentential forms with variables, of which (iii) at least one of the sentential forms contains a use of a schematic constant or a use of a schematic quantifier, and (iv) the last sentential form is introduced by a conclusion indicator like 'so' or 'therefore'.

Marking the distinction between schemes and forms with reference to their quantifiers and constants is better than doing it with reference to levels of generality. One reason is that it is more precise. Once the constants and quantifiers of each kind of logic are distinctly delineated, the distinction can be clearly drawn. Another reason is that the syntactic distinction between forms and schemes can explain the vague distinction based on generality. To understand this we must first appreciate that it is a mis-analogy to compare argument schemes to the logical forms of sentential logic, like *modus ponens*. Schemes are much more like the logical forms of predicate logic because they too involve quantifiers and individual variables. Since sentential logic parses discourse by the unit of the atomic sentence it is more general than predicate logic, which delves into the internal structure of atomic sentences. So, since schemes are more like the forms of predicate logic than they are like the forms of sentential logic, schemes are less general than the forms of sentential logic.

2 SCHEMES AND KINDS.

In this section, I argue for three claims: (1) that there are neutral argument schemes; (2) that neutral schemes give the identity conditions for argument kinds; and, (3) that argument kinds are illatively neutral.

2.1 The argument for the existence of neutral (descriptive) schemes.

A distinction often mentioned but seldom elaborated is the one between descriptive and normative argument schemes. Martin Kienpointner is reported to hold that whereas normative schemes have a normative conclusion and at least one normative premise, descriptive schemes have neither normative premises nor normative conclusions (see Blair 2001, pp. 374-75). This is a distinction between those schemes that come to a normative conclusion and those that don't; but both kinds are normative in that they give *prima facie* support for their conclusions. Another attempt to characterize descriptive schemes is Perelman and Olbrechts-Tyteca's approach, which Hitchcock says, is descriptive, meaning that it classifies kinds of arguments without including any direction for their evaluation.

They are describing how people actually argue outside demonstrative contexts, and how rhetorical handbooks recommend that they argue. It is of no concern to them whether a form of argument actually establishes the truth of a factual statement, the wisdom of a recommendation or the merits of an evaluation. (Hitchcock, 160; see *The New Rhetoric*, p. 188)

This we may call the anthropological approach. It is reportive/descriptive about those kinds of argument schemes in use which are thought to promote adherence to theses. However, Perelman and Olbrechts-Tyteca do not concern themselves with evaluation at this point. It is J.A Blair who draws a distinction between schemes that describe an actual instance of reasoning, whether it be good or bad, with normative schemes "that portray a supposedly valid or cogent pattern of inference or argument" (Blair 2001, p. 375). However, on Blair's view, some schemes can belong to both categories because some of the actual instances of reasoning found in the descriptive group may portray a cogent pattern of reasoning and therefore fit the normative category as well.

Let us explore another possibility. It is based on distinguishing argument kinds, to be identified by descriptive argument schemes, from positive or negative tokens of argument kinds, to be identified by normative argument schemes. How far-fetched is this suggestion that there are descriptive (normatively neutral) argument schemes? I think the seeds of the idea were sown some time ago. One of the important insights in the history of informal logic is that fallacies are related to patterns of argument; witness this passage from the *Fundamentals of Argumentation Theory*:

... it is now generally conceded that patterns of argument once considered uniformly fallacious are, in fact, fallacious only in some cases. ... The defining characteristics of a pattern or a type of argument are therefore to be distinguished from the defining conditions of the fallacious occurrences of that pattern. (van Eemeren et al., 1996, pp. 181-82.)

Here there is a distinction between “a pattern or a type of argument” – an argument scheme – and the added conditions needed for an argument to be a fallacious token of the type. Walton takes the story a step further.

Many of the most common forms of argument associated with major fallacies, such as argument from expert opinion, *ad hominem* argument, argument from analogy and argument from correlation to cause, have now been analyzed using the device of argumentation schemes. ... We need to recall that although the traditional logic textbooks mainly treated these forms of argumentation under the heading of informal fallacies, in many instances they are reasonable but defeasible arguments. (Walton, 2013, p. 220)⁵

If we can distinguish fallacious instances of an argument kind from the kind itself, so should we be able to distinguish positive instances of the kind from the kind itself. The scheme for an argument kind, which leans neither toward the positive, or the negative is a descriptive or neutral scheme. In short, the matter of neutral, descriptive, argument schemes is what good and bad instances of an argument kind have in common and no more.

As an illustration, compare these two schemes, one for a fallacy, the other for a presumptively good argument. Johnson and Blair (1994, p. 129) give a scheme for the Improper Appeal to Practice.

1. Someone defends an action against criticism by arguing that the conduct is widely practiced, is a customary practice, or is a rational practice.
2. Either there is, in fact, no such practice, or, in these circumstances, the existence of the practice is not relevant or not sufficient to justify or excuse the conduct being criticized.

⁵ See also Hitchcock, 2010, pp. 160-61.

Compare that with Walton's scheme (2006, p. 93) for Argument from Popular Practice by which he seems to have the same kind of argument in mind of which Johnson and Blair were speaking.

1. A is a popular practice among those who are familiar with what is acceptable or not with regard to A.
 2. If A is a popular practice among those who are familiar with what is acceptable or not with regard to A, that gives a reason to think that A is acceptable.
- C. Therefore. A is acceptable in this case.

The contrast here is between the appeal to popular practice arguments that are fallacies and those that are presumptively acceptable. What do they have in common? A plausible answer is given in the first line of Johnson and Blair's characterization: it is the kind of argument in which *that X is widely practised, or customary, or rational, is offered as a reason for the acceptability of X*. Notice that this characterization of the argument kind is neutral.

Here is another example. Johnson and Blair (p. 101) characterize the *ad hominem* (abusive) fallacy as follows.

1. The critic responds to the position of an arguer by launching a personal attack on the arguer (ignoring the arguer's position).
2. The personal attack on the arguer is irrelevant to any assessment of the argument.

Compare that description of a fallacy with Walton's scheme (2006, p. 123) for abusive *ad hominem* argument. (He calls it 'direct' to distinguish it from the circumstantial *ad hominem*, but it is often called 'abusive' *ad hominem*.)

- a* is a person of bad character.
So, *a*'s argument should not be accepted.

Here again the descriptive content for what the two schemes have in common is part of what we find in the first line of Johnson and Blair's formula: the argument kind abusive *ad hominem* is an *argument in which a critic ... launch[es] a personal attack on the arguer which may or may not be relevant*. Again, this is a neutral characterization of an argument kind. If the attack is not relevant it is a fallacy; if having a bad character is relevant it may be a good presumptive argument as Walton's scheme intimates. But these judgments will be based on considerations beyond what the scheme

provides. For each argument kind, whatever all the good and bad tokens of the kind have in common, that is what the descriptive (or neutral) schemes for the kind will be. Therefore, descriptive schemes are not abstracted from anyone's actual reasoning or arguing, nor are they anthropological data, nor are they schemes that bar the use sentence forms for normative sentences. Descriptive schemes are rather discovered by distilling what possible good and bad instances of an argument kind have in common. What they are is something we infer.

Of course, it is possible to talk of only good arguments of a certain kind (*ad verecundiam*, e.g.) and then say that these good arguments constitute a kind of argument. We can also talk of bad *ad verecundiam* arguments and consider them to be another argument kind. So, good *ad verecundiam* can be one argument kind and bad *ad verecundiam* another argument kind. But what makes them both *ad verecundiam* arguments? The question presupposes that there is something these two kinds of arguments – the good and the bad kinds – have in common, something which is general and contributes neither to the goodness nor to badness of arguments, but does serve to individuate argument kinds.

2.2 Neutral schemes and argument kinds.

I propose that these neutral descriptive schemes give the necessary and sufficient conditions for argument kinds. Yet, how shall we individuate argument kinds? It seems best to do it on the basis of the kinds of reasons (premises) for their conclusions. There are two different ways to understand 'reason' in this context. One possibility is a relational approach which sorts reasons in arguments by the kind of link they have to their conclusions, irrespective of the content of those reasons. This view, the relational-view, is preferred by David Hitchcock⁶ who illustrates it with these two arguments: (1) "This is red, so this is coloured", and (3) "This is square, so this is shaped", holding that they are arguments of the same kind because both are arguments from a determinate to a determinable, that is, the premise-conclusion link is of the same kind. Another possibility, the content-view or subject-matter view, is to sort premises into kinds by the content of their reasons; for example, all *ad misericordiam* arguments will have reasons of sympathy among their premises making them arguments of the same kind; and since reasons of fear (*ad baculum*), are different from reasons of sympathy, they will be a different kind of argument. The content view distinguishes kinds of evidence rather than kinds of support relations. It is

⁶ Personal communication, June 2019.

not clear whether, all things considered, the one way of individuating argument kinds is better than the other, but for the purpose of this study, I will explore the content view of distinguishing argument kinds. This seems consistent with contemporary work on argument schemes and has historical antecedents in the works of the Port Royal logicians, and John Locke and Isaac Watts, who divided arguments on the basis of their subject matter.

There are some consequences to the view that neutral schemes give the necessary and sufficient conditions for argument kinds. If any of the necessary conditions for belonging to the argument kind were left out, the definition would fail to capture the character of the kind of argument in question. Hence, the instantiations of any argument scheme (defining an argument kind) will have to include all the necessary conditions of belonging to the argument kind – no defining condition can be left out. Hence, the premises of any instantiation of such a scheme will have linked premises. (Premises are linked just in case if anyone of them is removed, or is false, support for the conclusion is lost or at least significantly diminished; arguments whose premises are not linked but are convergent with respect to a conclusion suffer less drastically when one of their premises is false or is removed (See Walton 2006, pp. 149-51)). Consequently, an argument scheme is one in which no proper subset of its sentential forms constitute an argument scheme.

2.3 Argument kinds are illatively neutral.

Arguments are often classified as either deductive or inductive. This view parallels the idea that there are two kinds of logic, deductive and inductive, one for each class of arguments. This view presupposes that we can always identify arguments as deductive or inductive before we set about making our logical evaluations. How is that to be done? One suggestion is that we must appeal to the intentions of argument makers. Do they indicate illative modalities by using illative adverbs like 'necessarily' or 'probably'? Sometimes yes, but when they don't we are then left in the position of not knowing by what standard to evaluate arguments – for example, is this a bad deduction or a good induction? Responding to this difficulty, Brian Skyrms (2000, p. 22) holds the view that "deductive and inductive logic are not distinguished by the different types of arguments with which they deal, but by the different standards against which we evaluate arguments". In other words, 'deductive' and 'inductive' do not name two kinds of arguments but rather different standards by which to evaluate arguments. This is a point about argument kinds not about arguments – there are, of course, particular arguments which necessitate their conclusions, and others that make their conclusions probable. Skyrms' point is about "types of arguments" and it should hold as well for the supposed class of "presumptive arguments" with which many closely identify argument schemes. From the Skyrmsian perspective some arguments may be used to establish presumptions but there is no argument kind, Presumptive Arguments, anymore than there is a kind deductive argument. But perhaps there is a third standard, by which we can evaluate arguments, the presumptive standard.

Now, if 'deductive,' 'inductive' and 'presumptive' do not name argument kinds, then argument kinds do not have illative modalities such as 'necessarily,' 'probably' or 'presumably', although individual arguments may well include such indicators. Where these adverbs are included they will advise arguers by which logical standard an argument is proposed to be evaluated. Argument receivers/evaluators not given any guidance by an argument maker must choose what they deem to be the most appropriate illative modality in judging arguments. However, since neutral (descriptive) schemes represent argument kinds, those schemes will not include illative adverbs. Descriptive schemes are, we may say, illatively neutral. On this view, an inductive appeal to authority and a presumptive appeal to authority will be different arguments because different standards of evaluation are in play but, on the content view of argument identity, they will be arguments of the same kind. Interestingly, it turns out that on this view of argument kinds, it is misleading to say that some argument kinds are defeasible. To be

defeasible means that initial judgments are subject to possible revision in light of new information. However, this cannot be said of argument kinds since they are illatively neutral and make no normative claim: they do not, in themselves, depend on standards. Hence, it is standards that may be defeasible, not argument kinds (neutrally defined). When defeasible standards are combined with instances of argument kinds, defeasibility is a factor in argument evaluation. Nevertheless, when we are focussed on neutral schemes, the term 'defeasible scheme' is a category mistake.

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