THE ARGUMENTATION SCHEMES

In this chapter, 25 different argumentation schemes are described and analyzed. For each argumentation scheme, a matching set of critical questions is given. This pairing brings out the essentially presumptive nature of the kind of reasoning involved in the use of argumentation schemes, and at the same time reveals the pragmatic and dialectical nature of how this reasoning works. The function of each argumentation scheme is to shift a weight of presumption from one side of a dialogue to the other. The opposing arguer in the dialogue can shift this weight of presumption back to the other side again by asking any of the appropriate critical questions matching that argumentation scheme. To once again get the presumption on his or her side, the original arguer (who used the argumentation scheme in the first place) must give a satisfactory answer to that critical question.

Some of the argumentation schemes are basic or fundamental, whereas others are composites made up from these basic schemes. Where this is so, one way or the other, it has been noted in the account of the argumentation scheme given. However, no attempt has been made to classify the schemes, beyond the typology already constructed by Kienpointner (1992). Some classifications are obvious. For example, there are causal, verbal, and gradualistic schemes. However, there is no reason to think that this set of schemes is complete, or that our analysis of their structure is adequate in every respect. Therefore, the temptation to venture a new system of classification, or one different from that of Kienpointner (1992), has been resisted at this point.

Another thing these argumentation schemes have in common is that they involve the application of generalizations of an abstract sort, to a particular situation, exemplified by the particular case at issue. The generalization acts as a warrant, or as Kienpointner (1992) called it, a *Schlussregel*, to support the premise that cites the particulars of the case. Thus, these schemes involve presumptive reasoning, because the match between a generalization and a particular case is never perfect, or completely certain and absolute. To the extent that they are species of case-based

reasoning,[23] these schemes embody argumentation that is defeasible, or open to retraction (default, defeat) in exceptional cases that may come to be known in the future.

Perhaps the main, arguable exception here is argument from evidence to a hypothesis, which seems to be an inductive or probabilistic, as opposed to a presumptive or plausibilistic kind of argumentation. However, it is a little early to tell. Perhaps even this type of argumentation has its presumptive aspects. And, at any rate, we include it here because it has been so often misunderstood and neglected in the past, as a distinctive type of argumentation with its own special characteristics.

Many problems and finer points of analysis remain unresolved in connection with these argumentation schemes. Where such problems exist, they have been raised and clarified, but clearly much work remains to be done in mapping the structure of argumentation schemes.

ARGUMENT FROM SIGN

Argument from sign is a familiar kind of reasoning in everyday argument. In argument from sign, a particular finding or observation *x* is taken as evidence of the existence of a property or event *E*, in a given situation.

Case 3.1: Here are some bear tracks in the snow.
Therefore, a bear passed this way.

The particular finding of the bear tracks is taken as the sign of the presence of a bear passing through the area indicated.

The reasoning in Case 3.1 is presumptive and defeasible, for there could have been other causes of the bear tracks, for example, someone putting them there to intentionally deceive anyone seeing them. However, in the absence of some evidence to the contrary of this sort, it would be reasonable to draw the conclusion in Case 3.1.

Another aspect of argument from sign is that the confidence in the conclusion is relative to what is normally expected in the type of situation. For example, if the area in Case 3.1 is known to be populated by bears, the argument for the conclusion is strengthened.

Argument from sign can be seen as a kind of converse causal argumentation. In Case 3.1 for example, presumably we infer the presence of a bear because that is what caused the bear tracks to appear. Some also see argumentation from sign as a species of inference to the best explanation.[24] According to this analysis of Case 3.1, the conclusion is the "best explanation" of the finding cited in the premise.

Hastings (1963) identified argument from sign as a distinctive argumentation scheme, or "mode of reasoning," as he called it (pp. 55-64). According to his analysis, the argument from sign always involves a "causal or correlative relation" expressed as a "conditional of probability" (p. 59). He cited the following example that is rephrased in Case 3.2.

Case 3.2: The Korean elections in 1948 and 1950 were free and fair. Free elections in a country indicate there is no police state. Therefore, Korea is not a police state, (p. 55)

According to the analysis of this case given by Hastings, we can use a variable *A* to stand for "Free elections" and another to stand for "No police state," and then we can see that the inference in Case 3.2 has a structure comparable to that of *modus ponens:* If *A* then *B; A*, therefore *B*. However, the conditional or "if-then" in the major premise is not a "hook" or strict conditional, of the kind familiar in deductive logic. Hastings describes it instead as a "causal relation" or "conditional of probability."

In evaluating arguments from sign, Hastings postulated two critical questions that should be asked:

1. **What is the strength of the correlation of the sign with the event signified?**

2. **Are there other events that would more reliably account for the sign?**

With respect to the first question, Hastings postulated the principle that the stronger the causal relation or association between the two events, the stronger is the argument from sign. With respect to the second question, Hastings postulated the principle that other causes fcr the sign must be unlikely for the sign reasoning to be plausible.

More complex cases of argumentation from sign are found in what might be called *evidence accumulating arguments*, arguments that proceed through a sequence of signs, each of which only gives a small weight of presumption for the conclusion, but taken together, the whole sequence builds up to quite a plausible argument for the conclusion. The following classic case is from the Sherlock Holmes story, *A Study in Scarlet*. Dr. Watson, looking for rooms in London, has just been introduced to Sherlock Holmes. As a result of the meeting, Holmes arrived at the conclusion that Watson had just returned from Afghanistan. How did Holmes arrive at this clever conclusion, without having been told anything about Dr. Watson's recent travels or background? According to his own account, his train of reasoning was based on the following argumentation from Doyle (1932).

Case 3.3: Here is a gentleman of a medical type, but with the air of a military man. Clearly an army doctor, then. He has just come from the tropics, for his face is dark, and that is not the natural tint of his skin, for his wrists are fair. He has undergone hardship and sickness, as his haggard face says clearly. His left arm has been injured. He holds it in a stiff and unnatural manner. Where in the tropics could an English army doctor have seen much hardship and got his arm wounded? Clearly in Afghanistan. (p. 11)

Holmes' reasoning takes the form of a sequence of inferences based on signs which he observes, for example, "His face is dark." From these signs he draws conclusions, for example, "He has just come from the tropics." As more and more signs are brought in, and more inferences drawn from them, the case builds up. Once enough evidence has accumulated, the conclusion becomes "obvious"–Watson has recently been in Afghanistan.

Clearly this argumentation is presumptive in nature, Holmes is really making a guess. But given the buildup of suggestive evidence, his guess is a plausible one, and it turns out to be right. Each sign gives a little bit of evidence. But the accumulation of the sequence of reasoning based on many signs yields a fair weight of presumption in favor of the conclusion conjectured.

However, in many cases, argument from sign is a simple, one-step kind of inference where some empirical observation is made, and interpreted as a sign or symptom, licencing the drawing of a presumptive conclusion. What makes a finding a sign, enabling the drawing of a conclusion from it seems hard to say. In many cases, there is a causal or explanatory link between the two things, but not in all cases. Common cases are the following.

Case 3.4: Bob is covered with red spots.
Therefore, Bob has the measles.

Case 3.5: The barometer just dropped.
Therefore, we will have a storm.

Case 3.6: Bob is biting his nails.
Therefore, Bob is worried about something.

These inferences have the following general form, where *A* is a proposition describing a finding or observation; and *B* is another proposition, a conclusion drawn on the basis of what has been observed.

A is true in this situation.

B is generally indicated as true when its sign, *A*, is true, in this kind of situation.

Therefore, *B* is true in this situation.

This type of inference is our first approximation of the argumentation scheme for the argument from sign. Argument from sign is based on a known correlation or association between two propositions *A* and *B* that is not absolute, but more suggestive (presumptive) in nature.

ARGUMENT FROM EXAMPLE

According to Hastings (1963) argument from example is the most common type of reasoning in debating. The most important characteristic is "not the number of items used, but their typicality" (p. 25). Argument from example is usually used to support a generalization of some kind, and hence Hastings called this kind of argument "argument from example to a descriptive generalization."

One type of critical response to use of the argument from example is to present a counterexample–another example that falsifies or refutes the given generalization. As Hastings pointed out, the response to this reply is for the proponent of the original generalization to qualify it with terms like "usually," "sometimes," "rarely," and so forth.

Argument from example is an inherently weak form of argumentation that does not confirm a claim conclusively, or even with probability. It gives only a small weight of presumption in favor of the claim, shifting a burden of proof in favor of it, subject to critical questioning. Five critical questions matching the use of the argument from example are given. Three of these critical questions (2, 3, and 4) are given by Hastings (1963).

1. **Is the proposition presented by the example in fact true?** This question asks whether the example is a true report of reality.

2. **Does the example support the general claim it is supposed to be an instance of?** This question asks whether the example is really an instance of the generalization it was brought forward to support.

3. **Is the example typical of the kinds of cases that the generalization ranges over?** If the example can be shown to be an exception or atypical case, its support for the generalization may be nullified.

4. **How strong is the generalization?** If the generalization holds only for a narrow range of cases, it is not very reliable. In such cases, the argument

may hold, but may be weak.

5. **Were there special circumstances present in the example that would impair its generalizability?** Presumptive generalizations are inherently defeasible, or subject to exceptions. One can always examine a cited example to look for indications that special circumstances are present in it.

Argument from example is inherently presumptive in nature, and hence it is always susceptible to the *secundum quid* fallacy of neglect of qualifications. Generalizations based on cited examples should always be seen as inherently subject to qualifications to the effect that they hold "normally" or "typically." This means that any cited instance or example could turn out to be atypical in certain respects, or that future instances could come to be known that are atypical, that is, do not support the generalization.

One must be careful in identifying argument from example in a given case, because the citing of an example is also used in explanations and other speech acts that are not arguments. Not every use of an example in everyday conversation can be cited as an instance of argument from example.

Was the example given to prove a point, or merely to illustrate it? This is a crucial question if the offering of a single example is alleged to be a hasty generalization. For if the example was only part of an elucidation, a pedagogical dialogue to illustrate or explain something, it could be quite inappropriate to criticize it as a hasty generalization, a failure to prove a generalization. For it could be that it was not meant to prove the generalization at all. In such a case, hasty generalization would be a pseudo-fallacy, or a species of false (inappropriate) charge of fallacy (see chapter 5).

According to Beardsley (1950), a single incident may be part of an anecdote designed to help an addressee understand or remember a point, instead of being meant to prove the point. Here we need to be careful to distinguish between two different kinds of speech act–illustrating a generalization versus proving it. But, in practice, it can be easy to confuse these two verbal performances.

Perelman and Olbrechts-Tyteca (1969) pointed out the distinction between illustration and example: "Whereas an example is designed to establish a rule, the role of illustration is to strengthen adherence to a known and accepted rule, by providing particular instances which clarify the general statement" (p. 357). Illustration and example have different functions in discourse.

Argument from precedent also seems similar to argument from example, but the functions of these two kinds of argumentation are different. In argument from precedent, a particular case is shown to make a change in a given rule necessary, or to require adding a new rule to cover this case. But in argument from example, the particular case cited is meant to give some evidence in favor of the given generalization.

A version of negative argumentation from example is characteristic of the concept of falsification of hypotheses in science, stressed by Popper (1963). However, an invalidating case does not always result in rejection of a law. Perelman and Olbrechts-Tyteca (1969) noted that a law can be retained, in such a case, by restricting its field of application. The technique used here is to admit certain kinds of exceptions to a law or generalization, postulating the generalization as being subject to exceptions, as opposed to being a strict or absolute law. To treat all generalizations as invariably strict, ignoring legitimate exceptions, is associated with the *secundum quid* fallacy.

The conclusion of an argument from example is a generalization that can take any one of three forms. A *universal* or *strict* generalization has the form "For all *x*, if *x* has property *F* then *x* has property *G* (without exception)." A *probabilistic generalization* takes the form that most, many, or a certain percentage of things that have property *F* are likely to also have property *G*. A *presumptive (defeasible) generalization* states that typically or normally (subject to exceptional cases) if *x* has *F* then *x* will also have *G*.

Whichever of these three forms the argument from example takes, generally the argumentation scheme has the following structure.

> In this particular case, the individual *a* has property *F* and also property *G*.
>
> *a* is typical of things that have *F* and may or may not also have *G*.
>
> Therefore, generally, if *x* has property *F*, then *x* also has property *G*.

This type of argumentation is generally quite weak, in the sense that the establishing of the premise only gives a small weight of support to the conclusion. However, that weight tends to be increased to the extent that the case cited is known to be typical or widespread, as a type of instance of the generalization. Support is also increased to the extent that the generalization in the conclusion tends to be less strict and more presumptive in nature.

Argumentation from example can sometimes be quite tricky to evaluate, and its strength in a given case depends very much on the type of generalization that is supposed to be involved. It may be unclear, in everyday conversation, what type of generalization is meant.

If the argument in question is meant to prove an unlimited generalization, then generalizing from only a single instance is an extremely weak form of argument. It gives almost no proof at all.

However, if the argument in question is meant to prove a limited generalization of the defeasible or plausible type, it may, in some cases, be quite a strong argument to shift a burden of proof. If it is clear that the example cited is a typical case of the generalization in question, and if the generalization is of the form, "Typically, cases of *F* are also cases of *G*," then the example may be quite a strong argument in favor of proving the generalization as an acceptable proposition.

These problems of evaluation are taken up in more detail in chapter five, where the fallacy of hasty generalization is analyzed.

Argument from example is the basis of all case-based reasoning, a kind of reasoning that proceeds by drawing inferences from one case that is similar to another in certain respects. Thus case-based reasoning depends on the use of argument from analogy. Any two cases will be dissimilar in certain respects, if they are similar in certain respects, provided they are two different cases. Hence case-based reasoning is always defeasible in nature, because the number of respects in which two cases can be found similar, or dissimilar, is unlimited.

According to the analysis of case-based reasoning given in Simpson (1985), this kind of reasoning involves the recognition of a pattern of similarity between a current case and a preceding set of cases in memory. Simpson's method of using this kind of reasoning to solve problems of dispute mediation uses trial and error, along with feedback. The reasoner compares a dispute to a previous dispute that had a known solution, and tries to apply the method used in that previous solution to the current problem.

In a critical discussion where there is a conflict of opinions on a proposition, giving an example of a case where that proposition is true (or false) varies greatly with respect to whether it is a strong or weak argument, depending on the generality of that proposition. If it is an existential proposition of the form "Some *F* are *G*," one example proves it

(conclusively). If it is a universal generalization of the form "All *F* are *G*," one example gives it only a weak (presumptive) basis of support.

Argument from Verbal Classification

This kind of argumentation takes a particular case, or single instance, and concludes that it has a particular property, on the grounds of a verbal classification of the instance as generally having such a property. For example, it might be said that Ross Perot is rich, on the grounds that anyone who has assets of more than 3 billion dollars can be classified as rich. This general type of argumentation scheme is categorized under *Einordnungschemata*, or classifying schemes by Kienpointner (1992).

Verbal classifications of empirical concepts, like "rich," tend to be vague. They admit of clear cases, where there is no room for doubt whether the instance fits the classification. But they also admit of borderline or vague cases, where there is no nonarbitrary way of making such a decision without adding qualifications. Hence the argument from classification is generally a presumptive and defeasible kind of argumentation.

Hastings (1963) called this type of argumentation "argument from criteria to a verbal classification," giving the following example.

> *Case* 3.7: In voluntary health insurance you generally get a poor return for your money because overhead and profits of the insurance company eat up huge chunks of the premiums you pay. On individual policies these companies spend for overhead and profits an average of about 60% of what you pay them and only about 40 cents of your premium dollar goes for benefits to policyholders. Obviously such insurance is a mighty poor buy. (p. 36)

The argument in this case could be described as the following sequence of reasoning.

Premise: There is a 40% return on health insurance.

Warrant: 40% can be classified as a poor return.

Qualifier: Unless other companies can do no better.

Conclusion: 40% is a poor return.

The warrant is a generalization, subject to exceptions of the kind cited in the qualifier. The basis of the inference is the statement of classification made in the warrant.

According to Hastings, the verification of the warrant is expected to come from common knowledge shared by the speaker and audience. The audience is expected to have enough experience with business to know or accept the idea that a 40% return would clearly be considered "poor" by conventionally accepted standards of the time.

This kind of argumentation is frequently used in eristic dialogue where one side verbally classifies the point of view of the other side in a negative way, using negative or "vituperative" terminology to describe it.

Case 3.8: Your point of view is heresy.
Therefore, your point of view is wrong.

One danger inherent in the use of this type of argumentation is the fallacy of begging the question. If no evidence is given for the premise which can be backed up independently of the conclusion, the argument in Case 3.8 could be circular. In other words, the proponent may be claiming both that Bob's point of view is wrong because it is heresy, and that Bob's point of view is heresy (only) because it is wrong. This type of argumentation can be fallacious if it is an attempt to evade fulfilling the burden of proof to support the premise (without already assuming the acceptance of the conclusion).

Another danger inherent in the use of the argument from verbal classification is that the dialogue can reduce to a quarrel, where each side classifies the point of view of the other side as "heresy." This kind of stalemate is a failure of communication that can block further (legitimate) argumentation needed to resolve the original conflict of opinions.

The argumentation scheme for the argument from verbal classification is the following:

a has a particular property *F*.

For all *x*, if *x* has property *F*, then *x* can be classified as having property *G*.

Therefore, *a* has property *G*.

The critical questions matching this argumentation scheme are the following.

1. **Does *a* definitely have *F*, or is there room for doubt?**

2. **Can the verbal classification (in the second premise) be said to hold strongly, or is it one of those weak classifications that is subject to doubt?**

Both these questions pertain to the degree of strength that any verbal classification will have, due to the vagueness of the property used as a classifier. For example, in the Ross Perot example previously mentioned, the term "rich" is vague. If someone has assets of over 3 billion dollars, we can definitely say that this individual is rich. But what if her total assets were 1 million dollars? Some would not say that such a person is rich. Others would classify her as rich. In such a case then, the classification does not hold strongly. At best, it is a weak classification, and subject to legitimate doubts.

When use of argument from a verbal classification is attacked (see the sections on argument from vagueness of a verbal classification and argument from arbitrariness of a verbal classification later), the dialogue takes a turn toward discussion of the terms used in the argumentation, and there is a distinctive shift in the type of dialogues involved. In Walton and Krabbe (1995) this shift is called a "tightening up" and is described as a shift from a permissive type of dialogue to a rigorous type of dialogue. In some cases, such a shift can represent a deterioration of productive dialogue into a kind of "logic-chopping." But in other cases, clarification of terminology in a dialogue can be helpful–an improvement.

ARGUMENT FROM COMMITMENT

In this type of argumentation, the proponent claims that the respondent is, or should be committed to some particular position on an issue, and then claims that the respondent should also be committed to a particular action, or line of conduct, on the grounds that the position implies (by practical reasoning) the action, in the given circumstances. A simple example is the following.

Case 3.9:

Bob: Ed, you are a communist, aren't you?

Ed: Of course. You know that.

Bob: Well, then you should be on the side of the union in this recent labor dispute.

If Ed denies that he is on the side of the union in the dispute, then he will have to explain why. Otherwise, it will appear that he is practically inconsistent in claiming that he is a communist, but that he is also against the union side in this case.

The argument from commitment, is the basis of, and, in some instances, leads to the circumstantial *ad hominem* argument. For example, in Case 3.9, Bob might follow up Ed's denial that he is on the side of the union in this case by replying: "You are not on the side of the union, and yet you say you are a communist. Come on, Ed. You can't have it both ways!" Here Bob is implying that Ed is being inconsistent, suggesting that communism is a pro-union commitment, so that for an avowed communist to be against a union raises a presumption of inconsistency. See Krabbe (1990) on inconsistent commitment and commitment to inconsistencies, and also Walton and Krabbe (1995) on retraction of commitment.

Typically, the circumstantial *ad hominem* argument is used to negatively criticize an opponent's argument, often by suggesting that the opponent is not sincerely taking part in a critical discussion, as shown by the clash between his professed argument and the real commitment on an issue. As used previously, however, it may be more an attempt by Bob to get Ed to profess the union side in the dispute, rather than to attack him very strongly. In some cases, the *ad hominem* argument is quite a strong attack however, suggesting that the attacked party is dishonest, illogical, or confused. This type of attack on a person's integrity, character, or ability for logical reasoning often shades into the personal, or so-called "abusive" type of *ad hominem* argumentation.

The argumentation scheme for the argument from commitment is the following.

> *a* is committed to proposition *A* (generally, or in virtue of what she said in the past).
>
> Therefore, in this case, *a* should support *A*.

The critical questions matching this argumentation scheme are the following.

1. **Is *a* really committed to *A*, and if so, what evidence supports the claim that she is so committed?**

2. **If the evidence for commitment is indirect or weak, could there also be contrary evidence, or at least room for the rebuttal that this case is an exception?**

3. **Is the proposition *A*, as cited in the premise, identical to the proposition *A* as cited in the conclusion? If not, what exactly is the nature of the relationship between the two propositions?**

With respect to the first critical question, it should be noted that very often in this kind of argumentation, the attribution of commitment is made, not in virtue of what *a* said in the past, but in virtue of something *a* was reported to have done. From such a practice, it is then inferred that *a* must be committed to some proposition that describes such a practice. Note however, that this is a weak kind of argument, subject to interpretations, implication, and

qualifications. Hence, it is important to cite the actual evidence alleged as the basis of an imputed commitment, and to *assess* what that evidence may be taken to imply or suggest, in context.

Hamblin (1970) thought of commitments in dialogue as statements that can be attributed to an arguer in virtue of the moves made by that arguer in a game of dialogue with rules that define the incurring of commitments for each type of move. From this point of view, a commitment is a statement that clearly goes on record, so that a participant in dialogue can be held by the requirements of consistency to what was previously said or committed to in a dialogue. However, a practical problem in the analysis of argumentative discourse is that not only explicit statements, but also actions or even personal circumstances can sometimes be taken righdy as reasonable indicators of commitment in a dialogue.

Actions speak louder than words it is said. But do a person's actions really indicate specific commitments more definitely or strongly than what the person says? The answer is that, in some cases, they do, but having conceded the point, one is confronted with the problem of interpreting a person's actions to fairly extract the commitments expressed by them. The danger of doing this incorrectly or unfairly is the risk of committing a strawman error or fallacy of distorting an arguer's position.

On the other hand, the argument from commitment is such an extraordinarily powerful tactic to use in dialogue, not only because it is an allegation based on an arguer's prior commitments, but also because actions and personal circumstances are important practical indexes of personal commitment in everyday argumentation. If you really want to know what a person is deeply committed to in his or her heart, then look to the person's personal actions more than what the person actually says. This piece of advice is often a good practical maxim, even if it can go wrong in some cases. What is suggested then as a general tactic of argumentation is that careful juxtaposition of a person's words and deeds together can often bear informative scrutiny, in building a case to assess his commitment, and also the worth of the argument. This tactical advice is especially appropriate when one is uncertain whether the argument is good in itself, yet one has to take a practical decision based on the presumptive worth of the argument. This situation is, of course, a common one when advice is given or taken on practical problems in everyday dialogue.

Another reason that the argument from commitment is interesting and practically useful to know about pertains to the fact that many presumptions are associated with a group or professional position, and that position may strongly bind the arguer to certain propositions.

But in practical terms, a general commitment might not apply in a clearly defined way to a specific situation or issue. In other words, an arguer's commitment-set of propositions may not be fully known, either to his critic or to himself or herself. The set of an arguer's commitments, therefore, may not be in full view of the participants in the argument. Only through further dialogue might the specific commitments of that arguer be revealed. The context of dialogue is crucial here (see Walton and Krabbe (1995) on dark-side (nonexplicit) commitments).

In practical terms, therefore, the analysis arising out of the use of the argument from commitment requires further specifications of an arguer's set of commitments. The arguer's personal actions, circumstances, or affiliations may commit that person to a certain position. But this position may not be perfectly spelled out yet in relation to the argument. Even so, the argument from commitment is often a powerful tactic of attack that shifts the burden of proof onto the arguer to defend or further clarify the position by answering critical questions, if the argument is to remain presumptively plausible.

A rational arguer should generally stick to his or her commitments, but must also be prepared to retract or revise commitments in some cases. Hence the argument from commitment is a defeasible type of argumentation, best seen as one that shifts a burden of proof in a dialogue.

Later, we see that argument from commitment is quite a fundamental type of argumentation that is a basic component of many other familiar and common types of argumentation in everyday conversations. Curiously however, argument from commitment has rarely, if ever, been explicitly recognized or analyzed as a distinctive species of reasoned argumentation in logic.

CIRCUMSTANTIAL ARGUMENT AGAINST THE PERSON

As noted previously, the circumstantial *ad hominem* argument (argument against the person) is a special type of argument from commitment where an arguer's circumstances are cited as revealing his or her commitment, which is claimed to be contrary to his or her own argument. Typically, the inconsistency alleged is of a pragmatic nature–a practical conflict between the personal actions, affiliations, or implications of these, and the proposition advocated as conclusion of the person's argument that is advocated. It is a clash of alleged commitments. The charge, "You don't practice what you preach!" is characteristic of this type of argumentation.

The classic case is the following example from Walton (*Inf. Log*., 1989).

Case 3.10:

Parent: There is strong evidence of a link between smoking and chronic obstructive lung disease. Smoking is also associated with many other serious disorders. Smoking is unhealthy. So you should not smoke.

Child: But you smoke yourself. So much for your argument against smoking, (pp. 141-142)

This case has now been much discussed and analyzed–see Walton (*Arg. Pos*., 1985) especially. The main point to note here is that the child's questioning of the parent's argument by citing the presumption of practical inconsistency suggested by the parent's personal actions can be a reasonable argument if it is meant only to shift a burden of proof (presumptively) against the parent's side of the dialogue. If interpreted as an absolutistic argument claiming to show that the proposition "Smoking is unhealthy" is false, it would be a fallacious circumstantial *ad hominem* argument. As with

all cases of argument from commitment, much depends on how you interpret the text, and a conditional evaluation of the argument is often best.

The argumentation scheme for the circumstantial argument against the person (circumstantial *ad hominem* argument) is the following.

> If *x* claims that everyone (including *x*) ought to act in accord with or support proposition *A*, then *x* is, or should be, committed to *A*.
>
> *a* claims that everyone (including *a*) ought to act in accord with or support proposition *A*.
>
> It is indicated by *a's* personal circumstances that *a* is not committed to *A*.
>
> Therefore, *a* is inconsistent in *a's* commitments, and there should be a weight of presumption against *a's* argument for *a's* claim.

In this type of argument, a negative kind of attack on an arguer's sincerity in entering into a cooperative dialogue, the upshot is that the arguer is inconsistent. If the arguer knows he or she is inconsistent, then the arguer is dishonest, and therefore not credible as a cooperative dialogue partner. If the arguer doesn't know he or she is inconsistent, then the arguer is confused, or illogical, and must sort this out by answering the charge, or concede that his or her argumentation is not coherent.

The critical questions matching the circumstantial argument against the person are the following:

1. **Does *a* claim that everyone (including *a*) ought to act in accord with or support *A*?**

2. **What is the evidence from *a*'s personal circumstances indicating he or she is not committed to *A*?**

3. **Does it follow from an affirmative answer to question 1 that *a* is, or should be committed to *A*?**

What a critic has to show, to back up a circumstantial argument against the person is that there is a real conflict of commitments in the given case.

Often, however, such attacks are based more on suggestion and innuendo than any real evidence.

The practical problem with the analysis of realistic cases of the argument against the person is that commitments as propositions, in many cases, are not clearly stated in such a way that they can be read off from the personal circumstances of the arguer who is criticized. One practical type of problem has to do with actions. We may know what the actions of an arguer are, but it may not be so easy to determine, in a particular case, what those actions imply. In Case 3.10, we saw that the parent smoked. But what commitments may be taken for this action to imply? Does it mean that the parent is personally committed to the advocacy of smoking as a practice? Perhaps not, but the circumstantial criticism suggests that the parent may be. Do actions speak louder than words? Sometimes they do, but in this case there is certainly room for a reply by the parent. In any event, the personal criticism put forward by the child is strong enough to shift the burden of proof onto the parent to defend or clarify his or her position.

Another instance of this practical problem arises through the fact that in many arguments the position of the arguer is not fully known to the critic, or perhaps even to the arguer himself. If someone is criticized by an argument against the person on the ground that this person is an admitted Catholic or communist, or belongs to some other group or organization, that person's personal position on an issue in a given case need not be exactly identical to the group position in every respect. There is room for exceptions, and arguable deviations.

In some of the more tricky cases, the circumstantial *ad hominem* criticism has to do with professional commitments or group affiliations, as the following case from Walton (*Arg. Pos*., 1985) illustrates.

> *Case* 3.11: You, a practicing Catholic agreed to have an abortion. You don't practice what you preach! (p. 281)

In this case, the burden of justification seems thrust on this woman to justify her position or special circumstances. But the problem for the critic is to make clear enough what the Catholic position on abortion is, or is supposed to be, to see whether the claim of a pragmatic inconsistency is genuine.

This type of case shows that it is the arguer's position, or personal set of commitments as expressed through the argument, that is at issue in *ad hominem* disputes. But articulating this position clearly enough to judge its applicability to the arguer's specific argument under criticism may involve much serious dialogue. Indeed, the success of such dialogue may be, to a significant extent, measured by the extent it serves to reveal the arguer's internal position in relation to the issue. The positive value of *ad hominem* argumentation has been brought out by Johnstone (1978).

But spelling out one's specific commitments as a Catholic on any particular issue of contention itself may not be a trivial or straightforward job (see Cuomo, 1984). Also, the "poisoning the well" criticism often associated with this type of case, to the effect that a committed Catholic (for example) cannot be an unbiased arguer, shows how closely the circumstantial *ad hominem* can be connected to the argument from bias.

The circumstantial *ad hominem* argument is basically a questioning of the arguer's position by alleging plausible evidence of a pragmatic inconsistency in that arguer's commitments. There is a logical basis for this type of argument because of the concept of inconsistency which is the basis of the allegation. However, the argument is called circumstantial because the inconsistency is pragmatic rather than purely logical in nature–it is the arguer's circumstances, as interpreted from the situation, that are alleged to be inconsistent with the arguer's statements. This type of *ad hominem* argument can be reasonable in some cases because inconsistency of an arguer's position should reasonably be open to criticism of questioning. But it should be put forward (and evaluated) on a basis of burden of proof, rather than being based on direct scientific knowledge or demonstration. For example, in the smoking case, the child may not be in a position to assess the scientific accuracy of the parent's claims about the medical hazards of smoking. In this type of situation of ignorance however, decisions of a practical or personal nature often have to be made because the action, (e.g., smoking or not smoking), pertains to one's own personal life. Issues of this sort are commonly practices or ways of life that we either accept or don't accept, based on presumption rather than on some conclusive reasoning. Challenging these presumptions are often enough to unseat them.

Argument from Position to Know

One familiar kind of argumentation occurs in a dialogue situation where one party has reason to presume that another party has access to information or knowledge that the first party does not have direct access to. Therefore, when the second party gives his or her opinion, the first party treats the statement given as having a weight of presumption in favor of its being true, and may recommend it to others on that basis (as in Case 2.5).

For example, suppose that two tourists are lost in a city they have never been to before, and they ask a shopkeeper the location of the Central Station.

Case 3.12:

First Tourist: Could you tell me where the Central Station is?

Shopkeeper: It is across that bridge, one kilometer south.

First Tourist: Thank you [To second tourist]. OK. Let's head for the bridge. Or do you want to stop for a coffee first?

Here, the first tourist presumes that the shopkeeper is familiar with the city, and therefore recommends to the second tourist that they act on the information given.

Another very common kind of argumentation from position to know is that of argument from testimony. For example, if a witness is known to have seen some event that took place, his or her statement concerning the particulars of the event may be taken as having a weight of presumption in favor of it. The argumentation scheme for the argument from position to know is the following.

a is in a position to know whether *A* is true (false).

a asserts that *A* is true (false).

Therefore, *a* is true (false).

The critical questions matching this argumentation scheme are:

1. **Is a in a position to know whether *A* is true (false)?**

2. **Is *a* an honest (trustworthy, reliable) source?**

3. **Did *a* assert that *A* is true (false)?**

The second question obviously relates to *ad hominem* generally, based on the question of the arguer's integrity or seriousness in entering into a conversation. The third question relates to the exact wording of what *a* said, or was alleged to have said–for example, whether *a* was quoted directly is a question of importance. In many cases, care must be taken because the proposition *A* in the conclusion is not what *a* exactly (directly) said. Instead, it is often an inference derived from what was said. This use of implicature or suggested inference is characteristic of innuendo, and presumptive conclusions put forward on the basis of rumor and gossip.

The argumentation scheme for the argument from position to know is often the basis for lack-of-knowledge inferences (arguments from ignorance), and is also the basis of the use of testimony in argumentation in dialogue, for example in a trial (Walton, *Arg. Ig*., 1995). What makes testimony a distinctive type of evidence is that the witness swears to tell the truth.

The third critical question is crucial in many cases, because a source may not have been directly or exactly quoted as saying *A*. It may often be that *A* has been inferred, by the arguer using the argument from position to know, from some collection of statements that *a* made. Here we have to be careful to ask whether *a* was quoted directly, or whether the opinion attributed to *A* was derived from something else *a* said. Matters of quotation of a source are generally very important in assessing the worth of an argument from position to know.

Also very important generally is the naming of the source. The value and worth of argumentation from position to know is much more reliable and useful if the name, and even the address of the source is given. Attribution of sources by opaque phrases like, "according to an insider," or "according to normally reliable sources" is of dubious value if the source cannot be identified or verified. Arguments from position to know of this type are double-sourced, because you are depending on the reliability of the source of the report who is claiming that *his* source is reliable.

The argument from position to know is based on the Gricean maxims of communication to the effect that the speaker is making a sincere and honest attempt to enter into a conversation where he or she is communicating information that the hearer wants to know about. A dialogue structure of communication is presupposed as a context of discussion for evaluating the worth of an argument from position to know in a given case.

In the context of legal trial, the presumption of the honesty and sincerity of the witness is made explicit in the oath that the source is asked to give. But the veracity of the witness can also be tested by the questioning of the opposed attorney in cross-examination. If there is a known bias or previous record of dishonesty which would be relevant, the questioning attorney is supposed to bring this out. Done successfully, such an attack can discredit the testimony of a witness.

Generally, the argument from position to know should be seen as a presumptive type of argumentation that shifts a burden of proof back and forth between two opposed sides in a dialogue. Such an argument is successful or correct if it tilts a balance or weight of plausibility to support one side where there is a conflict of opinions between two sides of an issue. This kind of argument is never "final," but carries a weight of plausibility that is enough to overcome doubts.

The key characteristic of all source-based argumentation that separates it from other types of argumentation is that there are three participants involved in the context of dialogue.

1. The *proponent* is the person who is using an argument for a purpose in a context of dialogue, (e.g., to convince a respondent in a critical discussion that a proposition is true).

2. The *respondent* is the recipient of the argument, the person the argument is directed to by the proponent.

3. The *source* is a third party upon whose assertions or support the argument used by the proponent is based.

Typically, in this arrangement, the respondent questions, or has an attitude of doubt about the conclusion of the argument put forward by the proponent. The proponent's goal is to remove this doubt by bringing forward an argument that will convince the respondent that the conclusion is true. In a source-based argument, the proponent uses an argument that has at least one premise based on the "say so" of a third-party source who vouches for the truth of the premise. The argument depends essentially on the standing or reliability of the source.

The participation of the source in the dialogue is of a different kind from that of the proponent and the respondent. The proponent and the respondent are both directly involved in a dialogue with each other. The source is external to this dialogue. The source stands in a dialogue (dialectical) relationship to the proponent. The context of dialogue here is often of an implicit or derived nature. When the proponent uses a source-based argument in a dialogue with a respondent, the proponent in effect alleges that he or she has consulted the source in some way. This means that there exists, at least an implicit dialogue relationship between the proponent and the source. It does not mean that the proponent has actually talked to the source. The proponent may, for example, be citing a written source he or she has not actually talked to. It means, rather that what the source has asserted, allegedly, is open to challenge and critical questioning.

ARGUMENT FROM EXPERT OPINION

One very special type of argument from position to know is an especially distinctive and important type of argumentation in its own right. An expert in a particular domain of knowledge is in a special position to know about propositions in that domain, and therefore the expert's opinion on some proposition of this kind generally has a weight of presumption in its favor.

One of the most common kinds of situation in which this type of argumentation is used is in a critical discussion between two parties, where one attempts to support one of his or her contentions to the other by saying: "This proposition is said to be true by an expert (or the experts)." In such a case, there are really two layers of dialogue involved. First, there is the critical discussion between the two parties. Then there is an expert consultation dialogue (a kind of information-seeking or advice-seeking dialogue) brought in by the one party in the first dialogue.

Hamblin (1970) proposed a deductive form of the argument from expert opinion (*E* represents an expert source of knowledge).

Everything *E* says is true.

E says *A* is true.

Therefore, *A* is true.

This proposed scheme is not a very realistic representation however, for it assumes *E* is omniscient (not a characteristic of any actual expert).

A problem arises for this scheme in the case where one expert, E_1 says *A* is true, and another expert, E_2, says *not-A* is true. It follows, by the application of the scheme, both that *A* is true, and also that *not-A* is true (a contradiction). Because such a result is unacceptable, it follows that the argumentation scheme for argument from expert opinion is not deductive in nature (at least in the form cited by Hamblin).

Salmon (1964) proposed an inductive form of the argument from expertise.

Most statements made by *E* are true.

A is a statement made by *E*.

Therefore (probably), *A* is true.

This account, however, runs into the same kind of problem, because of the negation rule in the probability calculus. According to this rule, the probability of a proposition *not-A* is to be calculated as 1 minus the probability of *A*. In a case where one expert makes the statement *A*, and another makes the statement *not-A*, it follows that *A* is probably true, and also that *not-A* is probably true. However, such a situation is not possible in the probability calculus. Hence the argumentation scheme for argument from expert opinion is not inductive in nature.

According to Rescher (1976), there is a third kind of reasoning, called plausible reasoning, and one characteristic of it is that it has a negation rule that is different from that of deductive logic or the probability calculus. According to Rescher, plausible reasoning is inherently presumptive, dialectical, and defeasible in nature. Consistently with Rescher's approach, an argumentation scheme for the argument from expert opinion was formulated in Walton (*Inf. Log*., 1989). *D* is a domain of knowledge or expert opinion.

E is an expert in domain *D*.

E asserts that *A* is known to be true.

A is within *D*.

Therefore, *A* may (plausibly) be taken to be true.

The five critical questions matching this argumentation scheme, as given in Walton (*Inf. Log*., 1989) can be concisely summarized as follows.

1. **Is *E* a genuine expert in *D*?**

2. **Did *E* really assert *A*?**

3. **Is *A* relevant to domain *D*?**

4. **Is *A* consistent with what other experts in *D* say?**

5. **Is *A* consistent with known evidence in *D*?**

The argument from expert opinion, so conceived, is an inherently presumptive type of argumentation that, when used correctly, shifts a burden of proof from a proponent to a respondent in a dialogue. However, the asking of any one of the appropriate critical questions previously mentioned shifts the burden of proof back onto the proponent's side again.

The argument from expert opinion can be a fallacy (called *argumentum ad verecundiam*, argument to modesty or respect) where the proponent tries to cut off the possibility of the respondent's asking of any or all of these critical questions by suggesting that, in so doing, the respondent would show insufficient respect for an expert's opinion.

It has been shown in Walton (*Inf. Log*., 1989, chapter 7) however, that many appeals to expert opinion in everyday conversation are weak, or insufficiently supported, but not so bad that they deserve to be called fallacious.

Practical problems in using the argument from expert opinion often arise from the quoting or reporting of the opinion from some second-hand source. Hence in judging the second premise of the argumentation scheme of the argument from expert opinion, four critical subquestions, cited by DeMorgan (1847) should be kept in mind.

1. **Is the expert's pronouncement directly quoted? If not, is a reference to the original source given? Can it be checked?**

2. **If the expert advice is not quoted, does it look like important information or qualifications may have been left out?**

3. **If more than one expert source has been cited, is each authority quoted separately? Could there be disagreements among the cited authorities?**

4. **Is what the authority said clear? Are there technical terms used that are not explained clearly? If the advice is in layman's terms, could this be an indication that it has been translated from some other form of expression given by the expert?**

With respect to answering the first critical question (of the original set of five, mentioned earlier), it is important to note that many such appeals are vague, and the name of the alleged expert(s) may not even be mentioned.

What is especially important to note here is that a juxtaposition of two distinct types of dialogue may be involved in the use of source-based argumentation. For example, suppose the proponent and the respondent are engaged in a critical discussion on the issue of whether or not abortion is morally acceptable as a practice. To back up one of the subarguments, suppose the proponent of one side of the issue cites an expert opinion, say, the opinion of a physician on whether a fetus could survive at some particular state of pregnancy of the mother. In this type of case, the dialogue between the proponent and the respondent is a critical discussion. However, in citing the physician's opinion on a particular point that is supposedly relevant in the critical discussion, the proponent is alleging that he or she and the source (the physician) stand to each other in the relationship or structure of an information-seeking type of dialogue of the type studied in Hintikka (1981) and Hintikka and Saarinen (1979). The proponent is claiming to consult the expert opinion of the physician, in other words, as an authoritative source to back up his or her argument in the critical discussion. The proponent need not have actually talked to the physician but he has the word or the opinion of the physician that has been brought forward and announced in some form.

One problem with a good deal of source-based argumentation is that the source is not even explicitly named or identified. For example, arguments may be based on the following kinds of claims: "According to experts . . .," "according to reliable sources . . .," "according to insider reports . . .," and so forth. The problem with these cases is that unless a specific person or institution is mentioned, no real verification of the claim is possible. It is just this kind of abuse (and other errors in the use of expert opinions) that is often covered in informal logic under the *argumentum ad verecundiam*. According to Imwinkelried (1981; 1986), expert testimony is increasingly being misused in the courts, and the mismanagement of this kind of argumentation is a serious legal problem of growing magnitude.

ARGUMENT FROM EVIDENCE TO A HYPOTHESIS

In argument from evidence to a hypothesis, a conditional or hypothetical prediction of the form "If *A* is true, then *B* will be true too" is put forward. The *A*-proposition is called the hypothesis, and the *B*-proposition (the consequent of the conditional) represents some empirical or circumstantial evidence that can be observed or reported, so that it can definitely be proved to be true or false.

This type of argumentation is typical of experimental verification or falsification of a hypothesis in scientific reasoning.

Argument from evidence to a hypothesis takes two basic forms, or argumentation schemes, one of which is positive and the other negative. The positive form, called *argument from verification of a hypothesis*, has the following argumentation scheme.

> If *A* (a hypothesis) is true, then *B* (a proposition reporting an event) will be observed to be true.
>
> *B* has been observed to be true, in a given instance.
>
> Therefore, *A* is true.

An example is the following case from Salmon (1984).

> *Case* 3.13: The prevailing sixteenth-century view of the arrangement of the sun, the earth, and other planets had been proposed 1,400 years earlier by Ptolemy, a Greek astronomer who worked in Alexandria. The Ptolemaic system was *geocentric*, placing our immobile earth at the center of the universe with the other planets and the sun revolving around it. Although the orbits of celestial bodies were very complicated to compute, this system permitted astronomers

to make quite accurate predictions of the positions of these bodies over the centuries.

In 1543, Copernicus, a Polish astronomer, proposed a new planetary system that avoided many of the complexities of the Ptolemaic system. The Copernican system was not based on any new observations. By placing the sun at the center with the planets, including the earth, revolving around the sun, the *heliocentric* Copernican system postulated more regular (nearly circular) orbits and accounted for the same observations as the Ptolemaic system, but employed less complicated mathematical calculations of the paths of celestial bodies.

About 50 years after the work of Copernicus was published, a Danish astronomer, Tycho Brahe, introduced still another planetary system in which the earth was motionless, the sun orbited the earth, and the other planets orbited the sun. The Tychonic system had the same mathematical advantages as the Copernican system–postulating simpler orbits with easier calculations than the Ptolemaic system-and it was in accord with all observational evidence.

All three of these planetary systems were proposed before 1609, the year the telescope was invented. Galileo did not invent the telescope, but he built one that same year and was the first to use the telescope for astronomical observations. Soon after Galileo built his instrument, one of his students suggested to him that if the Copernican system was correct, then Venus, which is between the sun and the earth, should show a full range of phases–from almost dark to crescent to nearly full–similar to the phases of the moon. Galileo turned his telescope on Venus, and, over a period of several months, he was able to observe the full set of phases. Galileo interpreted these data as evidence that the Copernican (heliocentric) system was correct–that the apparently immobile earth actually revolved around the sun. (p. 171)

According to the analysis of the argumentation implicit in this case given by Salmon, Galileo's reasoning has the following form.

If the Copernican system is correct, then Venus will show phases.

Venus shows phases.

Therefore, the Copernican system is correct.

This argument is a case of argument from evidence to a hypothesis. Paradoxically, as noted by Salmon (1984), an argument of this type has the form of *affirming the consequent*, the deductively invalid form of reasoning, 'If *A* then *B; B;* therefore *A*.' Looked at from this point of view, it may appear that the argument from verification is a fallacy.

What this overlooks is that argumentation from verification is not deductively valid. Nor is it meant to be a deductive argument of any sort, or a conclusive argument generally. Despite the conclusive appearance of the argument in Case 3.13, generally this type of argumentation is of a probabilistic, or in many cases only of a presumptive nature. Generally, that is, the truth of the observation sentence, in a given case, does not confirm the hypothesis beyond doubt, or conclusively. Instead, more and more positive findings tend to *confirm* the hypothesis, in the sense of making it more probable.

The negative form, called *argument from falsification of a hypothesis*, has the following argumentation scheme.

If *A* (a hypothesis) is true, then *B* (a proposition reporting an event) will be observed to be true.

B has been observed to be false, in a given instance.

Therefore, *A* is false.

An example is the following case.

Case 3.14: If this solution is an acid, this litmus paper will turn red.

The litmus paper did not turn red (when immersed).

Therefore, this solution is not an acid.

This type of argument has the form of *modus tollens*, a valid form of reasoning in deductive logic. In contrast to the argument from verification, the argument from falsification is conclusive, in the sense that the hypothesis is refuted by even one negative instance.

This asymmetry between these two types of argumentation was emphasized by Popper (1963), who saw falsification as the kind of reasoning characteristic of scientific method, precisely because of its conclusive character.

Argument from evidence to a hypothesis seems to resemble argument from consequences, and also argument from sign. All three types of reasoning have a "backwards" direction that takes the form of affirming the consequent. They all reason from the consequent back to the antecedent of a hypothetical, and could all therefore be described as species of consequential reasoning, but each is nevertheless a distinctive type of argumentation in its own right.

Argument from evidence to a hypothesis has to do with truth and falsity of the propositions involved, and is therefore different from argument from consequences, which has to do with the value (goodness or badness) of outcomes and proposed actions. You could say that argument from consequences is practical, whereas argument from evidence to a hypothesis is discursive in nature, having to do with the truth or falsity of propositions *per se*, rather than on how one should act on them, or because of what one knows about them. Argument from sign also tends to be discursive in nature (although it can be combined with practical reasoning, in many cases). What makes it distinct from argument from evidence to a hypothesis is its presumptive nature. Signs can be interpreted in many ways, and mean different things in different circumstances. Hence argument from sign is variable and defeasible in a way that argument from evidence to hypothesis is not. In argument from sign, the conditional says that if *A* is true, in a certain type of situation, then you can *normally* expect *B* to be true too (subject to exceptions).

None of these three types of consequential reasoning have been very well recognized as correct or legitimate forms of argument by traditional logic. Perhaps the reason is that, as forms of affirming the consequent, they have typically been suspected as being fallacious. Aristotle, perhaps setting the trend, classified *consequent* as a fallacious form of reasoning–see his account of the fallacy of the consequent in *De Sophisticis Elenchis* (167b2 -

167b12). This account was based on a valid point, but unfortunately, Aristotle's analysis of this fallacy is not very clear, and may have suggested to readers that all consequential reasoning is fallacious.

The critical questions for the argument from evidence to a hypothesis are the following:

1. **Is it the case that if *A* is true then *B* is true?**

2. **Has *B* been observed to be true (false)?**

3. **Could there be some reason why *B* is true, other than its being because of *A* being true?**

The third critical question inquires into the nature of the connection between A and B, which, in scientific testing of a hypothesis, requires some sort of lawlike or causal linkage.

Argument from evidence to a hypothesis, as noted earlier, is quite close to argument from sign, in some respects. In some cases, it is difficult to tell whether argumentation is of the one type or the other. The following case is a good example.

Case 3.15: If this solution is acid, this litmus paper will turn red.

The litmus paper turned red.

Therefore, this solution is an acid.

This case is a deductively invalid argument (of the form affirming the consequent). But it could also be interpreted as a reasonable kind of argumentation, if not seen as deductive in nature. But is it, so interpreted, a case of argument from sign, or a case of argument from evidence to a hypothesis? It seems more intuitively plausible to classify it as a case of argument from sign, perhaps because we know that litmus paper is a standard test used to indicate whether a liquid is an acid or a base. But on the other hand, it is not immediately obvious why this case should not be counted as an instance of argument from evidence to a hypothesis.

It could be that argument from evidence to a hypothesis is best seen in many cases as a species of argument from consequences. Later, argument from consequences has been described as a kind of practical reasoning that has to do with evaluating a course of action as prudent or imprudent on the basis of it projecting favorable or unfavorable consequences for an agent. However, it is possible that argument from consequences could also have a discursive argumentation scheme based on a major premise of the following form: If hypothesis *H* is a true proposition, then a proposition *T* describing a *test event*, some observable event that is a consequence of *H*, will also be true. In this type of argumentation, the occurrence of *T* counts toward the establishing of *H* as an acceptable hypothesis. According to this interpretation, a hypothesis grows more and more acceptable in a process of evolutionary acceptance in a scientific inquiry as it passes more and more empirical, and at the same time becomes more qualified and sophisticated conceptually.

Admittedly, however, such an analysis of argument from evidence to a hypothesis is novel and speculative.

Argument from Correlation to Cause

Argument from correlation to cause infers a causal connection between two events from a premise describing a positive correlation between them. In the argumentation scheme for this type of argument, the variables *A* and *B* stand for propositions (Walton, *Inf. Log*., 1989), but we generally think of them as propositions that describe events that can be observed.

There is a positive correlation between *A* and *B*.

Therefore, *A* causes *B*.

Whether there is a correlation between two events, and how frequent this correlation is, are questions of probability and inductive reasoning. Therefore argument from correlation to cause is often thought of as an inductive type of argumentation. However, according to the analysis in Walton (*Inf. Log*., 1989) causality is a *field-dependent* relation, meaning that it is assumed that, for the relation to hold, the situation given is stable or normal, in the sense that other intervening variables are excluded or held constant. It follows that causal arguments are presumptive and defeasible, and that they are based on plausibility rather than probability.

It has often been presumed in the past that the fallacy of *post hoc ergo propter hoc* is identical to the argument from correlation to cause. However, this is a simplistic (and incorrect) view of the matter. Quite often, arguments fitting this argumentation scheme are presumptively correct. However, this type of argumentation tends to be very weak in many cases, because other factors are overlooked. These other factors can be listed in the form of seven critical questions matching the argumentation scheme for the argument from correlation to cause (*Inf. Log*., Walton, 1989).

1. **Is there a positive correlation between *A* and *B*?**

2. **Are there a significant number of instances of the positive correlation between *A* and *B*?**

3. **Is there good evidence that the causal relationship goes from *A* to By and not just from *B* to *A*?**

4. **Can it be ruled out that the correlation between *A* and *B* is accounted for by some third factor (a common cause) that causes both *A* and *B*?**

5. **If there are intervening variables, can it be shown that the causal relationship between *A* and *B* is indirect (mediated through other causes)?**

6. **If the correlation fails to hold outside a certain range of causes, then can the limits of this range be clearly indicated?**

7. **Can it be shown that the increase or change in *B* is not solely due to the way *B* is defined, the way entities are classified as belonging to the class of *Bs*, or changing standards, over time, of the way *Bs* are defined or classified?**

Very often, the argument from correlation to cause is a weak argument because it overlooks or fails to account for one or more of these seven critical questions, in a given case. Even so, the argument might still be a reasonable one in that case, because the critical question could possibly be answered with further investigation of the case. In such a case, it is an exaggeration to say that the argument is fallacious. What we should say is that it only has a small weight of presumption in its favor, which can only be increased by giving a satisfactory answer to this critical question.

An example is the following case from Walton (*Inf. Log*., 1989), where reports cited beneficial effects of owning a pet. It was claimed that people who owned dogs, for example, showed evidence of having better than average qualities, like self-reliance, tolerance, and good social skills. The conclusion implied was that pet ownership is the cause of these improved social qualities.

Case 3.16: At a conference on the bond between humans and pets in Boston in 1986, researchers reported that pets can lower

> blood pressure in humans, improve the survival odds of heart patients, and even penetrate the isolation of autistic children. According to a report in *Newsweek* researchers at the conference reported on the beneficial effects of pet companionship. Studies showed that women who had owned dogs as children scored higher on self-reliance, sociability, and tolerance tests than petless women. Men who had owned a dog "felt a greater sense of personal worth and of belonging and had better social skills." Children with pets also showed greater empathy. (pp. 226-227)

We can assume that these studies were based on good correlations found by the researchers. But can we conclude that a causal relationship has been shown? The problem is that such a claim is dubious, because some key critical questions have not been answered.

One question is whether people who acquire pets in the first place tend to be the kind of people who have better than average social qualities. Another question is whether the effects could be due to other variables that go along with pet ownership. For example, any change in routine or diversion (whether it is a pet or not) could make for changes in social interactions that would lead to better social skills. Until these questions from Case 3.16 are answered, the argument from correlation to cause remains weak, or open to question. That does not mean, however (by itself) that the argument in this case is totally worthless, or fallacious.

Argument from Cause to Effect

The argument from cause to effect takes the form of a prediction or warning that one type of event tends to cause another. It is a species of what Kienpointner (1992) called *Kausalschemata*. Postulating that if one type of event occurs, or were to occur in a given, particular case, then it is predicted the other (the effect) would also occur (or will occur). The argumentation scheme for this type of argument is the following:

> Generally, if *A* occurs, then *B* will (or might) occur.
>
> In this case, *A* occurs (or might occur).
>
> Therefore, in this case, *B* will occur (or might occur).

The bridging principle or warrant in the major premise can be variable in strength. In a strong attribution of causality, it might be said that if *A* occurs, then *B* will definitely occur. In a weaker form, it might be said that if *A* occurs, then there is a danger that *B* might occur.

This type of argumentation was analyzed by Hastings (1963), who gave the following example.

> *Case* 3.17: We contend, thirdly that recognition of Communist China would harm our relations in Asia, not improve them, simply because we will once more be retreating in the face of a communist bluff. We have said, we're going to defend Formosa against Communist Chinese attack; and now if we abandon the island of Formosa, the effect on the Asians, I am sure, would be quite startling. But more important than that is the promise that for the past five years we have maintained that the United States will not recognize Communist China so long as Communist China violates international law and refuses to accept her international

> obligations. At this time Communist China is holding American prisoners of war as spies, one of the grossest violations of international law one can find in the books. Would it be wise for this country, at this time especially, to recognize this government when they continue to violate international law? We consider, then, that this effect on the Asians would be to decrease our prestige in Asia. [Dennis Holt, cited in Windes and Kruger (1961, p. 187)].

The argument from cause to effect in this case can be summed up as follows.

Causal Generalization: When nations do not remain consistent in their policies, their prestige drops.

Case Premise: Recognition of Communist China means not remaining consistent in our policies.

Conclusion: Recognition of Communist China means that our prestige is likely to drop.

Matching the argumentation scheme for the argument from cause to effect, Hastings (1963) cited three types of critical questions (altered in number, phrasing and emphasis).

1. **How strong is the causal generalization (if it is true at all)?**

2. **Is the evidence cited (if there is any) strong enough to warrant the generalization as stated?**

3. **Are there other factors that would or will interfere with or counteract the production of the effect in this case?**

In Case 3.17, the first critical question asks whether the causal generalization, that not remaining consistent in policies results in drop in prestige, is strong (or true). The second critical question asks for evidence cited, if any, to back up this claim. The third critical question asks whether other factors might come into play to prevent a drop in prestige in this case.

As Hastings noted, this case has a hypothetical aspect to it. The argument is not claiming that a drop in prestige will occur. It is only saying that a drop in prestige will occur if Communist China is recognized. Thus the argument, in this case, is the warning type that concludes (hypothetically), "If you bring about event *A*, then another event, *B*, will occur."

The argumentation in this case has the negative suggestion that we should not recognize Communist China as an implied (nonexplicit) conclusion. Seen in this light, it can be viewed as a case of argument from consequences (of the causal type). This illustrates how the causal argument from consequences is in fact a composite argumentation scheme, built up with argument from cause to effect as its central component.

There are many other kinds of causal argumentation that could also be recognized here. Argument from effect to cause is one type, and it may be a component in argument from evidence to a hypothesis, and argument from sign. At least it may play some important role in these and other argumentation schemes.

Another common kind of argumentation that is broadly causal, and also based on practical reasoning, is argument from motive, opportunity, and means to action. This kind of argumentation is described in Walton (*Pract. Reas*., 1990) as a species of practical reasoning often used in a "backwards" sequence–given an action, an investigator tries to reconstruct a goal and set of circumstances that plausibly account for the bringing about of the action.

ARGUMENT FROM CONSEQUENCES

Argumentation is a species of practical reasoning where a contemplated policy or course of action is positively supported by citing the good consequences of it. In the negative form, a contemplated action is rejected on the grounds that it will have bad consequences. Typically, this type of argumentation is used in a deliberation or critical discussion where there is a divided opinion on a contemplated course of action–one side supporting the action, and the other opposing it, or doubting the wisdom of it.

An example is the following case, an argument that was put forward in a Supreme Court decision on the issue of mandatory retirement for university professors in Canada. Mr. Justice Gerard La Forest put forward the following argument against mandatory retirement (Motherwell and Fraser, 1990, Al).

> *Case* 3.18: There can be little question that, while the impact will vary from individual to individual, mandatory retirement results in serious detriment to the appellants' working lives, including loss of protection for job security and conditions, economic loss, loss of a working environment and facilities necessary to support their work, diminished opportunity for grants, and generally seriously diminished participation in activities both within and outside the university, (p. Al)

In this argument Mr. Justice La Forest was citing bad consequences of the policy of mandatory retirement, inferring the conclusion that (at least, in the respects cited), mandatory retirement is not a policy that we should have (as required by law).

Argumentation from consequences is a very common type of argumentation, and is especially prominent in political deliberations and arguments on public policy. The decision-making method of cost-benefit

analysis is based on argumentation from consequences, and can be viewed as a formalization of this type of argumentation, where quantitative values are placed on both the value and probability of each outcome. However, in many arguments in everyday conversations, it is not appropriate or helpful to assign quantitative values (or at least, very precise ones) to these variables. In such cases, argumentation from consequences is better viewed as a kind of presumptive reasoning that shifts a burden of proof in a dialogue.

The argumentation scheme for argument from consequences is the following, where *A* is a proposition that can be brought about or made true by an agent.

> If *A* is brought about, then good (bad) consequences will (may plausibly) occur.
>
> Therefore, *A* should (not) be brought about.

This argumentation scheme represents both the positive and negative versions of the argument from consequences.

Argument from consequences is advanced by a proponent in a dialogue with the aim of convincing a respondent. Therefore, when a consequence is said to be "good" or "bad," it is meant to be good or bad from the respondent's point of view. "Good" means contributing to the respondent's known or expressed (or likely) goals, and "bad" means going against or defeating the implementation of these goals.

The critical questions for the argumentation scheme for the argument from consequences are the following:

1. **How strong is the likelihood that these cited consequences will (may, must, etc.) occur?**

2. **If *A* is brought about, will (or might) these consequences occur, and what evidence supports this claim?**

3. **Are there other consequences of the opposite value that should be taken into account?**

Another reason why argumentation from consequences is often best treated as a presumptive and defeasible type of reasoning is that the claim made is

often in the form of a warning that such-and-such consequences *might* occur. Such arguments are generally weak and presumptive in nature, but they can be reasonable in some cases, for example, on grounds of safety, where danger is involved. On the other hand, this type of argumentation also lends itself to fallacious variants that utilize tactics of intimidation or scaremongering, exploiting a respondent's insecurity or fear.

Curiously, argumentation from consequences has not been recognized in very many logic textbooks as a distinctive form of argument. And when it is recognized, there has been a strong tendency to classify it as fallacious. Examples cited are of the kind illustrated by the type of case where a literary work is condemned as a bad book because it led to bad political consequences, or perhaps acts of violence, or something of the sort. This seems to be a kind of fallacy, on the grounds that the book should be judged on its literary merits, not on consequences that the author had no control over. However, such cases are tricky to judge, because if the book was partly meant to contain a moral, or have implications for how one should live one's life, then if it did condone violence or unethical conduct, it could certainly be condemned, with justification, on grounds of its having led to such consequences.

Argumentation from consequences is therefore highly problematic, in light of its current treatment in logic textbooks. Since very little has been written on this subject, or is known about it, some attention will be paid later in trying to sort out whether and when it is fallacious or reasonable as a species of argumentation.

ARGUMENT FROM ANALOGY

Argument from analogy is used to argue from one case that is said to be similar to another, in a certain respect. It has the following argumentation scheme. The respect in which the two cases are said to be similar "in a certain respect" in the first premise, is specified in the second premise and conclusion.

Generally, case C_1 is similar to case C_2.

A is true (false) in case C_1.

Therefore, A is true (false) in case C_2.

A good example is the following case, cited in Copi and Cohen (1990).

> *Case* 3.19: As in prospecting for gold, a scientist may dig with skill, courage, energy, and intelligence just a few feet away from a rich vein–but always unsuccessfully. Consequendy in scientific research the rewards for industry, perseverance, imagination, and intelligence are highly uncertain. (Kubie, 1954, p. 111)

In this case, scientific research is said to be similar to prospecting for gold. We all know that generally, in the latter case, success is highly uncertain, even when considerable perseverance is put into its pursuit. The conclusion drawn is that the same can be said of scientific research.

The type of argumentation identified by the following pair of argumentation schemes in Walton (*Inf. Log*., 1989) is actually a practical reasoning variant of the argument from analogy.

(F_1) The right thing to do in S_1 was to carry out A.

S_2 is similar to S_1.
Therefore, the right thing to do in S_2 is to carry out A.

(F_2) The wrong thing to do in S_0 was to carry out A.
S_2 is similar to S_0.
Therefore, the wrong thing to do in S_2 is to carry out A.

The basic discursive scheme of the argument from analogy is that given previously. (Fx) and (F2) are the argumentation schemes that result when the basic scheme is combined with practical reasoning. As opposed to the basic argumentation schemes for argument from analogy, (F_1 and (F_2) could be called the practical variants of the scheme for argument from analogy.

An example of these practical variants is the following case, from Walton (*Inf. Log*., 1989).

> *Case* 3.20: President Reagan, in a speech for congressional funds to aid the Contra rebels in Nicaragua, compares the Contras to the American patriots who fought in the War of Independence. A speaker in Congress opposed to sending aid to the Contras compares the situation in Nicaragua to the war in Vietnam. (p. 256)

In this case, it is clear that the speaker, then President Reagan, was using the argument from analogy to counsel for the course of action of intervening in Nicaragua. The assumption in this argument is that the War of Independence was a good thing for the U.S. The speaker in Congress was, of course, using the negative variant (F_2) of the argument from analogy to counsel against taking action to intervene in Nicaragua. The comparison case was that the intervention in Vietnam was a disaster for the U.S.

Hastings (1963) distinguished between the argument from comparison and the argument from analogy as two separate argumentation schemes. According to his account, in argument from analogy (as opposed to argument from comparison), “the second, analogical event is similar, not on

the basis of facts or circumstances, but on the basis of abstract principles; the structure of the abstract relationships of the two events is the same" (p. 111). Hastings gave the following example of argument from analogy to illustrate his distinction.

> *Case* 3.21: I know that Mr. Reuther, Mr. Newsom, and all you good people listening tonight want to know why prices have continued to go up after the freeze. You and I realize that we cannot simply apply the brakes suddenly to a truck going seventy miles an hour without a smash-up. You have to apply the brakes gradually. We must be fair to three million business concerns selling more than eight million items. And we must protect 152 million American consumers. [Michael DiSalle, cited in Harding (1952, p. 287)].

In this case, the analogy is between the momentum of the economy to the momentum of a heavy truck that cannot be stopped quickly, but must be slowed gradually.

Hastings seemed to think that the argument from analogy is more controversial, and perhaps also more prone to fallacious use, than the argument from comparison. Making any kind of clean distinction between two such types of argument is hard to sustain, however, and we adopt the point of view here that both types can be called argument from analogy, and come under the argumentation scheme mentioned earlier.

The critical questions for the argument from analogy are the following:

1. Are C_1 and C_2 similar, in the respect cited?

2. Is A true (false) in C_1?

3. Are there differences between C_1 and C_2 that would tend to undermine the force of the similarity cited?

4. Is there some other case C_3 that is also similar to C_1, but in which A is false (true)?

The third critical question asks whether there is a counteranalogy available to refute the original argument from analogy. It takes ingenuity to construct such a counteranalogy, in many cases. Hence, in most cases, the first three critical questions are the most important ones.

The following case nicely illustrates how argument from analogy is characteristically used to shift a burden of proof in a critical discussion of an issue that has two sides. Here two analogies are actually used to support the one side or the other in a key respect. The dialogue is a discussion between a mother and daughter on whether it is more rewarding to have children or a career. The mother insists to her daughter that she (the daughter) was never boring, and the daughter replied as follows (Chazin, 1989).

> *Case* 3.22: I didn't believe her, so I insisted. "Surely children are not as stimulating as a career."
>
> "A career is stimulating," she said. "I'm glad I had one. But a career is like an open balloon. It remains inflated only as long as you keep pumping. A child is a seed. You water it. You care for it the best you can. And then it grows all by itself into a beautiful flower." (p. 32)

In this case, the argument from analogy is very persuasive. But it is clear that it is a presumptive kind of argumentation which, if replied to adequately, could shift the weight of presumption back to the other side.

For example, the daughter could reply: "Yes, but some careers, like creative writing, also plant seeds that produce flowers by opening the minds of others to new ideas." Because analogies are generally open to being used in different ways in argumentation, the argument from analogy is defeasible and open-ended in nature, even when it is very persuasive.

Argument from Waste

One interesting type of argumentation which is a subspecies of practical reasoning is the argument from waste. In this type of argumentation, the speaker is striving to carry out a goal, but finds the process very difficult, or perhaps even wonders whether it is impossible, and begins to question whether continuing is worthwhile. But then the speaker reasons, "If I stop now, all my previous efforts will be wasted. Therefore, I must continue." The argumentation scheme for the argument from waste is the following.

> If *a* stops trying to realize *A* now, all *a*'s previous efforts to realize *A* will be wasted.
>
> If all *a*'s previous attempts to realize *A* are wasted, that would be a bad thing.
>
> Therefore, *a* ought to continue trying to realize *A*.

This type of argumentation has a *modus tollens* kind of practical reasoning structure.

It was analyzed by Perelman and Olbrechts-Tyteca (1969), who called it the argument of waste (*argument du gaspillage*). Their description of it is included in the following quotation, which gives a good example of the argument.

> *Case* 3.23: The argument of waste consists in saying that, as one has already begun a task and made sacrifices which would be wasted if the enterprise were given up, one should continue in the same direction. This is the justification given by the banker who continues to lend to an insolvent debtor in the hope of getting him on his feet again in the long run. (p. 279)

The argument from waste almost seems like an irrational argument, but it need not be in every case. For example, suppose in the previous case that there is really some chance that continuing to support the debtor a little more might lead to his saving his business and repaying the loan. Then the argument from waste, in this case, could possibly be a good argument.

Another good example is the following.

Case 3.24: A PhD student, Susan, has spent more than five years trying to finish her thesis, but there are problems. Her advisers keep leaving town, and delays are continued. She contemplates going to law school, where you can get a degree in a definite period. But then she thinks: "Well, I have put so much work into this thing. It would be a pity to give up now."

From this case, one can easily appreciate the psychological appeal of the argument from waste. Against the despair of possible failure, and frustration of continuing, is laid the possible waste of a lot of hard work and resources put into a project.

The broader context of practical reasoning always needs to be taken into account in evaluating the argument from waste. The basic problem is that of weighing the positive value of a goal against the cost, or negative value of achieving it. And "waste" is a negative value.

One should also remember however, in evaluating this type of argument, that the past cannot be changed. If you have already "wasted" something, and there is no recouping that loss, then it would be fallacious to include such a loss as negative value in practical reasoning on how to proceed now.

Case 3.25: Bob invested heavily in a stock, *ConEd*, which had been overvalued, but then plunged to a relatively low price. Bob kept his money in *ConEd*, reasoning: "I can't afford to lose this much money, so I had better keep my shares in *ConEd*, in the hope of recouping some of my losses."

This could be a fallacy, however. Bob should only keep his money in *ConEd* if he has some reason to think the value of its shares will rise again. If some stock with better prospects is available, Bob should not stick with *ConEd*, even though he may now not have much to lose, unless he thinks it will bounce back. He should not leave his remaining funds in *ConEd*, purely on the grounds of the argument from waste.

The case of Susan is somewhat comparable. Her past work is in the past, and that cannot be changed. But it is also somewhat different. That past work could possibly have a big future payoff for her, if she continues only a small while longer.

Another aspect of the latter case is that Susan should try to specify her goal more completely. Other than just the goal of completing her degree, does she want it to get a job, for personal satisfaction, and so forth? Then she can ask: "What is the value of completing my degree with respect to this goal, versus spending the time required to complete my degree, versus the value of spending that time pursuing some other means of achieving that goal?" The question here is one of goal-specification, at least to begin with.

The following critical questions are appropriate for the argumentation scheme for the argument from waste.

1. **Are *a*'s previous attempts to realize *A* really a negative value to be taken into account in my practical decision on what to do now, or are they simply past events that can no longer be changed?**

2. **Is there sufficient reason to think that if *a* continues, *A* will be realized? In other words, is *A* possible?**

3. **Is there good reason to think that, from this point, the value of realizing *A* is greater than the disvalue (cost) of continuing the process of attempting to realize *A*?**

The third question asks whether, forgetting the past, it is worthwhile, from the point of view of the present, carrying on with the action currently being taken.

The argument from waste is somewhat comparable to the inductive error called *the gambler's fallacy*, where the assumption is made that a run of heads (or tails), in a fair sequence of coin-tosses, will likely reverse itself on the next toss. This is a fallacy because, in a fair toss, by definition, the

probability of heads versus tails is the same value (.5). It is assumed that each toss is independent of the previous one. Hence the tendency to think that if you have had a run of heads, the next toss will be tails, is a fallacy. Yet it is difficult, psychologically, to resist drawing such an inference. It seems natural, somehow, to think that nature will correct itself, or even things out.

ARGUMENT FROM POPULARITY

This argument has a practical and a discursive form, and the former argumentation scheme can be regarded as a variant of the latter. The discursive form, called the argument from popular opinion, has the following argumentation scheme.

> If a large majority (everyone, nearly everyone, etc.) accept *A* as true, then there exists a (defeasible) presumption in favor of *A*.
>
> A large majority accept *A* as true.
>
> Therefore, there exists a presumption in favor of *A*.

This kind of argumentation is deductively invalid, and generally it is not highly reliable. Indeed, it is known to be misleading, incorrect, and even fallacious in many cases. However, interpreted as a presumptive kind of argumentation that shifts a burden of proof in a dialogue, like a critical discussion, it can, in some cases be a reasonable argument. It is often conjoined with other argumentation schemes, like argument from position to know, in order to make it more plausible in a given case. An example would be the following case.

> *Case* 3.26: Nearly everyone who lives in Cedar Rapids thinks that the lake is a good place to swim in the summer.
>
> Therefore, the lake in Cedar Rapids is probably (plausibly) a good place to swim in the summer.

You can easily appreciate why the argument from popularity is often conjoined with, and partly based on the argument from position to know, judging by this case.

Another kind of argument from popular opinion concerns majority preferences in matters of public policy (Editorial, 1992).

> *Case* 3.27: VANCOUVER–the Vancouver aquarium will stop capturing killer whales but will continue to show them, officials said yesterday.
>
> Curator Dr. Murray Newman said a new policy proposes rescue programs and breeding programs among whales already in captivity as ways to stock aquariums. He also said the aquarium will not return its current stock of killer whales and dolphins to the seas.
>
> "The decision not to collect killer whales is a reflection of human sensitivity," Newman told a news conference in the aquarium's underground boardroom, where several times the huge whales swam by and looked in.
>
> He said a year-long study showed the public preferred the aquarium not to collect whales.
>
> "At the same time we feel we have a mandate to tell people about them and keep them before the public eye."
>
> There have been three orca deaths at the Vancouver aquarium in three years, (p. A3)

In this case, the indication of public preference shifts a burden of proof when there exists a balance of considerations on both sides. On the one side, there is the mandate to show whales to the public. On the other side are the arguments of animal activists that these whales do not live a healthy life in captivity, and too often die.

The practical form of the argument from popularity is called the *argument from popular practice*. It has the following argumentation scheme.

> If a large majority (everyone, nearly everyone, etc.) does *A*, or acts as though *A* is the right (or an acceptable) thing to do, then *A* is a prudent course of action.
>
> *A* large majority acts as though *A* is the right thing to do.
>
> Therefore, *A* is a prudent course of action.

A good case to illustrate this type of argumentation is the following one.

> *Case* 3.28: In a sailboat race, there were a lot of markers that had to be passed, and it was very easy for the participants to become disoriented and get lost. The competitors made elaborate charts before the race, and during the race spent a lot of time using a compass to try to figure out the route. The captain of one sailboat was asked what strategy he used. His reply: "Well, we try to prepare carefully by making good charts. But if you are really getting lost, you often just follow the other fellows who seem to be very successful in getting ahead.[25]

In this case, the argument from popular practice is clearly a stop-gap (or even desperation) strategy that may be wrong, but is at least some basis for prudent action where better evidence (good charts and the like) is not available, or has gone wrong. It is clearly a kind of second-best basis of argument as a means of deciding a course. But as a presumptive basis for prudent action, where better information is not available, this type of argumentation could have practical value in deliberations.

On the other hand, of course, it is evident that arguments from popularity often go wrong, or are used badly, and the logic textbooks are full of cases of the fallacious use of argumentation of this kind. It can be a serious error to take them too seriously, or to try to portray them as being deductively valid or inductively strong.

In practice, using argumentation from popularity can be quite tricky. For example in cases of economic behavior, like stock market crashes, investors often try to act quickly to follow trends. Often, this leads to a kind of slippery slope effect of precipitating mass actions, based not on knowledge of what is really happening, but on rumors or suspicions. People often try to follow trends, because they may have some reason to think that the trend-setter knows something they do not know.

Teenagers are particularly adept at exploiting tactics of argumentation from popularity designed to exclude a parent from taking meaningful part in

a dialogue when they reply to questions with arguments like, “Everybody’s wearing them.” or “That’s not how we do things now.” The latter, in particular, is a tactic to suggest that the parent is out-of-date, and therefore not in a position to know what is currently popular or acceptable.

ETHOTIC ARGUMENT

An *ethotic argument*, according to Brinton (1986) is one in which *ethos* (the character of the speaker) is used to transfer credibility (either positively or negatively) to the proposition advocated by that speaker. Brinton (1985; 1986; 1987) cited Aristotle as the source for the identification of the ethotic argument as a specific type of argumentation. In the *Rhetoric* and the *Nicomachean Ethics*, Aristotle remarked that persuasion can be achieved by a speaker's personal character, because the good person's speech is more credible, especially on a question when certainty is impossible, and opinions are divided.

The argumentation scheme for the ethotic argument, or argument from ethos, as it might equivalently be called, is the following.

> If *x* is a person of good moral character, then what *x* contends (*A*) should be accepted (as more plausible).
>
> *a* is a person of good moral character.
>
> Therefore, what *a* contends (*A*) should be accepted (as more plausible).

In this context, "accepted as more plausible" means that the proposition *A* in a question should be granted a greater weight of presumption than it would normally be (as supported by other evidence).

This argumentation scheme does not apply to all contexts of dialogue equally. It is most useful, as noted previously by Aristotle, on deliberations, for example on questions of values or public interest issues, when sources giving hard evidence, and expert opinions, are divided, and do not decisively resolve the issue. In other contexts, for example in a scientific and technical discussion in physics, questions of the speaker's character would not be relevant.

The critical questions matching the argument from ethos are the following.

1. **Is *a* a person of good moral character?**

2. **Is the question of *a*'s character relevant, in the context of dialogue in the given case?**

3. **How strong a weight of presumption in favor of *A* is claimed, and is that strength warranted by the case?**

With respect to the third critical question, it should be noted that this type of argumentation is presumptive in nature, and generally does not conclusively prove a conclusion. Rather, the argument from ethos normally enhances a conclusion for which there already exists some (nonethotic) evidence.

With respect to the second critical question, it should be noted that character is generally relevant in political argumentation, and especially in election campaign debating. However, notoriously, in some cases too much weight is put on character issues, instead of other kinds of argumentation.

The negative form of the argument from ethos is identical to what has been traditionally called the "abusive" (direct or personal) argument against the person (*argumentum ad hominem*) in logic textbooks. The argumentation scheme for this negative type of ethotic argument (*Gegensatzschema*) is a variant on the positive form.

> If *x* is a person of bad moral character, then what *x* contends (*A*) should be rejected (as less plausible).
>
> *a* is a person of bad moral character.
>
> Therefore, what *a* contends (*A*) should be rejected (as less plausible).

Bad character for veracity is especially often cited in connection with the use of this argumentation scheme. The critical questions for this argumentation scheme are comparable to the ones for the positive version given above (putting "bad" for "good" in 1, and "against" in for "in favor of in 3).

The negative argument from ethos is often abused, and classified as a fallacy, when an unwarranted leap is made from the allegation that a person has a bad character, to the conclusion that what this person contends must be

false. This fallacy can take one of three forms, depending on which critical question is inadequately answered, ignored, or suppressed.

With respect to the first critical question, it should be noted that many fallacious *ad hominem* attacks are based on unsubstantiated rumor, innuendo, or gossip, instead of good evidence. With respect to the third critical question, it should be noted that claims based on negative ethotic argumentation are fallacious when the absolute conclusion is inferred that *A* is false (or that *A* is "certainly" false, etc.). This fallacy is perhaps most evident in the *poisoning the well* variant, in which it is argued that *a* is a liar, biased, and so forth, and therefore whatever *a* says, no matter how plausible or well-supported by good evidence, must be false. This type of attack is a tactic used to "shut up" an opponent, or disqualify him or her from taking any further part in a dialogue.

According to the account of legal evidence given by R. E. Degnan in the *Encyclopaedia Britannica* (1963), impeachment is the process of showing facts that reflect on the veracity of a witness, thereby authorizing rejection of his testimony, in whole or part. Four universally recognized forms of impeachment are cited as quoted.

> (1) showing that the witness has previously made statements inconsistent with those made on the stand (i.e., in the box) under oath; (2) showing that the witness is biased either for or against one of the litigants; (3) showing general bad moral character of the witness; and (4) showing that his character for truth and veracity is bad. (p. 908)

This fourfold classification is actually a very nice division of the four main types of *ad hominem* argumentation. However, especially category (3) brings out the importance of negative ethotic argumentation as a component of argumentation from testimony, a species of argument from position to know. Argumentation from testimony is source-based, and therefore dependent on the cooperativeness and sincerity of a participant in dialogue. Here we allude again to the Gricean maxims of cooperative conversation.

Argument from Bias

The argument from bias is a negative type of argumentation whereby a respondent in a dialogue attacks a proponent's argument by claiming that the proponent is biased. It would therefore come under the heading of what Kienpointner (1992) called *Gegensatzschemata*. The argumentation scheme for the argument from bias is the following.

> If an arguer *x* is biased, then it is less likely that *x* has taken the evidence on both sides of an issue into account in arriving at conclusion *A*.
>
> Arguer *a* is biased.
>
> It is less likely that *a* has taken the evidence on both sides of this issue into account.

The use of this argumentation scheme is heavily dependent on the context of dialogue. If a dialogue is clearly and overtly of a partisan kind, for example, a sales speech to sell a product, then a certain degree of bias is normal and appropriate. We know in advance that it is a partisan argument for one side, and if that is what the speech is supposed to be, there is no deception involved. There is bias, but it is not a problem for the hearer.

However, if the dialogue is of a type that is supposed to take the evidence on both sides into account, and proceed in a neutral way (e.g. an inquiry), then bias is a problem. In such a case, the argument from bias can get a good grip, and rightly functions to throw a weight of presumption against a conclusion.

The critical questions corresponding to the argumentation scheme of the argument from bias are the following.

1. **What is the context of dialogue, and in particular, is it a type of dialogue that requires a participant to take evidence on both sides of an issue into account?**

2. **What is the evidence for the charge that *a* is biased?**

In many cases, it is not easy to prove bias, and the charge of bias is based only on suspicion, rather than evidence. In such cases, the use of the argument from bias can degenerate into a fallacious *ad hominem* attack.

The topic of the following case was the introduction of the NeXT computer on the market by Steve Jobs, former head of the Apple Computer Corporation. A *Newsweek* article discussed the features of the NeXT, and speculated on its prospects of success in attempting to move into the work-station market in the computer industry.[26] Discussing the pros and cons of the issue, the article makes a case that although the NeXT venture has many strikes against it, many industry analysts are enthusiastic about its prospects for success.

Inevitably, this article makes considerable use of appeals to expert opinions of leaders in the computer industry in its discussion of the topic. One expert opinion cited is that of William Gates, a successful and respected software engineer who produced operating systems for IBM, and many important applications of IBM and Apple computers. According to the article, Gates, a "virtuoso software engineer" who "dominates the industry" declined Jobs' invitation to contribute software to the NeXT project, because "there wasn't enough money in the narrow market Jobs was pursuing" (p. 51). Gates is described as the "most dour critic" of the NeXT project.

What is most interesting, however, is the way the *Newsweek* article provided a rebuttal to the reported criticism.

> *Case* 3.29: Some industry observers suggest a dark motive for Gates' skepticism. The deal between Jobs and IBM centers on Unix–one major operating system Gates doesn't own. If the NeXT program helps Unix become a standard, Gates may lose money and power.[27] (p. 51)

Gates is cited as the critic, but his criticism is then criticized by pointing out that he stands to lose "money and power" if the system he has criticized becomes a success. The suggestion is that Gates' criticism could be biased, because of financial and other personal interests.

This allegation of bias is actually an *ad hominem* argument, because Gates' alleged argument is said to be possibly based on a "dark motive" of financial or personal interest. It is *ad hominem* because it opens Gates' personal integrity, veracity, or objectivity to critical questioning. Allegations of personal bias generally tend to have an *ad hominem* character in argumentation because they raise questions about an individual's veracity, integrity, or moral character by alleging a lack of objectivity.[28] If a person is not objective in an argument, there are two alternatives. Either the bias is intentional or unintentional. If it is intentional, then dishonesty or a "hidden agenda" is suggested. If it is unintentional, then it is suggested that the person is not astute, sophisticated, or detached enough to realize that his or her arguments are biased, and therefore that the person may not be capable of playing an intelligent part in a serious and sustained argument on a controversial topic of discussion.

Another interesting aspect of Case 3.29 is the way the criticism of Gates' objectivity is based on the attribution, "Some industry observers suggest. . . ." Who are these "industry observers?" They could be virtually anyone. They could be two persons queried on the street, who happen to have opinions on the computer industry. This way of introducing evidence by naming or indicating sources would not be allowed in a scholarly work. But it is allowed in journalism. Even so, in this case, basing an allegation of a respected expert's personal bias on a claim about what some observers suggest is skating on thin ice.

The article follows up by taking some sting out of the criticism of bias–while at the same time producing a superficial appearance of balance–by adding that, according to a named source, Gates is a smart enough businessman to produce software for NeXT, if NeXT really becomes a success. The suggestion made here is that while Gates may be negatively biased against Jobs personally, he is no fool, and if Jobs' project becomes successful, Gates may not continue to be against it.

By basing its allegation of bias on what some observers suggest, the article is being clever to appear not to make any allegations itself. At the same time, by reporting that Gates is a "good businessman," even though he

is sometimes “negative” to Jobs personally, the article cleverly presents a surface appearance of balance in looking at both sides of an issue. Despite these clever disclaimers however, the suggestions made provide plenty of innuendo to do the job of raising pointed questions in a reader’s mind about the objectivity of Gates’ cited criticism of the market potential of Jobs’ NeXT project. Thus the allegation of bias is put forward in an ingenuous manner–it is a powerful argument put forward through the use of methods of suggestion and innuendo. Such tactics are highly effective.

Bias works through a dialectical shift. A certain level of objectivity or freedom from bias is required in a persuasion dialogue, for example. But if one participant in the persuasion dialogue speech event is revealed to be covertly engaged in negotiation dialogue (based on self-interested bargaining), the person may be criticized for bias. Such a criticism means that there has allegedly been a failure on the part of a participant in argument to keep up to an appropriate standard of objectivity for the context of dialogue in question.

Another example could be a participant’s engaging too heavily in persuasion dialogue during the course of a scientific inquiry. There is nothing wrong with strenuous advocacy of one’s personal point of view in a persuasion dialogue. But if the context of argument is clearly supposed to be that of a scientific inquiry, persuasion dialogue argumentation could be criticized as inappropriate on the grounds that it fails to meet high enough standards of objectivity.

In Case 3.29, the context of dialogue is somewhat complex. It is that of a journalistic report which speculates on the possible success of a new project just launched in the computer industry. Nobody knows, yet, whether the project will succeed or fail. It is a matter of opinion. So, expert opinions of those in the industry are cited by the article, in order to look at both points of view on the topic. However, neither the journalists nor the readers are presumed to be experts on this subject. The readers can draw their own conclusions based on their assessment of the opinions and facts collected and interpreted by the journalists. Naturally, in weighing these highly fallible opinions, the readers need to make up their own minds about the worth of a source, and the plausibility of the opinions ventured by that source. Considerations of respect for the credibility of authoritative sources, and the potential for bias of their opinions, rightly play a role in a reader’s judgments of the preponderance of argument and evidence in drawing a conclusion on

the controversy. Hence allegations of bias rightly have a place in this type of context of argumentation.

Bias is not only difficult to judge in a given case (Blair, 1988), it is even difficult to define exactly what it is. In Walton (*Bias Crit*., 1991) bias is defined as a failure of critical doubt to function correctly in argumentation in a given context of dialogue. Critical doubt is defined as a second-level attitude one participant in a dialogue has toward the attitude of another participant. Analysis of argumentation schemes, and how they are used in dialogues, is helpful in studying and evaluating bias, if Walton (*Bias Crit*., 1991) is right that bias is associated with certain characteristic types of failures of reasoned argumentation. In particular, bias is associated with the failure to be open to new evidence introduced into a critical discussion.

There are many kinds of bias, not all of them relevant to the critical evaluation of argumentation. However, in one sense, to say that a person is biased is to say that this person has shown an attitude that is inappropriate in a critical discussion, as evidenced by the use of argumentation. By this account, bias is dialogue-relative. The same argument could be biased in one context of dialogue (in the negative sense of showing harmful or obstructive critical bias) and not biased in another context of dialogue.

ARGUMENT FROM AN ESTABLISHED RULE

Argument from an established rule is a practical kind of argumentation that comes into play where one participant in a dialogue is attempting to persuade another participant to carry out an action, or to act in a particular way (or the rightness of either), and the other participant is resisting or questioning this persuasion. The following case is a familiar example.

Case 3.30:

Student: I don't think I will be able to get my essay in on Tuesday. Would it be OK if I handed it in next week?

Professor: We all agreed at the beginning of the year that Tuesday is the deadline. That is the rule.

The professor might back up this argument by saying that it would not be fair to all the others, who have completed the assignment on time, if one student is given more time (an unfair advantage) without being penalized by getting a grade reduction.

There is an appeal to universality in the argument from an established rule. In this way, it is somewhat similar to the argument from popular practice. The argument from an established rule says that everyone in a particular group acts, or must act in a particular way, therefore it would be unfair to let any single person act in a different way by not having to follow the rule. This is somewhat like the argument from popular practice, which is based on the premise that a large majority of people act as though some particular course of action is the right thing to do. But the general thrust of these two types of argumentation is different. In the argument from popular practice, an individual looks to the universal practice of the group as a guide to action. In the argument from established rule, one party uses the rule established by the group to try to persuade the other to follow that rule.

The argumentation scheme for the argument from an established rule is the following.

> For all *x*, if doing *A* is the established rule for *x*, then (subject to exceptional cases), *x* must do *A* (subject to penalty).
>
> Doing *A* is the established rule for *a*.
>
> Therefore, *a* must do *A* (subject to penalty).

An established rule is a universal practice, a code of action specifying a right thing to do in a given type of case. The term "established rule," used as opposed to the weaker term "universal practice," suggests that the prior agreement of the respondent may be used as evidence to back up the major premise.

The following critical questions match the argumentation scheme for argument from an established rule.

1. **Is "doing *A*" in fact what the rule states?**

2. **Does the rule "doing *A*" apply to this case?**

3. **Is "For all *x*, *x* must do *A*" the right rule, or should some other rule be the right one? Could there be more than one rule involved, with some doubt on which is the more appropriate one?**

As stated in the argumentation scheme for the argument from an established rule, the major premise is a defeasible conditional. Generally, in this type of argumentation, the argument is only meant to apply to normal, or nonexceptional cases. The most common type of response to it is to claim that one's own case is exceptional, for some reason. In many contexts of dialogue where this type of argumentation is used, in fact, known categories of exceptions to a rule will be recognized. Citing of an appropriate type of exception will therefore throw the burden of proof back onto the proponent of the argument from established rule.

The following argumentation scheme is a counterargument or refutation matching the argument from an established rule, called the *argument from an exceptional case*.

For all *x*, if the case of *x* is an exception, then the established rule does not apply to the case of *x*.

The case of *a* is an exception.

Therefore, *a* need not do *A*.

This counterargument is more than just a critical question, because (a) it requires definite evidence of a certain type to back it up, and (b) it throws a positive burden of proof back onto the other side when successfully deployed in a dialogue. Hence, it is best seen as an argumentation scheme in its own right, matching the prior argumentation scheme of the argument from established rule. Hence, it could be called a refutation scheme, or counterargument scheme.

An example would be the following continuation of the dialogue in Case 3.30.

Case 3.31: **Student:** But I had a bad case of the flu last week, and I have a note from my physician to prove it.

What is appealed to here is the recognized category of exception "illness" as proven by the accepted kind of evidence (note from a physician). The effect of this counterargument is to shift the burden of proof back to the other side to show why the cited claim to exceptional status is illegitimate, or to concede the point.

When the argument from an exceptional case is used, in some cases the argument will be clearly acceptable. In other cases, it will be clearly unacceptable, for example, "I had a lot of other assignments to do." And in still other cases, it will be borderline, that is, neither clearly acceptable nor clearly unacceptable. Deciding borderline cases sets precedents, and is related very closely to argumentation from precedent.

Argument from an exceptional case is also closely related to argument from analogy. Often, a case is argued to be exceptional or nonexceptional (especially in borderline cases) in virtue of its comparison with an allegedly similar case. For example, if one student successfully argues "My mother

died last week," another might try the argument "My dog died last month." The professor is then put in the position of "judge" who must give a decision, one way or the other. Such a decision will then function as a known or established precedent in further argumentation.

The critical questions for the argumentation scheme for the argument from exceptional case are the following.

1. **Is the case of *a* a recognized type of exception?**

2. **If it is not a recognized case, can evidence why the established rule does not apply to it be given?**

3. **If it is a borderline case, can comparable cases be cited?**

The asking of any of these three critical questions shifts the burden of proof back onto the proponent's side.

The applicability of these two argumentation schemes to legal argumentation is clearly evident. Clearly this type of argumentation uses case-based reasoning, and the citing of particular cases is generally used to back up the use of both argumentation schemes, and to try to refute the opposing side.

ARGUMENT FROM PRECEDENT

Argument from precedent is a species of case-based reasoning where citing a particular case is used to argue for changing an existing rule, or adding a new rule to supplement existing rules. Argument from precedent is one way of responding to argument from an established rule (as an opposed refutation). The precedent slippery slope argument is one way of responding to the argument from precedent (as an opposed refutation).

An example can be given by extending Case 3.30 of argument from an established rule.

Case 3.32: **Student:** Yes, but I heard that you said to Ms. Reasoner that she could hand her essay in a week late because she has another assignment due this week. I have another assignment due this week too. So I should be able to hand mine in a week late too.

The basis of this appeal is the argument from precedent, on the grounds of the similarity of one case to another. According to Golding (1984), the idea of adherence to precedent in moral and legal reasoning can be traced back historically to Aristotle's concept of justice or fairness, according to which, like cases should be treated alike.

The argument from precedent functions by shifting a burden of proof. In Case 3.32, the citing of a similar case functions as a presumptive appeal to a precedent, to plead for exemption from the established rule. The proponent of the rule needs to give some explanation or argumentation, in order to justify applying the rule to the current case, in light of the previous case cited as an opposed precedent.

The argumentation scheme for the argument from precedent is the following.

The existing rule says that for all *x*, if *x* has property *F* then *x* has property *G*.

But in this case *C*, *a* has property *F*, but does not have property *G*.

Therefore, the existing rule must be changed, qualified, or given up, or a new rule must be introduced to cover case *C*.

The critical questions matching this argumentation scheme are the following.

1. **Does the existing rule really say that for all *x*, if *x* has *F* then *x* has *G*?**

2. **Is case *C* legitimate, or can it be explained away as not really in violation of the existing rule?**

3. **Is case *C* an already recognized type of exception that does not require any change in the existing rule?**

The use of argument from precedent poses a puzzle or problem, by introducing a novel type of case that does not appear to fit the existing rules. It therefore points the way to some new development in the evolution of a set of rules, for example, by adding a new rule, or by recognizing a class of exceptions to an existing rule.

ARGUMENT FROM GRADUALISM

Argument from gradualism is a sequential argument that moves forward by a series of small steps to persuade a respondent to accept a conclusion he or she would not accept in one big step. An example is the following case.

> *Case* 3.33: A government knows that it needs to get an 18 percent value-added tax (VAT), sometimes also called a goods and services tax (GST) in order to deal with the deficit. However, the public would never vote for, or approve such a large tax, in one single step. Therefore, the government adopts the strategy of introducing a 3 percent VAT, and then increasing it every few years, when politically appropriate, until the 18 percent level is reached.

Perelman and Olbrechts-Tyteca (1969) called this tactic the *device of stages*.

> It is often found to be better not to confront the interlocutor with the whole interval separating the existing situation from the ultimate end, but to divide this interval into sections, with stopping points along the way indicating partial ends whose realization does not provoke such a strong opposition. Though the passage from point *A* to *C* may cause difficulties, it might happen that no objection may be seen to passing from point *A* to *B*, from which point *C* will appear in a quite different light. We may call this technique the device of stages. The structure of reality conditions the choice of these stages but never imposes it. (p. 282)

It is a good question whether this type of argumentation should be defined as a distinctive argumentation scheme, or as a tactic of argumentation that is used in conjunction with various argumentation schemes. However, sometimes, as in Case 3.33, it is used as a distinctive type of argumentation

in its own right. Hence, it is appropriate to define it as a separate argumentation scheme.

The argumentation scheme for the argument from gradualism is the following.

> Proposition A is true (acceptable to the respondent).
>
> There is an intervening sequence of propositions, B_1, B_2, . . ., B_{n-1}, B_n, C, such that the following conditionals are true: If A then B_1; If B_1 then B_2; . . .; If B_{n-1}, then B_n; If B_n then C.
>
> The conditional 'If A then C' is not, by itself, acceptable to the respondent (nor are shorter sequences from A to C (than the one specified in the second premise) acceptable to the respondent.
>
> Therefore, the proposition C is true (acceptable to the respondent).

This type of argumentation is successful if and only if each small step, from A to B_1 from B_1 to B_2 and so forth, is acceptable to the respondent as an argument. And second, it is successful if and only if the entire sequence leads from A as a premise to C as the final conclusion.

The Causal Slippery Slope Argument

The slippery slope argument is a species of argument from gradualism. At the same time, it is characteristically used in opposition to (the reality or threat of) the argument from gradualism. A slippery slope argument, (Walton, *Slip. Slope*, 1992), warns a respondent that if he or she takes a first step, this person will find himself or herself caught up in a sequence of consequences leading to a disastrous (dangerous, horrible) outcome. The conclusion is: "Respondent, do not take this first step!" In the causal variant, the sequence is causal in nature.

A classic case concerning the once fashionable controversy on the decriminalization of marijuana is taken from Johnson and Blair (1983).

> *Case* 3.34: The federal proposal to switch cannabis from the Narcotics Control Act to the Food and Drug Act will probably be the first step leading to the eventual legalization of this 'soft' drug. Under the drug act the possession of marijuana or hashish will be punishable with a fine rather than with a jail sentence as called for in the narcotics act.
>
> The penalties for trafficking, importing, and cultivating the drug will still be stiff. However, it is hardly likely that judges will take as serious a view of a drug as they do of a narcotic, and in time the penalty for trafficking or importing will probably be a light fine and a ticking off by the judge. Then, in turn, the fine for possession will likely be dropped and it will be legal to have cannabis for personal use.
>
> From there the next step is controlled manufacture and sale along the same lines as alcoholic drinks. Then the emphasis on the nature of the crime will switch to smuggling and bootlegging with the intention that the Crown gets its legitimate revenue from the sale of the drug. By that

> time, cannabis will probably be called joy candy or fun smoke or by some other euphemism.
>
> If we seem to be moving too fast, remember that this is the usual way of softening up the law. We hope that when Health Minister Lalonde makes the change he will understand that he is opening the door to putting pot in every pocket, (pp. 161-162)

In their analysis of the argumentation in this case, Johnson and Blair spelled out the steps in the sequence of reasoning.

1. Marijuana put under Food and Drug Act;

2. Possession punished by fine rather than jail; trafficking, importing, and cultivating punished stiffly;

3. Judges take a less serious view of offenses against this law;

4. The penalty for trafficking and importing becomes less severe–a light fine;

5. Penalty for simple possession dropped; legal to possess marijuana;

6. The manufacture and sale of marijuana controlled by the government;

7. Emphasis changes from possession and trafficking to smuggling and bootlegging;

8. Marijuana legal and in common use.

Some of the links in this chain are obviously weaker than others. Johnson and Blair suggested that the best method of criticizing the argument, therefore, is to attack the weakest links first.

The argumentation scheme for the causal slippery slope argument is the following (Walton, *Slip. Slope*, 1992).

A_0 is up for consideration as a proposal that seems initially like something that should be brought about.

Bringing up A_0 would plausibly cause (in the given circumstances, as far as we know) A_1, which would in turn plausibly cause A_2, and so forth, through the sequence A_2, . . ., A_n.

A_n is a horrible (disastrous, bad) outcome.

Therefore, A_0 should not be brought about.

The critical questions matching the argumentation scheme for the causal slippery slope argument are the following (Walton, *Slip. Slope*, 1992).

1. **Does the proponent's description of the initial action A_0 rightly express the proposal being advocated by the respondent?**

2. **Do any of the causal links in the sequence lack solid evidence to back it up as a causal claim?**

3. **Does this outcome plausibly follow from the sequence, and is it as bad as the proponent suggests?**

Generally, as with all slippery slope arguments, the key critical question concerns the chain of conditionals that make up the sequence. The evidence for the steps in this sequence is often very poor, and only meant to shift a weight of presumption by suggestion or innuendo.

In many cases, the slippery slope argument is so sketchy and weak, it is used as more of a scare tactic, (e.g., "Bad things might happen if you embark on this dangerous course"), than as an argument that is backed up by serious evidence. In these types of cases, it may be described as a fallacy. However, in principle, the causal slippery slope can be used as a correct or reasonable presumptive type of argumentation. Its correct function is as a kind of warning in advice-giving dialogue of the deliberation type, where the respondent is using practical reasoning to try to determine a prudent course of action, and the proponent of the slippery slope argument is warning against a particular action being considered by the respondent.

Johnson and Blair (1983) recognized two forms of the causal slippery slope argument, a long form and a short form. In the long form, the whole series of causal steps is included, whereas in the short form, just the first and last steps are (explicitly) given. In the following example of the short form (Johnson & Blair, 1983), Canadian unions had been complaining that foreign visitors were taking Canadian jobs, in contravention of immigration rules. In 1972, the government proposed issuing work permits to deal with the problem. However, union leaders strongly protested against this proposal, and the leader of the United Auto Workers, Dennis McDermott, argued that such remedies would be worse than the problem they were designed to solve.

> *Case* 3.35: They [work permits] would run counter to our traditional freedoms and would be *the first step* toward a police state.

This case of the causal slippery slope argument is a short form type, because we are not told what all the intervening steps between "work permits" and "police state" are supposed to be. It is easy to imagine what these steps are. The issuing of work permits would obviously make it easier for the government to keep track of people, and this would increase government control, which could lead, at least potentially, towards a better ability for the government to "police" certain kinds of illegal activities. But just how this would or might lead to a "police state" seems highly questionable. The basic problem is that the purported intervening steps are simply not specified.

It is a good question whether the short form of causal slippery slope argument should be classified as inherently fallacious, or whether, in some cases, it can correctly function as a weak, but not fallacious, presumptive argument that shifts only a slight weight of presumption to the other side of a dialogue. In Walton (*Slip. Slope*, 1992), the later hypothesis is supported.

In any event, in the short form case especially, the most important emphasis in critical questioning should be directed toward filling in the missing steps in the sequence. In many cases, these steps are not explicitly given, but can be filled in (hypothetically) from the context of dialogue in the given case.

The causal slippery slope argument is not a basic argumentation scheme in its own right. It is a composite of the argument from gradualism and the

argument from cause to effect. A fuller treatment of the causal slippery slope argument, and more case studies of it, can be found in Walton (*Slip. Slope*, 1992).

The Precedent Slippery Slope Argument

The precedent slippery slope argument is a combination of the argument from precedent and the argument from gradualism. In the precedent type of slippery slope argument, one participant in a dialogue is contemplating a particular action and a second participant argues that if he or she takes this step, it will set a precedent that will lead to a series of actions that will be not good (from the point of view of the first participant). In many cases of the precedent slippery slope argument the series not only gets worse and worse, one precedent leading to another, but some particularly horrible outcome is cited as the end result.

The context of the following case was a debate on whether the practice of having religious prayers in the schools should be kept or discontinued.

> *Case* 3.36: One participant argued that with all the different minority groups, once you accept one kind of religion as legitimate, you are going to have to accept many other kinds of religious groups as having a legitimate right to have prayers or religious services in the classroom. This participant said: "It's a Pandora's box. You know that satanism is a religion too!"

From the text of this case, it is not made explicit what side of the debate this participant was on. But it appears that the person was taking the side against the practice of keeping prayers in the school, by arguing that if you keep this practice, you will have to admit more and more religions to have prayers of their own kind. The argument is that once you accept one religion (which presumably, is the case), it will function as a precedent so that you will have to accept another, and so on. Eventually, by this process, the argument runs, you will have to accept (unacceptable or horrible) religions like satanism.

This particular case also has an element of argument from a verbal classification present, in defining satanism as a religion. Such an element is very common in the use of the precedent slippery slope argument, but not essential to it.

This case is also a little bit different from the usual in that usually, the slippery slope is a conservative type of argument that warns against changing an existing practice, on the grounds it will lead to a dangerous outcome. In this case, assuming that having prayers in the schools is the existing practice, the slope argument warns against the dangers in trying to maintain this practice.

The argumentation scheme for the precedent slippery slope argument–compare Walton (*Slip. Slope*, 1992)–is the following.

> Case C_0 would set a precedent with respect to an existing rule R.
>
> Case C_0 is similar to case C_1, that is, if C_0 is held to be an exception to R, then C_1 must be held to be an exception too (in order to be consistent in treating equal cases alike). A sequence of similar pairs $\{C_i, C_j\}$ binds us by case-to-case consistency to the series, C_0, C_1, . . ., C_n.
>
> Having to accept case C_n as a precedent, or as a recognized exception to R, would be intolerable (horrible, bad).
>
> Therefore, admitting case C_0, or bringing it forward in the first place, is not a good thing to do.

The precedent slippery slope argument takes the form of a warning, or practical advice. It says: "Do not take this first step of allowing case C_0 (as a recognized exception to a rule, or as any new step), because once you do, it will set a precedent, and then one case will lead to another!" The warning tells you that things will go from bad to worse, once the first step has been taken.

The critical questions for the argumentation scheme for the precedent slippery slope argument are the following.

1. **Would case C_0 set a precedent?**

2. **What is the exact sequence of intervening steps in virtue of which C_0 would lead to C_n?**

3. **What is the evidence showing why each of these intervening steps would occur?**

4. **Is C_n intolerable, and if so, why?**

5. **Which are the weakest of the intervening steps, and is the evidence backing them sufficient to warrant the strength of the claim made in the conclusion?**

In evaluating precedent slippery slope arguments, it should be noted that they come in varying degrees of strength of claim made. Sometimes the conclusion claims that the horrible outcome "must" occur, but in other cases, it is only claimed that it "may" or "might" occur. The evidence backing up the premises needs to be adequate only to support the strength of the claim made in the conclusion. Hence the wording of the claim in the given case is very important.

Other case studies of the precedent slippery slope argument can be found in Walton (*Slip. Slope*, 1992).

Argument from Vagueness of a Verbal Classification

This argument is a kind of counterargumentation used to reply to the argument from an established rule and to the argument from verbal classification. The argument from vagueness of a verbal classification claims that the rule or verbal classification in question is overly vague, and therefore cannot sustain the conclusion it was supposed to support. It is a species of refutation scheme or *Gegensatzschema*.

For example, in reply to Case 3.7, our example of the argument from verbal classification, a respondent might argue as follows.

> *Case* 3.37: Well, the notion of "poor return" is too vague to be well-defined. What is a poor return on stocks or bonds, is not a poor return on health insurance. This concept is too vague, so you can't just say absolutely that 40% is a poor return.

To say that a term is vague is to say that it lacks sufficient precision to support a classification required to sustain an argument.

The argument from vagueness of a verbal classification is a kind of meta-argumentation, because it refers to the degree of precision of language used in an argument. Thus it makes a judgment about the fittingness of the language in relation to the context of dialogue in which the argument has been advanced.

A typical example is the following case.

> *Case* 3.38: Marcia and Ted are debating on the issue of abortion. Ted, who is pro-life, argues: "There can be no abortion when the fetus becomes a person." Marcia replies: "That's hopelessly vague! There is no way to exactly define when the fetus has become a 'person.' You don't have a leg to stand on there!"

What Marcia is objecting to here is that the term "person" is too vague to resolve the dispute at issue. Both sides can interpret it in such a way as to support their own arguments. Hence, introducing this vague term is of no use in contributing to the resolution of the dispute. The argument is not that the vagueness of the term "person" is a bad thing *per se*, but that this term lacks enough precision in relation to the context of dialogue for the argumentation in this particular case (according to Marcia's claim).

In the argumentation scheme for argument from the vagueness of a verbal classification given later, the variable *Arg* stands in for an instance of argument from a verbal classification, or argument from an established rule that occurred in prior dialogue.

> If an argument, *Arg* occurs in a context of dialogue that requires a certain level of precision, but some property *F* that occurs in *Arg* is defined in a way that is too vague to meet the requirements of that level of precision, then *Arg* ought to be rejected as deficient.
>
> *Arg* occurs in a context of dialogue that requires a certain level of precision that is appropriate for that context.
>
> Some property *F* that occurs in *Arg* is defined in a way that is too vague to meet the requirement of the level of precision appropriate for that context.
>
> Therefore, *Arg* ought to be rejected as deficient.

The critical questions matching the argument from vagueness of a verbal classification are the following.

1. **Does the context of dialogue in which *Arg* occurs demand some particular level of precision in the key terms used?**

2. **Is some property *F* that occurs in *Arg* too vague to meet the proper level or standard of precision?**

3. **Why is this degree of vagueness a problem in relation to the dialogue in which *Arg* was advanced?**

The argument from vagueness of a verbal criterion does not totally refute the argument against which it is directed. Instead, it shifts a weight of presumption against that argument by raising critical questions about the language or concepts used.

One typical, and also generally adequate way to reply to the argument from vagueness of a verbal classification, is to tighten up the level of precision of the vague term by offering a precise (or more precise) definition of the term. A typical way to respond to this response, in turn, is to deploy the argument from arbitrariness of a verbal criterion. In such cases, the dialogue shifts to verbal argumentation (argumentation about the meaning of terms used), as opposed to substantive argumentation about the content of the issue.

Characteristically, when there is a shift to verbal argumentation, there is an accompanying shift in the dialogue itself, to a different type of dialogue. In Walton and Krabbe (1995), this type of dialectical shift is called a "tightening up" of the dialogue, and is defined as a shift from permissive persuasion dialogue (*PPD*) to rigorous persuasion dialogue (*RPD*). In the latter type of dialogue, the rules are more strict and exact, and allow fewer options for moves, and require an arguer's commitments to be determined in a more precise and rigorous way. Such a shift is not necessarily bad, and can assist the original permissive dialogue in reaching its goal.

Argument from vagueness of a verbal classification is the basic component in the fallacy called *argument of the beard* by the logic textbooks. For example, according to Byerly (1973), this fallacy "consists in arguing from the vagueness of a distinction to the absence of any meaningful distinction" (p. 56). For example, Byerly wrote that the existence of bluish-green shades does not "imply that the colors blue and green are not really distinct hues" (p. 56). The fallacy appears to reside in arguing from the premise that some cases are vague to the conclusion that all cases are vague.

According to Moore (1967), the argument of the beard may be considered the opposite of the black-or-white fallacy, the fallacy of failing to admit the possibility of a middle ground between extremes. In the argument from the beard, "we use the middle ground, or the fact of continuous and gradual shading between two extremes, to raise doubt about the existence of real differences between such opposites as strong and weak, good and bad, and black and white" (p. 166). For example, a gray shade between black and

white does not prove that there is no difference between black and white (at all, or in every case).

The term “beard” suggests the verbal slippery slope argument, and clearly the argument of the beard is a component in that argument. However, we do not try to analyze the argument of the beard here, or to explain why it is a fallacy.

Argument from Arbitrariness of a Verbal Classification

This argument is similar to argument from vagueness of a verbal classification, except that the arbitrariness of a verbal criterion is the objection instead of its vagueness. The one argument is often used to back up the other, or in conjunction with the other. The argument from arbitrariness of a verbal classification claims that a rule or verbal classification proposed by one participant in a dialogue is arbitrary, or too arbitrary to support the argument of the other side in the dialogue.

For example, the dialogue between Ted and Marcia in the abortion case might continue as follows.

Case **Ted:** The fetus should be considered a person through the third trimester.
3.39:

Marcia: You mean to say that the day before the third trimester, the fetus is not a person. And then the first day of the third trimester, it is a person. That is an arbitrary way of drawing the line.

In this case, Ted has given a precise criterion. But Marcia still objects to his classification, now on the grounds that it is arbitrary. The suggestion is that such arbitrariness is inappropriate in this case, because there is a substantive issue being disputed, requiring a real basis for a classification affecting the issue.

The argumentation scheme for the argument from arbitrariness of a verbal classification is the following.

> If an argument, *Arg* occurs in a context of dialogue that requires a nonarbitrary definition for a key property *F* that occurs in *Arg*, and *F* is

defined in an arbitrary way in *Arg*, then *Arg* ought to be rejected as deficient.

Arg occurs in a context of dialogue that requires a nonarbitrary definition for a key property *F* that occurs in *Arg*.

Some property *F* that occurs in *Arg* is defined in a way that is arbitrary.

Therefore, *Arg* ought to be rejected as deficient.

The critical questions matching the argument from arbitrariness of a verbal classification are the following.

1. **Does the context of dialogue in which *Arg* occurs require a nonarbitrary definition of *F*?**

2. **Is some property *F* that occurs in *Arg* defined in an arbitrary way?**

3. **Why is arbitrariness of definition a problem in the context of dialogue in which *Arg* was advanced?**

In some contexts of dialogue, defining a term in an arbitrary way is appropriate and useful, in contributing to the proper resolution of the conflict or problem posed by the dialogue. However, this is not always the case. In critical discussions on controversial issues, participants generally try to define terms in a way that favors their own side. This happens because words and phrases in a natural language already have positive and negative connotations, favoring one side or the other. For this reason, there is the danger, or reality, that a term defined in an arbitrary way might favor one side too much, thereby infringing on the linguistic rights of the other side.

For example, in the abortion dispute case, no doubt one side would be happy with a definition of "person" that required the baby to be out of the womb before it could qualify as a person. And the other side would be happy with a definition that allowed a fertilized ovum in the womb to count as a person. But either definition would provide too much of a strong weight of presumption against the other side. Thus any definition of "person" in this context would be extremely controversial, and either side should have the right to object to any proposed definition. In this context, an arbitrary

definition of “person” should not stand. It should be open to critical questioning by the other party as arbitrary, and for that reason, unacceptable.

The Verbal Slippery Slope Argument

The verbal slippery slope argument is a composite type of argumentation that combines argument from vagueness of a verbal criterion and argument from gradualism. In a verbal slippery slope argument, one participant has used a vague term or property *F* in a dispute with another participant who exploits that vagueness by using an argument from gradualism as follows: "You accept that some individual *a* has *F*, but *a* is indistinguishable from *b*, so you must admit that *b* has *F* too (and so on for individuals *c*, *d*, and so forth, to individual *n*, each pair being so indistinguishable that if one has *F*, the other must too). Therefore, you must admit that *n* has *F*. But this is clearly unacceptable (from your point of view). Therefore you were wrong to accept the proposition that *a* has *F*, in the first place." The verbal slippery slope argument looks a lot, in its general outline, like a *reductio ad absurdum* argument. And in fact, it is very similar in form. Both start with an assumption accepted by a respondent, and then draw an implication out of that assumption that the respondent does not, or cannot accept, by a series of steps or inferences.

The verbal slippery slope argument trades on the vagueness of a key term in the respondent's argumentation. The proponent of the slope argument utilizes this vagueness to exploit the respondent's inability to "draw the line" between pairs of cases on a continuum of closely related cases.

An example of the verbal slippery slope argument can be given by continuing the debate on abortion between Marcia and Ted (Case 3.39) as follows. This case is an adaptation of one in Walton (*Slip. Slope*, 1992).

Case **Ted:** 3.40: Surely the baby in the womb must be defined as a person, with rights during these latter stages, because a surgeon can do intra-uterine surgery to correct the baby's heart defect, in some cases of this sort. The baby is the doctor's patient, therefore it must be a

person. Moreover, in many such cases, the baby, if delivered by Caesarian section, could be supported by intensive care, without the mother's support.

Marcia: Well, yes, I think the baby is a person just before it is born, but not before that.

Ted: But where do you draw the line? If the baby is a person in these latter stages near birth, then it is also a person in the earlier stages, where it cannot survive on its own, but where it has all the same features like a heart, lungs, limbs, and so forth. I don't see any point where you can draw the line, other than by having to admit that it could be a person from the moment of conception (an absurd proposition to admit, for anyone advocating your viewpoint). I mean if it is a person on one day, then the day before, it couldn't have been that much different, so that it couldn't be a person that day. (p. 46)

In this type of argumentation, Ted is using a series of steps, each of which is a kind of *modus ponens* argument from a pair of cases, over and over again. Ted is, in effect arguing, "If the fetus is a person at stage y of its development, then it is also a person at stage x, just prior to y. But (you admit) it is a person at stage y. Therefore, it is a person at stage x." He is applying this step of inference over and over again, until eventually, he reaches a conclusion that is intolerable (unacceptable very clearly) from Marcia's point of view on the issue.

The argumentation scheme for the verbal slippery slope argument is the following. The variable F stands for a (vague) property, and the constants a_1, a_2, . . ., a_n stand for a set of individuals.

Individual a_1 has property F (as you, the respondent, concede).

For all x and y, if x has F, then if y is indistinguishable from x with respect to F, then y also has F (as you, the respondent cannot deny).

For any given pair $\{a_i, a_j\}$ of adjacent individuals in the sequence, a_1, a_2, . . ., a_n, a_j is indistinguishable from a_i with respect to F.

Therefore, a_n has property F (following from the three previous premises, by a series of steps).

But a_n does not have property F (or at least, this outcome is not acceptable to you, the respondent).

Therefore, it is not true that a_1 has F (or you, the respondent, should not have accepted this proposition).

This type of argumentation works best where there is a continuum of closely related cases and a fuzzy or vague property of the kind that once you accept it as applying to the one case, you can hardly deny that it could also apply to a closely related, or similar case. Because of the vagueness, the respondent can be driven along the continuum by the proponent's use of a series of small step-arguments.

The critical questions for the verbal slippery slope argument are the following.

1. **Does a_1 have F (according to what was conceded)?**

2. **Is F really vague, in the sense that for all x and y, if x has F, then y also must be conceded to have F?**

3. **Are the pairs a_i, a_j in the continuum really indistinguishable from each other?**

4. **Is the conclusion that a_n has F truly unacceptable from my (respondent's) point of view?**

5. **Can some precise definition of F be given that will remove the vagueness, sufficiently to stop the slope?**

The usual response to a verbal slippery slope argument, if the first four critical questions can be answered adequately (showing that the slope is

correctly structured and supported), is to propose a precise definition of the vague concept in question. In such a case however–see Walton (*Slip. Slope*, 1992)–a common response is to attack the precise definition as arbitrary, using argument from an arbitrary criterion.

The basic structure of the verbal slippery slope argument is expressed very well in the "heap" or *sorites* paradox, said to have been invented by Eubulides, a contemporary of Plato. If you take one grain away from a heap, it is still a heap. And each time you do so, it makes no difference, because one grain is too small to make a difference, by itself. But repeated over and over, such an argument can be shown to be absurd, for eventually, there will no longer be a heap.

This argument can be applied wherever there is a vague term, like "bald" or "short." Kneale and Kneale (1962) cited the following ancient Greek version of the *sorites* argument.

Case 3.41: Would you say that a man was bald if he had only one hair?

Yes.

Would you say that a man was bald if he had only two hairs?

Yes.

Would you . . ., and so forth.

Then where do you draw the line?

Interestingly, this version is in the form of a dialogue.

A version similar to that of Black (1970) has a base premise, B_0, and an inductive premise, *I*.

Case 3.42: (B_0) Every person who is 4 feet in height is short.

(I) If you add one-tenth of an inch to a short person's height, that person is short.

(B_1) Every person who is 4 feet and one-tenth of an inch in height is short (and so on, for two-tenths, etc.).

(B_n) Therefore, every person is short.

The conclusion is clearly false. Therefore, because the argument is valid (a series of *modus ponens* steps, by transitivity of logical implication), it follows that at least one of the premises must be false. But since, apparently, all the premises are true, we have a paradox. In this sense, a paradox is a contradiction.

Many solutions–outlined by Sainsbury (1988)–to the *sorites* paradox have been offered, perhaps most notably the famous fuzzy logic of Zadeh (1987). However, looked at from a pragmatic point of view of argumentation schemes, this type of argument is not paradoxical, erroneous, contradictory, or (inherently) fallacious. It is simply a kind of argumentation that can be used by one participant in a dialogue to argue against the point of view of another participant by drawing out a presumptive contradiction in the collective commitments of that participant. In principle, it is a reasonable kind of argumentation, although it can often go wrong, or be used incorrectly to commit a fallacy.

The full Slippery Slope Argument

The full slippery slope argument is a complex network of argumentation that combines argument from gradualism and argument from popularity with the causal, precedent, and verbal slippery slope arguments. This argument claims that once a first step is taken, it will lead by small steps of a causal precedent or verbal type, to a sequence of further cases that people will come to gradually accept, until some horrible outcome finally ensues. In this type of argumentation, it is suggested that once people become comfortable with one stage of development, increasing popular acceptance will push the whole sequence along towards the final outcome.

The following example (Rachels, 1986) is a case of the full slippery slope argument against starting a policy of accepting euthanasia in any form.

> *Case* 3.43: If voluntary euthanasia were legalized, there is good reason to believe that at a later date another bill for compulsory euthanasia would be legalized. Once the respect for human life is so low that an innocent person may be killed directly even at his own request, compulsory euthanasia will necessarily be very near. This could lead easily to killing all incurable cancer patients, the aged who are a public care, wounded soldiers, all deformed children, the mentally afflicted, and so on. Before long the danger would be at the door of every citizen.
>
> Once a man is permitted on his own authority to kill an innocent person directly, there is no way of stopping the advancement of that wedge. There exists no longer any rational grounds for saying that the wedge can advance so far and no further. Once the exception has been made it is too late; hence the grave reason why no exception may be allowed. That is why euthanasia under any circumstances must be condemned. (p. 171)

The full slippery slope is a presumptive and defeasible kind of argumentation because it is based on a prediction, or plausible scenario, on what might happen in the future. It therefore becomes highly questionable in a given case, when phrased in terms of what "must" happen, what is "inevitable," and so forth. However, in some cases, if phrased as a warning, in terms of what might or may happen, and each of the steps in the chain of reasoning is backed up by the required evidence, it can be a reasonable argument.

The argumentation scheme for the full slippery slope argument (adapted from the account given in Walton, *Slip. Slope*, 1992) is the following.

> Case C_0 is tentatively acceptable as an initial presumption.
>
> There exists a series of cases, C_0, C_1, . . ., C_{n-1}, where each case leads to the next by a combination of causal, precedent, and/or analogy steps.
>
> There is a climate of social opinion such that once people come to accept each step as plausible (or as accepted practice), they will then be led to accept the next step.
>
> The penultimate step C_{n-1} leads to a horrible outcome, C_n, which is not acceptable.
>
> Therefore, C_0 is not acceptable (contrary to the presumption of the initial premise), (pp. 199-200)

The argumentation scheme presented is sketched out in an abbreviated form, but the detailed framing of the premises and conclusion can be grasped by looking back to the argumentation schemes for the causal, verbal, and precedent slippery slope arguments.

The full slippery slope argument combines all three types of slippery slope arguments, but what makes it distinctive is its use of the public acceptance premise as the force that propels the respondent down the slope.

The critical questions for the full slippery slope argument are the following.

1. **What are the various subarguments or "links" that make up the intervening steps from C_0 to C_n?**

2. **How strongly is the conclusion phrased, that is, what is the burden of proof in the dialogue?**

3. **Is evidence given to back up each of the subarguments, and is it strong enough to meet the requirements of burden of proof?**

These are the three major considerations, but a detailed analysis could give a more finely differentiated set of critical questions for the full slippery slope argument. See Walton (*Slip. Slope*, 1992) for more case studies, and a more detailed analysis of the full slippery slope argument.