INFORMAL FALLACIES

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Douglas N. Walton

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Towards a Theory of Argument Criticisms

Douglas N. Walton
University of Winnipeg

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CHAPTER 1: A NEW MODEL OF ARGUMENT

The basic question of this monograph is: how should we go about judging arguments to be reasonable or unreasonable? Our concern will be with argument in a broad sense, with realistic arguments in natural language — for example, persuasive arguments that might occur in advertising or in political debates. Our concern will not extend to all aspects of such arguments however. The basic object will be to engage in a normative study of determining what factors, standards, or procedures should be adopted or appealed to in evaluating an argument as "good," "not-so-good," "open to criticism," "fallacious," and so forth. Hence our primary concern will be with the problems of how to criticize an argument, and when a criticism is reasonably justified.

To criticize an argument is, sometimes, to begin to take part in the argument. In any such step of real engagement in the argument, there is a danger of loss of the proper critical perspective, a danger of taking sides in the argument itself. Can this step be avoided? Our problem is to show how criticism can be reasonable. So we need to show how reasonable criticism can itself contend with the criticism of having taken sides in the argument.

We need to pursue answers to two questions. First, what is an argument? And second, how is reasonable criticism of an argument possible? Beyond these two questions, we will need to study and explore the kinds of criticisms of arguments that have traditionally been thought to be reasonable and to logically compel our consideration in judging arguments. Many of these criticisms can be identified with the domain of the traditional informal fallacies, descended from Aristotle's *sophistici elenchi*, and long a part of the logic curriculum. Much of our work will be in trying to make sense out of these traditional fallacies as representing reasonable or unreasonable types of criticisms that can be made of arguments. In that regard, our project falls under the subject of applied logic, or informal logic as it often is called these days.[1] In another way, our project could be looked at as a kind of theoretical linguistic investigation in the field now called the pragmatics of discourse.

There are many requirements for a theory of argument. But in addition to the factors already mentioned, the following phenomena of argument must be dealt with. We list these matters briefly here to give the reader some rough guidelines for what we take to be the proper subject area of the theory of argument. First, an argument must be understood not exclusively as a set of isolated propositions (a set of premisses and conclusion), but also as an extended chain of arguments in the context of a continuous discourse, issue, or discussion. Second, the notion that each participant in an argument may have a certain stance or position to defend must be made sense of. Third, the phenomenon of a shift in the burden of proof[2] in argument is often fundamental in correctly judging the force or value of a criticism.

A fourth consideration is the distinction between different kinds of argument. For example, it is often held that an argument may be inductively strong even while it is deductively invalid. Does this mean that there are two different kinds of argument, or merely that there are two different standards for the strength of an argument? What other kinds or standards of argument are there?

Fifth, we need to look at the borderline between arguments and non-arguments. For example, overly personal attack and emotional diversion are sometimes thought to be forms of non-argument and evasion of argument. Sixth, we need to understand the idea that some arguments are defensive, in contrast to other arguments that attack a position not one's own. The *pro* and *con* of argumentative discourse needs to be understood as part of the argument itself.

Seventh and eighth, we need to look carefully at the role of formal logic and rhetoric in the theory of argument.

A fundamental problem of applied logic is the fact that a good part of most real arguments remains unstated by the arguer, yet is reasonably taken as part of the argument by the one to whom the argument is addressed. This is the traditional question of enthymematic premisses. An *enthymematic* premiss is traditionally said to be a premiss not explicitly stated in an argument, but tacitly presumed by the arguer. In a given argument, there may be one or more enthymematic premisses. It is generally held that an enthymematic premiss is necessary for the argument in question to be valid, and that all the required enthymematic premisses are sufficient to make the argument valid. An *enthymeme* is an argument that has one or more enthymematic premisses. We need to study the problem of

defining the set of missing premisses that a critic may fairly be allowed to add in to the argument he wishes to criticize. Enthymemes will be the subject of chapter 5.

The ninth area of concern is that of questions and answers. No theory of argument could be adequate without dealing with the role that questions play in arguments. Another aspect of argument that is important to deal with concerns the various rules or procedures that can be adopted to regulate arguments. In specific contexts, arguers may agree on helpful procedural rules. For example, in legal contexts, certain forms of questions may not be allowed to be asked. If Grice is right, there may even be procedural agreements — for example, an agreement to remain polite — that are part of ordinary conversations.

An eleventh topic is the role of language in arguments. This topic includes problems of vagueness, ambiguity, and definitions of terms. A twelfth major topic is that of judgements of relevance of an argument or criticism in relation to the issue or topic of the argument.

In this monograph we will argue for the pluralistic thesis that there are many different models of argument, each of which may have a certain legitimacy in relation to its context. However, the twelve requirements above are so broad that we will concentrate on one model of argument as paradigmatically central. We call this model of argument the dialectical model, meaning that argument is thereby conceived as an interpersonal exchange that takes place between two arguers. This model of argument derives from Aristotle historically,[3] and is quite a separate tradition from Hegelian or Marxist use of this term to designate a historical process of evolution. Rather, dialectic in our sense refers to a logical game of dialogue, a verbal sequence of question-and-answer moves where the objective of each player is to prove a thesis to the other.

1. Introduction to the Fallacies

There are fifteen (plus) or so major fallacies given by the standard treatment of current and traditional logic texts, depending on how you divide them up.[4] Each of these has traditionally been thought to be a serious and systematic type of error or fault in reasoning worth study in the logic curriculum. The basic problem with the fallacies has always been that, once you look at them closely, you can see that in each case the type of argument alleged to be "fallacious" can evidently, in some instances, be a correct — or at least not unreasonable — form of argument, or kind of

move to make in argument.[5] In short, the would-be "fallacies" are not always fallacious.

On the other hand, it remains clearly true that in some circumstances, each, or at least many of these traditional fallacies can contain serious common forms of lapses of logical reasoning eminently worth systematic study. And indeed, it will not take too much convincing to see that we deeply need to understand the structure of each of the "fallacies" if we are ever to have a useful grasp of how logic can be applied to realistic argument in a practical way. If there can be an applied logic, it must accommodate (at least) the subject-matter of the major fallacies (along with our other twelve topics as well).

With each of the fallacies, it is necessary for us to work towards understanding principles or procedures for helping us to adjudicate when the "fallacy" really is an incorrect move in argument and when the alleged or possible fallacy can be justified as a legitimate or justifiable move to have made in argument. Thus each of the fallacies presents us with an analytical problem. What is important to see, at the present stage of development of applied logic, is that each of these problems can be solved. Solutions to each of these problems are not immediately forthcoming in most cases, for various reasons that will become clearer as we engage the problems. But a shift towards a new conception of argument will at least provide a framework in which each problem can be formulated so that it can be solved. This step toward a new theoretical conception of argument, initiated most notably by Hamblin (1970), but now by others as well in various disciplines, brings out the advantages of looking at the fallacies (plus some other matters) as related parts of a common underlying concern about the theoretical modelling of dynamic argumentation.

Hamblin (1970) has already done a useful job of outlining the major fallacies and indicating some basic questions about the status of each as an identifiably incorrect type of argument. It is not helpful to cover this ground again. But it may be helpful to the reader to briefly characterize the traditional or standard conceptions of each of the major informal fallacies — including a few related topics — and show how each poses a particular problem for analysis. In each case the basic problem is posed by the fact that the "fallacy" in question is not, in every instance, a wrong argument. The problem is: when is it right and when is it wrong?

One group of fallacies has to do with "hot" appeals to emotion in argument. Difficulties in reasonable argument and dialogue having to do with

the illicit use of emotional appeals are perhaps the most common types of problems in criticizing political debates and other forms of contestive argument in natural language.

The *ad populum* fallacy is the illicit use of "popular pieties" in argument. This fallacy is said to occur where appeal to popular feelings, or prejudices, is used to rouse conviction in an audience in lieu of presenting genuinely relevant evidence.[6] Sometimes called "appeal to the gallery," this fallacy can take place where an arguer zeroes in on powerful positive feelings of a specific target audience and exploits these sentiments. Such feelings may include patriotism, ethnic pride, or any special interests that constitute a strong, positive pull of allegiance or emotional elicitation for the person or group to whom the appeal is made. On the other hand, sometimes an *ad populum* appeal to negative feeling is made by invective against those perceived as enemies by the audience. We will study several examples of this fallacy in chapter 2.

The *ad misericordiam* argument is the appeal to pity, a familiar enough strategy in argument. One must be careful here to note that appeals to pity may, in some instances, not be unreasonable as a basis for making a decision. For example, charitable appeals for funds to support orphans may not be advancing a fallacious argument in every instance where an appeal to pity is made. But in some cases, an appeal to pity may be an evasion of relevant considerations needed to make a decision on the issue. For example, in a criminal trial, if the defence attorney bases his whole argument on an appeal to pity, it could be quite reasonable to criticize his argument for its failure to look at the evidence for the defendant's guilt or innocence. So judgement is needed to evaluate whether, in a particular case, an argument has made an illicit use of appeals to emotion.

Cederblom and Paulsen (1982, p.101) cite the case where a friend asks you to write a letter of reference for a job he is not properly or suitably qualified to undertake. Not wanting to hurt his feelings, you write the letter saying he is qualified. Suppose your friend appealed to pity in his request for you to write the letter. So moved, you disregarded your scruples, and wrote it. Here your action could certainly be criticized. And if your only reply was that you did it on the basis of pity for your friend, then your argument would be a weak one, and open to the *ad misericordiam* type of criticism.

A third fallacy of emotional appeal is the *ad baculum*, or appeal to force. Making a threat of force, or responding to one, is not in itself illogi-

cal. But where the appeal to force is offered or taken as a reason for inferring that a certain conclusion or recommendation is true, there may be an *ad baculum* fallacy committed. As with the previous pair of fallacies, the problem is to sort out, in a particular case, just when the emotional appeal has become a fallacious argument.

A fourth fallacy of hot rhetoric is the *ad hominem* or *ad personam* fallacy, where an argument has become an excessively personal attack on an arguer's position. In the abusive *ad hominem* attack, the argument has degenerated into personal abuse and vilification. In the circumstantial *ad hominem* attack, it is alleged that the individual's personal circumstances or actions are inconsistent with his arguments or policies. For example, a politician who advocates wage restraint may be personally criticized for asking for an increment to his already high salary. This form of personal attack of an arguer's circumstances can be quite legitimate.[7] But because it is a personal and emotional form of argument, it can be carried too far in many cases. Indeed, the *ad hominem* attack is such a powerful type of argument that, in political and other adversarial debates, it is often accepted quickly and uncritically by audiences as a knock-down refutation of a person's argument. Yet characteristically, it is quite a complex matter to sort out, in a given instance, to what extent and in what ways an *ad hominem* criticism is reasonable or fallacious. We will look at an example of *ad hominem* attack in section 5 of this chapter.

A fifth traditional fallacy associated with appeals to personal credibility is the *ad verecundiam*, or appeal to authority. Appeals to the authority of expertise on a topic can be quite legitimate, and are often so taken by the textbooks. But clearly, such appeals can fail in various ways.[8] The "expert" cited may not be an expert at all in the field at issue, for example. And appeal to expert sayso may not, in every instance, be a good substitute for looking at objective evidence, if it is available. Hence appeals to authority can be tricky and complex arguments to sort out and reasonably judge.

Of the fallacies categorized by Aristotle as being dependent on language, four will turn out to be important for our purposes. Equivocation is the fallacy that arises through the use of ambiguous terms in an argument. Consider the following argument.

> Partisans are not to be trusted.
> Democrats are partisans.
> Therefore, democrats are not to be trusted.

What seems worth noting here is that a shift has occurred. 'Partisans' means 'people who are biased and prejudiced' in the first premiss. But the same word would seem to be used in a different way in the second premiss, meaning 'members of a political party'. Presuming that there is a significant difference between these two meanings, the argument above fails to establish that its conclusion is true, even if it is granted that both premisses are true. Reason: even though the argument may appear on the surface to be valid, it is likely that most persons, to whom the argument would be directed, would take one premiss the one way, and the other premiss the other way. However, so interpreted, the sentences of the premisses do not go together as propositions to make up a valid argument for the conclusion. Hence equivocation can be fallacious.[9]

Equivocation can have to do with vagueness as well as ambiguity. For terms in natural language, because they are intrinsically vague, may be open to varying disambiguations. Consider the following argument.

> An elephant is an animal.
> A grey elephant is a grey animal.
> Therefore, a small elephant is a small animal.

Here we have a relative term, 'small', that shifts meaning according to the context. A small house may not be taken, in some contexts, as anywhere near the size of a small insect. 'Small' is a highly relative term, unlike 'grey', that shifts according to subject. A small elephant is still a relatively large animal.

The notorious slippery slope fallacy arises out of the vagueness of terms in natural language. Each time you remove a grain of sand from a heap of sand, it still remains a heap of sand. But if you keep applying that principle, each time taking away one grain, then eventually you will no longer have a heap. Yet there is no one single point you can say where the principle has failed — there is no single step where the heap ceased to become a heap because one grain of sand was taken away.[10]

So in the same way, a student might argue that although 50 is the lowest passing grade on a test, if he got 49, he should be passed. For he might argue: it is absurd to suppose that the one mark between 49 and 50 is educationally significant enough to withhold someone from passing for the lack of that one point. But if the appeal were granted, a student who received a mark of 48 could argue, with equal justification, that he should receive 49, and therefore also pass the exam. Such an appeal could be repeated, with

equal justification, until no one student could receive a failing grade.

Slippery slope arguments may be difficult to repel if a border or guideline is perceived as being somewhat arbitrary. Such an argument calls for a recognition of the vagueness in the standard on which the guideline is based. But once conceded, a vagueness without precise limits — remembering that any criterion with precise limits is no longer vague — may be open to attacks that chip away at the guideline, one step at a time.

Amphiboly, meaning 'double arrangement' is the same fallacy as equivocation except that the double meaning involves a group of terms in a grammatical construction where no single term in the group is ambiguous in itself. An example of this sort of grammatical double meaning is given by Engel (1976, p.52): "With her enormous nose aimed at the sky, my mother rushed toward the plane". Although this sentence certainly illustrates a grammatical incongruity, it is not an argument, by itself. Hence it is questionable whether the sentence represents a fallacy of amphiboly.

Amphiboly, although it has been traditionally classified as a significant fallacy by textbooks, presents several problems. If it is truly a fallacy, then we need to see how grammatical double meaning somehow combines with argument to produce a fallacy. The usual examples of the texts, like the one cited above, fail to suggest how amphiboly could be a serious fallacy in its own right. However, amphiboly seems to be a special, and perhaps unusual, case of equivocation, and we will see that as a fallacy it could share many problems of analysis with equivocation.

The final fallacy of this group we will mention is the dual fallacy of composition and division. This fallacy has to do with arguing from the properties of a part to the properties of a whole or vice versa. First, let's take an example of composition. Because all the members of a football team are good, for example, it does not follow that the team is good. Or to take an example of division, because a machine is heavy, it does not follow that a particular part of the machine is heavy.[11]

Traditionally, authors have attempted to give various schemes of classifications of the fallacies. However, as Hamblin (1970) has shown, these schemes are nothing more than *ad hoc* devices of little serious import. We attempt no scheme of this sort. But for the reader's convenience, it may be helpful to group the fallacies of hot rhetoric and the fallacies dependent on language as two roughly grouped areas to begin with in our presentation. The remaining fallacies are even more heterogeneous however, and we will not try to group them rigorously in any special order or scheme of classifica-

tion. Instead, we categorize seven basic faults of argument in section 6 of this chapter. But by the end of the monograph the reader will see that the domain of the fallacies is far too complex to classify easily.

2. Some More Fallacies

The *ad ignorantiam* argument, or argument from ignorance, occurs where lack of knowledge is used as a premiss to argue to the conclusion that some proposition is true or false. It is said to be one form of this fallacy to conclude that a proposition is false merely on the grounds that the truth of the proposition has never been established. Alternatively, it is said to be a second form of this fallacy to conclude that a proposition must be true, simply because it has never been disproven.[12]

The stock example is the argument that ghosts do not exist because nobody has ever been able to prove that ghosts do exist. While it is easy to appreciate the sort of mistake at issue, one must be careful, because sometimes arguing from ignorance is not altogether unreasonable. If you are not sure whether eating a "mushroom" you have just picked is safe, better to at least provisionally assume that it is not safe. Here the negative conclusion may be reasonably justified by lack of knowledge only.

The fallacy of *petitio principii*, sometimes also called begging the question or arguing in a circle, is said to occur where a conclusion is "proved" by assuming the conclusion as one of the premisses of your argument. For example, suppose a philosopher wants to prove that induction is justified as a reliable source of knowledge, and he sets out to prove it by giving several examples, where, he suggests, induction works. A critic might argue that this philosopher has begged the question because he has presupposed the reliability of induction, presuming that the philosopher had argued inductively on the basis of the examples he used.[13]

The problem with arguing in a circle as a fallacy is that it's not always clear that circular arguments are fallacious. Suppose an economist is asked why the economy in a certain province x, is in a slump at the present time, and he offers a number of reasons, including the fact that many people have been leaving province x. But suppose further that while giving reasons why people are leaving the province, the economist cites the relative prosperity of other provinces, in effect making the presumption that the economy is in a slump in province x. The economist's argument is circular, when taken as a whole. But is the circle necessarily fallacious? The economist could conceivably defend the circularity of his argument by pointing out that there is

in fact a circular feedback relationship between the behavior of people leaving province x and their correct perception that the economy is in a slump in that province. If so, the circularity in his argument need not necessarily be fallacious in the vicious way.[14]

In this case and others, if a critic perceives a circle in someone's argument, it may be a reasonable criticism to point out the circle. But in some cases, the arguer might be able to respond to the criticism by showing that the circle does not necessarily undermine or refute his argument altogether. Hence the general problem of the *petitio principii* is to distinguish between circles that are vicious and those that are benign, or at least can be dealt with or defended.

Another group of fallacies has to do with the asking of questions. The fallacy of complex question is illustrated by the famous example "Have you stopped beating your spouse?" This type of question suffers from many faults, not least that it unfairly attempts to force an answerer to concede the prejudicial presumption of being a spouse-beater — no matter which way he answers, 'yes' or 'no'.

Another allegation of fallaciousness pertaining to questions occurs when an answerer fails to give a direct answer to a question, yet gives an answer that is indirectly related to the question. Such a response may be dismissed by a critic as irrelevant, as a red herring. This brings us to the topic of relevance in argument.[15]

All the fallacies discussed so far could be, and have been, called fallacious on the ground that they are failures of relevance in argument. Yet some texts follow the Aristotelian tradition of singling out one term for the special fallacy of failure of relevance.

The traditional term *ignoratio elenchi*, meaning "ignorance of refutation" is often translated as "irrelevant conclusion." According to Hamblin (1970, p.31), Aristotle meant this term to refer to the case where someone offers an argument that may even be valid but has the wrong conclusion. In other words, the fault appears to be that the arguer thinks he has proved one thing, but has really proved something else.

The straw man fallacy, on the other hand, is the mistake of getting the premisses of an argument wrong. Here, the fault is that of incorrectly or inaccurately attributing a position to an arguer that he does not really accept, or has given evidence of having accepted. This is indeed a common fault of argument, or at any rate, arguers quite often try to criticize their opponents for having misrepresented their views or their position. And of

course, such criticisms are sometimes justifiable. Here the problem is that although an argument may be quite valid, it may commit a straw man fallacy if drawn from premisses that do not fairly represent the position it is meant to refute.

Another group of fallacies are the inductive fallacies. The most notorious of these is the *post hoc, ergo propter hoc* fallacy,[16] where a correlation between two events A and B is fallaciously used to draw the conclusion that A causes B. The chief problem here is that there appears to be little firm agreement on how the relationship of causality is to be precisely defined.

3. Fallacies Combined in Realistic Dialogues

In real arguments, moves open to critical analysis and questioning may occur at various junctures in a sequence of dialogue where each juncture is related to one of the traditional informal fallacies. In this fashion, several of the fallacies may be combined in a given passage of dialogue. However, typically, each "fallacy" is better described as a move or allegation by a party to the argument that could be open to reasonable questioning, rebuttal, or critical questioning by the other party, or by some third-party critic. In the present case, these third-party critics are you, the reader, and myself, the author of observations on the passage of dialogue being considered.

Consider the following sequence of dialogue from *Hansard* (*Canada: House of Commons Debates*, Feb. 17, 1984, p.1499).[17] The topic of this parliamentary debate was tax proposals affecting professionals.

> *Hon. Edward Broadbent* (*Oshawa*): Mr. Speaker, I would like to move on to another aspect of the unfairness as it pertains to the possibilities open to professional people such as doctors and lawyers. The Budget provision is that doctors, lawyers, and other professional people who may be earning $80,000 to $90,000 a year can now re-establish themselves as companies. Does the Prime Minister consider it fair that professionals and other upper income people who are paying an effective tax rate of 50 per cent now because their income is in the $80,000 to $90,000 category, should be able to have their taxes reduced to about 15 per cent, which is the level an ordinary worker has to pay who has not open to himself the same privilege of reconstituting himself as a company? Is this the kind of fairness the Government believes in, that there should be a special hand-out in terms of redistribution of income to richer Canadians instead of moving toward justice for middle and low income Canadians?
>
> *Right Hon. P.E. Trudeau* (*Prime Minister*): Mr. Speaker, the Minister of Finance is proposing a way of treating professionals and other such people

> which has been used in the past, and to which he is returning now. We had another system for a period of time. I do not recall the Leader of the NDP having supported it in any vocal way.
>
> I do recall when the former Minister of Finance, the present Secretary of State for External Affairs, had a budget in November, 1981, which was deliberately attempting to close what the Hon. Member has called loopholes, that he was not supported by that Leader of the NDP, nor by his colleagues. It is quite typical of the NDP that they will not support any progressive reform by the Government. They will merely continue to attack everything indiscriminately.
>
> *Mr. Broadbent*: It is quite typical of the political style of the Prime Minister to shift in a sleazy way from a difficult question that he was supposed to answer, and provide irrelevant and misleading information. This Party supported the provisions in that Budget which would remove the loopholes that go to upper income Canadians. We opposed the other provisions that gave other benefits to people who did not deserve to get them. That should be clear.

If you look over this sequence of question, reply, and objection, you see the following moves that can be identified with traditional fallacies. First, Mr. Broadbent asks two very complex questions. Both questions could be described as loaded and prejudicial. In reply, Mr. Trudeau launches a circumstantial *ad hominem* attack against Mr. Broadbent. Finally, Mr. Broadbent accuses Mr. Trudeau's answer of being a "sleazy shift" away from answering the question. In effect, Mr. Broadbent accuses Mr. Trudeau of having committed a fallacy of irrelevance.

The example is an interesting one for many reasons. But it is especially instructive to observe how fallacies of question-asking, *ad hominem*, and irrelevance can all be combined in this one fairly brief but stormy interchange in debate. What can be said about these matters at this point?

First, let us examine Mr. Broadbent's questions. The first question is whether Mr. Trudeau considers it fair that a professional should be able to reduce his taxes by classing himself as a corporation. This question does not seem unreasonable, if Mr. Broadbent's figures and assumptions about the present tax regulations are correct. The question is a lengthy and highly complex one, and there are some aspects of it that could well be criticized by an answerer. But the next question is clearly more open to criticism, so let us pass on to it.

Mr. Broadbent describes the present tax policy of the Liberal government to that party's leader, in this question, as a "special hand-out" to

"richer Canadians". In effect, he is suggesting that this policy is not fair, as he makes clear by going on to say that the policy is one that gives a hand-out to the richer Canadians "instead of moving toward justice for middle and low income Canadians". Of all this — Broadbent queries — is this the kind of fairness the government believes in? Clearly the question is ironic. What Mr. Broadbent is really asking is whether that is the kind of unfairness that the government believes in.

The grammatical form of this question is that of the yes-no question. That is, there are only two options for giving a direct answer to the question: 'yes' or 'no'. If Mr. Trudeau answers 'yes', then what he thereby concedes is that he believes in the kind of "unfairness" described by Mr. Broadbent as giving hand-outs to the rich and depriving others (the non-rich) of justice. On the other hand, if Mr. Trudeau answers 'no', he thereby concedes that he does not believe in the official government tax policies, set by the Liberal Party, the party Mr. Trudeau leads. Clearly, if he were to answer 'no', Mr. Trudeau would immediately be attacked by Mr. Broadbent on the *ad hominem* accusation of being inconsistent with the position of his [Mr. Trudeau's] own party. In short then, no matter which way Mr. Trudeau answers, he commits himself to an extremely damaging admission of guilt or inconsistency.

But the question is a yes-no question. To answer it directly, Mr. Trudeau is offered only these two options — yes or no. Is it a fair question? Clearly it is not. It is a complex question and a loaded question. Mr. Trudeau would be foolish indeed to give a direct answer to it. He should, in all fairness, be allowed to question some of the presuppositions inherent in the question. He should, in short, reasonably be allowed to avoid giving a direct answer, without altogether evading the issues raised by the question.

Here then we are confronted with the problem of the many questions fallacy and associated problems with the asking and answering of questions. Asking a question can be fallacious. And failure to answer it directly enough, given the circumstances, can also be fallacious.

Mr. Trudeau answers the question by directing an *ad hominem* attack against Mr. Broadbent's position on the issue of taxation of professionals. He replies that in the past, professionals could not use these means of reducing their taxes. Mr. Trudeau then claims that he cannot recall Mr. Broadbent's ever having supported that previous policy in a vocal way. So Mr. Trudeau alleges, in effect, that Mr. Broadbent is inconsistent. He never supported the old policy in a vocal way, but now he vocally supports

it. Why? According to Mr. Trudeau's reply, it is because Mr. Broadbent and his NDP colleagues simply attack all government policies indiscriminately. Mr. Trudeau claims, in effect, that Mr. Broadbent's attack on tax policies is not based on a consistent or reasonable position, but merely on a typical NDP reflex attack on all government policies. This rejoinder is, in effect, an attack on NDP integrity and policymaking generally.

Now the question — has Mr. Trudeau unfairly avoided answering Mr. Broadbent's question? Has he committed a fallacy of irrelevant answer? First, we need to note that Mr. Trudeau's statements in answer are, in some sense at least, relevant to the question. They do relate to tax policies. Second, we have already seen that Mr. Broadbent's question, as put in its present form, was not a fair or reasonable question to answer directly. Third, although Mr. Trudeau's answer is an *ad hominem* in the sense that it attacks Mr. Broadbent's personal voting record in relation to his present argument, and criticizes the consistency of the NDP position, it may be that not all *ad hominem* arguments are fallacious. In some situations, pointing out that an arguer does not practice — say in his voting record — what he now preaches, could be a reasonable form of criticism in argument.

For these reasons, Mr. Broadbent's accusation in reply that Mr. Trudeau has shifted "in a sleazy way from a difficult question" is at once ingenuous and exaggerated. The question was more than difficult — it was impossible to answer directly! And to call the reply "sleazy" is to use an emotional and inappropriate word to describe the *ad hominem* attack.

Given the unfairness of the phrasing of the question, one is almost tempted to think that Mr. Trudeau's *ad hominem* reply is a fair enough answer. But that is not the point, at least entirely. We should ask whether the point was evaded by the *ad hominem* reply. Should Mr. Trudeau have offered further positive support for the government tax policy on professionals instead of attacking the NDP consistency on this issue? Perhaps he could have. On the other hand, his query of the opposing party's consistency on this topic is not essentially unreasonable as a form of argument.

Mr. Broadbent does reply to Mr. Trudeau's attack by claiming that his party has been consistent. He claimed that his party had supported some aspect of the past tax policies, and only opposed the new provisions. However, he now describes these provisions as "loopholes that go to upper income Canadians." Once again, the language is excessively loaded and prejudicial. Mr. Broadbent is aggressively trying to beg the disputed question of whether these provisions are good or fair aspects of tax policy. His

reply then, is based on a sound point, but can be criticized for its excesses.

This excessive aggressiveness in attempting to discredit the opposing party's position is quite typical of political debate as a form of argument. This particular interchange has consisted in a series of parries, or attacks on each other's position. While such an *ad hominem* approach is to some extent legitimate within the adversarial structure of parliamentary debates,[18] one might also wonder whether excessive use of positional attack represents a lower grade of dialogue than one should expect in parliament.

Clearly, Mr. Trudeau had to respond aggressively to support his party's position in face of Mr. Broadbent's nasty question. Yet one could question whether Mr. Trudeau's method of refutation of the question — by claiming that the NDP typically attacks the government — could be an over-reactive, unsupported generalization. Surely it is not a highly plausible thesis that the NDP attacks the government indiscriminately as a quite general practice in their arguments. Even if it is true, it would be a difficult general claim to establish, and Mr. Trudeau would have been on easier grounds to support if he confined himself to the present topic of tax reform in the case of professionals. Or perhaps he could have cited a particular case where the NDP attacked a government policy that subsequently showed evidence of success. Therefore, even in light of the adversarial nature of partisan debate, one could question whether the use of *ad hominem* argumentation is in this case excessive.

We see then that just to say that one party committed a "complex question" fallacy, or that the other committed an *ad hominem* fallacy is by no means the final word. Each of these so-called fallacies is a form of argument that is part of a certain context of dialogue. In light of the objectives of the dialogue then, each move may be critically questioned and evaluated as being reasonable in some respects, but open to criticism in others. One criticism may be best evaluated in relation to the previous move in dialogue that it was made in response to.

In chapter 8, we will devote a whole chapter to the systematic analysis of the *ad hominem* fallacy. For the moment, the lesson is that the reasonable and fair evaluation of *ad hominem* argumentation is a complex matter, and involves analysis of the context of dialogue in which the argument occurred. That lesson will turn out to be true of all the fallacies and other aspects of argument so far mentioned. Looking at an argument as simply a designated set of propositions, the premisses and conclusion, does not take us far enough to be much help.

Hence we need to inquire more carefully into the nature of argument, and introduce the idea that an argument is a form of dialogue interchange between participants in the argument. Otherwise, there can be no hope of evaluating the cut and thrust of realistic disputation as consisting of fair or unreasonable criticisms.

4. What is an Argument?

The basic definition of an argument that has usually been given in logic textbooks is that an argument is a set of propositions, one of which is designated as the conclusion. The remainder are called premisses. To determine which is the conclusion, the reader usually gets different advice. But it is often suggested that the conclusion is preceded by a word like 'therefore' or that the premisses provide the "basis" for the conclusion. What this type of suggestion amounts to, in practice, is not too clear. For very often the conclusion is not preceded by 'therefore' or some clearly equivalent term. And what 'basis' means is no more clear than what 'premiss' is supposed to mean. However, it has seemed satisfactory, for the purposes of such textbooks, not to pursue such matters further and to lean heavily on the word 'designated'.

When it comes to analyzing the fallacies however, that approach is not good enough. The fallacy of *ignoratio elenchi* involves an arguer getting wrong which is the conclusion for an argument. The *straw man* fallacy involves wrongly identifying the premisses. *Petitio principii* may involve confusing the conclusion with a premiss. Emotional fallacies like *ad populum* sometimes involve the mistake of thinking there are premisses when it is not clear that there are any propositions that can be clearly identified as premisses. All these fallacies, and others as well, involve a failure to clearly or correctly identify or distinguish between the premisses and conclusion of an argument or putative argument. Here, the definition of an argument as a set of propositions is best seen as a necessary condition only — a step towards a fuller account.

An argument is basically a set of *propositions*. But that is not all there is to it. There is another factor. An argument is a *claim* made that the conclusion follows from premisses advanced. Therefore, an argument may be defined as a set of propositions where one is claimed to follow from the others.

Sometimes it is also suggested to be part of the definition of *argument* that the premisses may serve to provide support for, or may be taken as the

basis of the truth of the conclusion. For example, Copi (1982, p.6) writes that an argument is "any group of propositions of which one is claimed to follow from the others, which are regarded as providing support or grounds for the truth of that one." This account of the concept of an argument agrees nicely with the one proposed above except for the addition of the clause beginning "which are regarded as ..." Is such a clause necessary or useful? Some care is needed in discussing this question.

Initially, the point should be made that, in some arguments, the premisses are meant to support "positive" or "direct" arguments. But in other arguments, the premisses advanced are meant to criticize an opponent's position, or to rebut objections to the conclusion meant to be defended. We could call these "negative" or "indirect" arguments. Such arguments may provide indirect support for a conclusion. However, it is important not to confuse the difference between support for the truth of a proposition and refutation of an objection that supports the falsehood of a proposition. For it may be quite consistent to argue that there is no support for either the truth or the falsity of a proposition. At least in some cases, if there is no relevant evidence and no burden of proof, it can be reasonable to be a skeptic.

Hence there is reason to believe that the final clause may not be characteristic of all arguments. Whether it is remains open to argument.

But let us get back to the idea that an argument is a *claim* for its conclusion. What could this mean? It seems to mean that there is a certain thrust or direction or force in argument that goes from the premisses to the conclusion. But such a notion of "thrust" is highly metaphorical. It is not clear what it amounts to, in precise terms.

Many of the fallacies presuppose that there can be two conclusions in an argument — the conclusion of the argument being criticized or evaluated and the conclusion of the argument of the critic or evaluator. What emerges is an interpersonal conception of argument. If you and I are engaged in argument then presumably you may have your conclusion and I may have mine. The two conclusions may be quite different, even logically opposed in some cases.

For example, the concept of begging the question seems to presuppose a context where each of two arguers has his own conclusion to be proven. In order to prove my conclusion, I should "beg for it" from you. Rather than simply asking you to grant my conclusion — in effect arguing 'C, therefore C' — I should present something different from my conclusion C as evidence you might be inclined to accept.

In order for there to be an argument, there should be an "issue" to be disputed or argued about. At least the informal fallacies strongly require this notion. What this amounts to is that each party to the argument — there may be more than one party — should have his or her conclusion formulated clearly, if the argument is to have any point or purpose. Once my conclusion in the argument is clearly formulated and established as such, I may be fairly accused of *ignoratio elenchi* if I prove some other proposition judged to have no real bearing on that conclusion.

In adopting the idea that there could be two conclusions in an argument however, clearly we are moving to a much richer conception of argument than the initial one of a set of propositions. We are moving toward the first basic idea of logical dialogue, that each party to the argument should have a thesis (conclusion) to be proven.

Sometimes in real-life arguments it is not established what the thesis of each participant really is — the thesis that he or she is supposed to be arguing for. In many quarrels, for example domestic quarrels and political debates, the two parties are disputing and arguing, but it is not clear what the real issue is.

This phenomenon means that logical games of dialogue are one step removed from the realities of actual argumentation. In the games of dialogue, the thesis of each participant that he is ultimately supposed to prove must be clearly set as a proposition in advance of any play of the game.

Many quarrels in real life are simply vague in this regard. The disputants may never make clear precisely what they are quarrelling about. The issue is not defined precisely.

It is interesting to reflect however that, in some instances, the dispute may serve to help define the issue. A domestic quarrel may arise in heated dispute over who is to take the garbage out. However, it may arise through the course of the argument that the real issue is the husband's coming home late the previous night. In such a case, the preliminary argument may have served the valuable function of defining the real issue. Disputing about the ostensible issue served as a process from which the real issue of contention could emerge.

Once the issue is formulated and argument is underway, we might now wonder what the purpose of an argument is. Very often, in real arguments, the purpose of an arguer is to defeat the opponent at all costs. But if logical dialogue is to represent a normative model of reasonable argument of

interest in analysis of the fallacies, the means of winning should reflect some sort of "logical process" of proceeding from premisses to conclusions. This leads us to reflect on the conditions under which arguments are won or lost when the participants are perceived as being reasonable in their method of argument.

There are two basic ways to win an argument. The more familiar way is to present your own arguments. This way means presenting your own reasons for accepting the proposition at issue, in the hope that your listener will also find these propositions as plausible and attractive as you do.

The second way is to listen to your opponent and try to argue from her side of the fence. This way means looking at her reasons for persisting in the opposite viewpoint, and trying to argue on that basis. There are several ways of doing this. One is to take the opponent's commitments, and show that they imply your own thesis that you want to persuade her is true. Another is to show that your opponent's position is internally inconsistent or questionable. *Reductio ad absurdum* is a type of argument of this second form.

These two ways of winning an argument do not exhaust all the possible avenues. A third way is to show that your reasons for accepting your thesis are better than your opponent's reasons for not accepting it. A fourth way is to show that your thesis follows from a set of propositions that both you and your opponent accept.

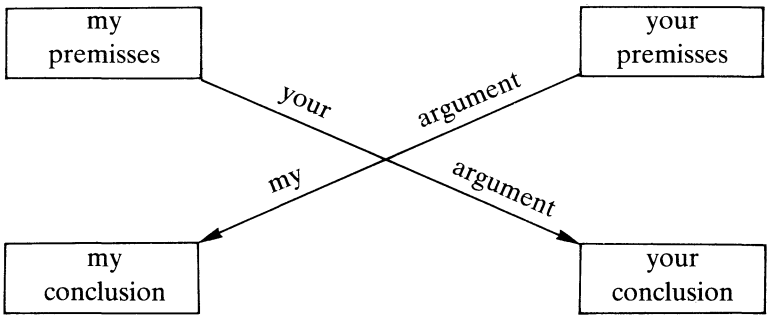
The third and fourth ways involve the commitment-sets of both participants in the argument. The first two ways, however, are opposed to each other in one important respect. The first way argues from premisses in your own commitment-set. The second argues from premisses exclusively in your opponent's commitment-set.

There may be many purposes of argument. One might be communication or exchange of information.[19] However, in analysis of the informal fallacies we see that a characteristic objective is for one participant to persuade another that a certain proposition should be accepted. Such a "game of persuasion" basically involves the following type of strategy — you try to get your opponent to accept *your* conclusion on the basis of his premisses (propositions he is committed to or has accepted previously). The object is to use logical rules of inference to prove your conclusion from his premisses. In this framework, a compelling argument is an argument that should persuade a rational arguer to accept a conclusion. What one arguer needs to provide a compelling argument is a set of propositions that are commit-

ments of the person to whom the argument is addressed, where this set of propositions implies the conclusion by rules that both parties accept.

A compelling argument may be a long process requiring a strategy comprising several sub-arguments. Therefore in practice, many arguments are more like promissory notes. They make a start towards achieving an argument that will hopefully be compelling once it is constructed in full. Hence many arguments will not be compelling as they stand. They merely "lead in a certain direction." Our concept of argument, therefore, must be broad enough to allow for chains of arguments made up of component arguments.

The central function of argument as interpersonal persuasion then involves an interchange of premisses and conclusions. This represents the model of argument we might call dialectical because it truly represents "dialogue" in the sense of systematically arguing from the other's premisses. It is this art that presumably lies at the bottom of the expressed value often placed on the humanistic empathy of appreciating the other person's point of view. This concept of argument represents a model of reasonable argument that rejects the dogmatic stance as a failure of reasonable argument.



The dialectical model of argument is not the only legitimate model of reasonable argument, but it is clearly central in attempting to understand the fallacies as reasonable or unreasonable moves of criticism, argument and refutation. However, there are many ways in which we might define "win" and "loss" in such a dialectical game. We could have relatively loose procedural rules for what counts as a win or loss. Perhaps we could simply require that the participants be sincere and honest. But since the fallacies are ostensibly about certain types of deception or subtle unfairness in

moves of dialogue, it could be useful and interesting to construct precisely regulated games (like chess or monopoly) where permissible moves lead to a definite 'win', 'lose' or 'draw'. We will study both these options.

A final characteristic of argument as dialogue is that the basic moves should consist of a sequence of questions and answers. In the most simple type of exchange, the questioner might ask 'Do you accept proposition A?' and when the answerer replies 'yes', proposition A is entered in his log of commitments. In a symmetrical game, the participants take turns asking questions.

The foregoing considerations all suggest that we adopt a new model of argument where the main outlines are given by the following sequence of definitions. Each of these definitions represents a rough beginning of the theory to come. Each of them will be given alternatives and more precise implementations in the sequel.

An *argument* is a set of propositions advanced by a player (the proponent) in a game of dialogue. The *conclusion* is one proposition in this set, designated by the proponent in accord with his strategic objectives. The remainder of this set of propositions are called *premisses*. These propositions are selected by the proponent with the strategic objective that the other player (the respondent) is either committed to them, or will become committed to them during the course of the game. This basic conception of what an argument is leads on naturally to the following conception of a logical game of dialogue.

A *game of dialogue* is composed of two players, called the proponent and the respondent, a set of moves of the players, and a set of rules for the game. Each move is either a question or an answer. The players take turns making moves. There are different kinds of procedural rules which determine when various kinds of moves are allowed in the game. There are logical rules, defining what counts as a valid argument. The player wins who first proves his thesis from the other player's commitments by means of the rules. There are rules of commitment, defining how commitments are incurred by a player as a result of moves he makes. Each player starts the game with a set of initial commitments, and the commitment rules add to (or in some cases subtract from) the members of this set. The thesis that each player must prove is set at the outset of the game. Each rule of the game is also designated at the outset. A player may formulate strategies to guide him in making moves that will enable him to prove his thesis from the other player's commitments. The set of commitments of a player is called

that player's *position*.

Using this basic conception of argument, we can now go on to examine the individual fallacies, and try to see in each case what is the best system of dialogue-rules for fairly managing and adjudicating on allegiations of fallaciousness. Alleged fallacies are sometimes defensible arguments, so we want to search out rules to fairly regulate disputable cases.

5. Criticism as Challenge and Response

Dialectic is essentially a reactive form of argument in the sense that every move made by an arguer needs to be seen as a reply or counter-move to some move of the other party to the argument. For this reason, many criticisms and other forms of argument have as their essential and legitimate function what may be described as "putting the ball in the opponent's court." For example, the legitimate function of the *tu quoque* form of the circumstantial *ad hominem* is to take the opponent's criticism of your position and deflect the very same criticism back onto his original attacking criticism. The proper effect of the *tu quoque* rejoinder then is to deflect the burden of proof away from your own position and back onto the opponent's argument. Your opponent must, if the *tu quoque* is successful, then turn at his next move to defending his own position instead of attacking yours.

Within the context of dialectic as a model of argument, the *tu quoque* can be a reasonable form of argument. Well deployed, it can be an excellent strategy in dialogue, to be sure. However, it can in some circumstances be used fallaciously as a means of attempting to evade argument, or of trying to avoid answering a reasonable question by setting up a diversionary attack. Where this possibility exists, care must be taken in setting out to evaluate whether the *ad hominem* rejoinder should fairly be judged permissible or fallacious.

A real example of the *tu quoque* rejoinder will illustrate some finer points to be considered in attempting to evaluate this kind of move in argument. The following dialogue is taken from *Hansard* (*Canada*: *House of Commons Debates*, vol. 127, no. 43, 1984, pp.1812-1813).[20] The topic of the debate was economic development, and in particular, a special capital recovery projects program where employees determine priorities. The especially interesting part of the debate concerns a question posed by Mr. Thomas Siddon, and the reply given by Mr. Donald Johnston of the Liberal Party (the party then in power).

Mr. Thomas Siddon (*Richmond-South Delta*): Mr. Speaker, my question is directed to the Minister of State for Economic and Regional Development. It refers to the colossal porkbarrel known as the Special Recovery Capital Projects Program. Will the Minister confirm that the secretariat administering that program does not operate out of his own Department but, indeed, reports directly to Cabinet through Senator Keith Davey, and that the key employees engaged in determining priorities under that program are former government employees presently operating under contract? If so, will he table for the examination of all Members an indication of which of these employees have long distance telephone credit cards, car rental cards, government codes, expense accounts, and the like? In other words, will the Minister indicate the extent to which government employees are being paid massive contract amounts to administer this program if they are trusted political friends of the Government?

Hon. Donald J. Johnston (*Minister of State for Economic and Regional Development and Minister of State for Science and Technology*): Mr. Speaker, I will begin with reference to the porkbarrel. It is curious that the Hon. Member for Richmond-South Delta would raise that since there is a very significant project in his own riding at the Vancouver airport. I look to the riding of the Hon. Member for Vancouver Centre. I see she is not with us today. There is something like $41.9 million in that porkbarrel for Vancouver Centre. Looking on from there, I see Vancouver Quadra, and I think the Hon. Member for Vancouver Quadra might be here, $15 million in Vancouver Quadra. I go over to the Island to Esquimalt-Saanich. The Hon. Member for Esquimalt-Saanich is here. He is not blushing, I hope, about receiving $8.5 million for the graving dock improvements in Esquimalt. I see the Hon. Member for Hillsborough sitting here, to go to the other end of the country, $14.5 million for the veterinary college in Charlottetown. I do not hear him saying that he would not like the project there. I note that the Leader of the Opposition is not present. It is interesting that we have a $25.9 million project in Central Nova, Ferguson Industries Ltd. of Pictou. Just so this will be completely non-partisan, I see the Hon. Member for Winnipeg-North Centre is here.

Mr. Speaker: Order.

One interesting aspect of this debate is that it shows us how the *ad hominem* as a form of argument in dialogue is intimately linked to the asking of questions in the context of the dialogue. Mr. Siddon's question requests Mr. Johnston to "indicate the extent to which government employees are being paid massive contract amounts ... if they are trusted political friends of the Government." This question is a complex or multiple question. It contains a conditional and some conjunctions. It is also a loaded question, in that some of the propositions contained within its parts

as presuppositions are damaging to the position of Mr. Johnston's party. It presupposes that "massive" amounts are being paid to "trusted political friends of the Government." This presupposition is hardly one that the Liberal Party could accept without appearing to be guilty of patronage or "porkbarrelling," as the process of giving favors to your political friends is called.

Note also that the question is constructed in an unfairly aggressive way. It asks for specific amounts of these expenditures. However, if Mr. Johnston were to provide these figures, thereby giving a direct answer to the question posed, he would automatically be incriminating his own party. He might well take issue with the highly prejudicial presumptions of the question as posed. But if he provides a direct answer, he automatically becomes committed to assent to those presuppositions.

Consequently, we need to ask here: in the context of the dialogue, is Mr. Johnston obliged to directly answer the question? Or would it be fair if, instead of giving a direct answer, he parried the question by asking another question, for example, or by challenging some of its presuppositions? Given the context and the specifics of the question, it seems fair and reasonable that some of these latter options should be open without Mr. Johnston's reply being open to reasonable criticisms of unfairly evading the question or giving an irrelevant answer (*ignoratio elenchi* fallacy). When Mr. Johnston then proceeds to reply to the question by means of an *ad hominem* rebuttal to it, we should judge the legitimacy of his refutation of the attack posed by the question in the light of the latitude that should be judged permissible for a fair reply to the question.

Mr. Johnston's reply is very clever. Instead of giving the contract amounts for the project queried, he systematically goes around to several opposition members, including Mr. Siddon, and gives the amounts each of them has been granted for significant projects in each of their own home ridings. He says of one of these members, "I do not hear him saying that he would not like the project there." What is Mr. Johnston suggesting by this clever reply? He is saying that if the special capital recovery project could be called a "porkbarrel" then so, equally well, could each of these other opposition projects be called "porkbarrelling." It is a classical *tu quoque* reply of *ad hominem* argument. Instead of answering the question directly, Mr. Johnston turns the question back upon its asker and his supporters.

Is this *ad hominem* rebuttal fallacious? This judgement can only be resolved, I suggest, in light of the question it retorts to. Is the question

unfairly or aggressively loaded? If so, the *ad hominem* reply need not be automatically dismissed as evasive or diversionary.

Indeed, it could be fairly argued that the question itself poses an *ad hominem* attack against Mr. Johnston's party. To answer the question directly is to concede "massive contract amounts" paid to "political friends." Hence the question itself poses a form of personal or circumstantial attack on the conduct of the party in power. In this light, Mr. Johnston's reply can be seen as an *ad hominem* reply to an *ad hominem* attack. It is truly a *tu quoque* rejoinder.

It should be pointed out that Mr. Johnston did not give a direct answer to the question. His reply could possibly be criticized — perhaps fairly to some extent — on those grounds. Yet given the aggressive nature of the question, it seems fair and reasonable that he should be allowed to begin his answer by rebutting some of the prejudicial presuppositions contained in the question. His *ad hominem* reply does precisely that, and very effectively. In effect, Mr. Johnston's reply makes the point that payment of funds to one's political supporters is not necessarily a "porkbarrel." If the funds are fairly paid, through due processes, with no conflict of interest or clearly culpable ulterior motive, then such contracts or projects need not be labelled by the perjorative term "porkbarrel." In fact, it is a separate question to be established whether such contracts are in some clearly established way illicit, and may therefore be described as a "porkbarrel." Mr. Siddon's question — so Mr. Johnston's reply alleges — had not given evidence of the illicit nature of the contract in question. Therefore Mr. Siddon's question, which describes the contract as a "porkbarrel" within the question itself — really begs the question, so to speak, of whether it is truly a "porkbarrel" practice. Mr. Johnston's reply then, in effect, rebuts that presumption by pointing out that one might equally well call, *tu quoque*, any of the opposition's recently funded projects "porkbarrels." He is turning the presumption of the question back on its poser. He is, in a nutshell, questioning the question. To the extent that the question is unfairly loaded, we can say that Mr. Johnston's reply to it is fair and reasonable, and therefore commits no *ad hominem* fallacy.[21]

Notice what has happened here, however. We have two parties in the debate. One poses an *ad hominem* attack and the other marshalls a clever *ad hominem* reply. Either the questioner or the answerer could be criticized for various reasons, in the context of the dialogue. Conventionally, *ad hominem* has been thought of as a fallacy, an argument that seems valid but

is not. Our evaluation of this dialogue challenges that whole conception of *argumentum ad hominem* as a fallacy.

By the analysis given in chapter 9, *ad hominem* is a form of criticism in dialogue that, as a move in argument, can be in some cases permissible and reasonable. *Ad hominem*, then, can be a non-fallacious argument in some cases. In this case, whether a fallacy is committed depends on how the *ad hominem* rebuttal fares as a reasonable response, given the structure of the question that elicited it. Argument must be seen in the context of such an evaluation, not just as a set of propositions where one follows deductively from the others, arbitrarily called "premisses." Argument must be seen as a dynamic relationship where one arguer's position is challenged or attacked, and the other arguer's move is seen as a response to this challenge.

Hence we are led again to the main thesis of this monograph that fallacies in realistic arguments can only be fairly evaluated by viewing the argument as part of a logical game of dialogue. At one level, we have realistic arguments like the parliamentary debate above. But to evaluate the moves in these realistic arguments as "fair" or "fallacious" criticisms, we need to have a model of dialogue as an abstract normative structure against which the real argument can be evaluated.

6. Basic Categories of Argument Study

On some occasions in a dispute about a certain contention, neither party may have access to additional evidence that would be sufficient to persuade the other party to come over to his side of the issue. In such a case, one's own argument may not be able to be strengthened, by building it up with positive, new evidence. An alternative in this type of stalemate is to adduce arguments to weaken your adversary's case for his side of the contention at issue. For if his arguments are weakened, then your own side may prevail. When the arguments are nearly enough balanced, yet neither side wins and there is no new evidence for the moment that would tilt the scales one way or the other, an argument to refute or undermine your opponent's argument may be the only option.

If the above type of situation reflects the reality of argumentation, a distinction needs to be made between two kinds of argument. One kind of argument is the argument based on evidence that purports to be universal, on verified knowledge that anyone should accept. This kind of evidence is sometimes called *reproducible evidence*, meaning that it can be verified by

any observer in like circumstances. A second kind of argument is based on premisses accepted by some particular party to the argument. This basis of argument does not purport to be universal. It represents the position of a specific arguer, which that arguer accepts. But others may not share this viewpoint. An argument of this sort is always relative to what this particular arguer should accept. This kind of argument is essentially dialectical — it is an argument devised by one party and directed against (or in some cases towards) the position of another party in an interpersonal dialogue.

The most basic kind of *ad hominem* fallacy consists in the confusion between these two species of argument. It is an argument of this form: your dialectical argument for proposition p is weak, or based on premisses that can be shown to be inconsistent, therefore p must be false, or at least not based on verified, universal knowledge. This kind of move from the dialectical to the reproducible argument is a fallacious kind of move. Although an arguer's dialectical case for p may be weak, it need not follow that there is no reasonably strong reproducible evidence for p.

To clarify the basic distinction involved here, we need to define our terms more precisely. We shall define a dialectical argument as essentially two-person in just the following sense. Let P be the premisses and C the conclusion of an argument. An argument 'P, therefore C' is *dialectical* if, and only if, it is a move or series of moves, in a game of dialogue, advanced by one participant with the objective of proving his thesis. Usually P will comprise propositions that are commitments of one or the other player. Usually C will be an *interim* conclusion of the player who advances the argument, that is, a proposition leading in that player's strategy towards the proof of his own thesis. An argument 'P, therefore C' is *monolectical* if, and only if, the set P purports to be universally acceptable, reproducible evidence not restricted to propositions that are commitments of a particular participant in the argument. Very often P will be some scientific or empirical evidence based on experiment, or some other form of reproducible verification.

Our next few remarks on categories and classifications of arguments apply to both monolectical and dialectical arguments. However, our concern is mainly with the latter. Therefore, our examples and cases will be drawn from the dialectical model of argument.

There are two basic functions of argument. One is *proof*, or what might be called *positive proving*, and this refers to proving your conclusion, based on premisses that establish that conclusion, or contribute to its estab-

lishment. In dialectic, proof normally means proving your own thesis from your opponent's premisses. The other function of argument is *refutation*, where an argument falsifies or undermines a conclusion. In dialectic, refutation normally means showing that your opponent's position is inconsistent.

To say that an argument is proven because it has not been refuted could be a dialectical form of the *ad ignorantiam* fallacy, though such an inference is not always fallacious. Similarly, in monolectical terms, to say that a conclusion is falsified because it has never been verified could be one form of *ad ignorantiam* fallacy. Much more needs to be said about *ad ignorantiam* arguments, but it is clear that the distinction between positive proof and refutation lies at the heart of that informal fallacy.

In a game of dialogue where classical logic provides the rules of valid argument, proof and refutation amount to nearly the same thing. If the rules of valid argument include addition, simplification, and disjunctive syllogism, then any conclusion follows validly from an argument with inconsistent premisses. Hence proving that one's opponent's commitment-set is inconsistent, in a game of dialogue that includes these three logical rules, amounts within the next few moves to proving one's own thesis from that opponent's commitment-set. This well-known fact is essentially theorem 1 of Walton (1984, p.140). However, in some non-classical propositional calculi — like relatedness logics and relevance logics — theorem 1 does not hold. Hence in games with logical rules based on these non-classical logics, refutation and proof are farther apart.

Ignorance of refutation (*ignoratio elenchi*), in the Aristotelian tradition, refers to a failure to show that one proposition is contrary to, or refutes another. This failing of argument refers to a badly mounted refutation which fails to demonstrate inconsistency. Failure to prove the conclusion an arguer is supposed to prove, in a game of dialogue, is a parallel fallacy.

The traditional informal fallacies pertain to different types of arguments and criticisms that have gone amiss in one way or another. Fallacies may be related to three basic kinds of failures of an argument.

1. *Wrong Premisses*. In the characteristic case, in games of dialogue, this failing means that the premisses of one party's argument are not all commitments of the other party. In other cases however, this criticism may involve an allegation that the party criticized has too many (redundant) premisses, has too few premisses, or has the wrong sort of

premisses for other reasons, e.g. premisses that are not topically related to the conclusion.

2. *Invalid Argument.* This criticism is familiar in the usual approaches to logic. It means that the conclusion does not follow from the premisses by the logical rules. It represents a failure to prove.
3. *Wrong Conclusion.* The problem here is that the argument could be valid, as required by 2., yet have the wrong conclusion. In games of dialogue, it is required at the outset that all participants have a specific proposition designated as their thesis (conclusion) to be proven. In realistic argumentation, this requirement may not be met, or not clearly met.

The above three types of failures of an argument are basic to all studies of fallacies and applied logic. They are somehow fundamental. They can be applied to monolectical arguments as well as dialectical.

However, there are various other failings of argument that can play a role in reasonable criticisms of arguments. These include the following.

4. *Questions Badly Asked.* Questions have presuppositions and therefore the act of questioning itself may be subject to reasonable criticisms. Questions can be complex. Questions can be unfairly aggressive and prejudicial to the answerer's position. Therefore, the fair management of question-answer relationships is an important part of procedures that must be regulated in games of dialogue.
5. *Failure to Answer Questions.* Since a question may be unfair, or unreasonably posed, it should not always be required in rational dialogue that an answer must provide a direct answer to every question. Yet the answerer should be constrained to give a reasonable answer without being unduly evasive. Failure to answer a question may be criticized, in some circumstances as committing a fallacy of irrelevance.
6. *Failure to Argue.* Sometimes an argument fails, not by having the wrong sort of premisses, but by not having any premisses at all. The basis of some criticisms is that the arguer has created an emotional "smoke screen" in lieu of providing any propositions that can clearly be identified as premisses.
7. *Too Many Arguments.* Another form of failure of argument is where more than one argument is advanced. Equivocation is a case in point. Because of an ambiguous term in one or more of its propositions, an

> "argument" may really be several arguments rolled up into one schema or bundle that looks like a single argument. The problem is that the different arguments may exhibit different failings, and thereby confuse the one to whom the argument is directed. Another interesting failure of this sort occurs where one arguer advances an argument meant to be taken as inductively correct, whereupon his critic criticizes it as deductively invalid. There may be different standards or types of argument, and these may be mixed up.

There are other failings of argument that are connected to the criticisms that form the basis of the traditional lore of informal fallacies. But these seven fundamental kinds of argument failure provide a structural background against which a good deal of the criticisms at work in the fallacies can be studied.

It is now time to look at the fallacies and other relevant aspects of argument in greater detail. We begin with the first group of fallacies introduced, namely the fallacies that have to do with "hot" appeals to emotion. Before getting into the detailed workings of the fallacies, we conclude this chapter by making a brief general statement of our objectives to be carried out in the ten chapters to follow.

The subject-matter of informal fallacies is a pragmatic testing ground for formal theories of argument and dialogue. The three main formal theories of logical dialogue — games advanced in recent times are those of
(1) Lorenzen and his school (the Erlangen school),[22]
(2) Hintikka[23] and his students, including Carlson,[24] and
(3) Hamblin[25] and his followers, including Mackenzie.[26]
Also, the theory of argument advanced by Barth and Krabbe[27] has developed the formal structure of the Lorenzen school. The problem for the study of the fallacies is to apply these three theories to the various special contexts of argument required to make sense of the informal fallacies in attempting to fairly and reasonably judge — and provide general standards to judge — criticisms, refutations and arguments of a realistic sort that represent traditional "fallacies" and other significant phenomena of the world of fallacies and argumentation. All three of these theories can be fruitfully applied to the traditionally chaotic and undisciplined domain of the fallacies. But in certain special contexts, one theoretical approach may offer clear advantages over the remaining pair. Each theory has its advantages. And, given the undeveloped state of the study of the fallacies, it would be premature to declare that one of these theories is the best for all or most

purposes. That is not our objective, at any rate.

My objective is to look over enough of the rich domain of the fallacies to allow a working, pragmatic model of argument to emerge. Having already sketched out the very rough edges of the model in this first chapter, the subsequent aims are to justify the applicability of that model in relation to the fallacies, and to explore its refinement in building particular models of questioning, criticism, rebuttal, and so forth, for various special contexts of reasonable argumentation interchange.

NOTES

1. See Johnson and Blair (1980).

2. See Rescher (1976) for a systematic study of arguments where shift in the burden of proof is significant.

3. See Hamblin (1970).

4. The most complete survey of the fallacies is that of Hamblin (1970, chapter 1). A less comprehensive introduction is given in Walton (1984, chapter 1).

5. Works of Hamblin (1970) and Walton (1984) bring out this lesson in depth.

6. See Walton (1980a).

7. So we will argue in chapter 9, at any rate.

8. See Woods and Walton (1982, chapter 5).

9. Chapter ten of this monograph is an extended study of the fallacy of equivocation.

10. See, for example, Zadeh (1975) for structures appropriate to this sort of reasoning.

11. See Woods and Walton (1977).

12. See Woods and Walton (1978).

13. An extended study of this example is given in Walton and Batten (1984).

14. A more extended discussion of a case similar to this one is to be found throughout Walton (1984).

15. See Walton (1982).

16. See Woods and Walton (1977).

17. I would like to thank Tan Bee Chin for drawing this debate to my attention.

18. Subsequent extended discussion of *ad hominem* criticism in chapter 9 will clarify just when an *ad hominem* attack becomes fallacious.

19. Hamblin (1970) emphasizes this aspect.

20. I would like to thank Marc Frechette for drawing this debate to my attention.

21. However, the reader who has doubts about this evaluation might wish to go on to chapter 9 to get a fuller appreciation of the *ad hominem* argument as sometimes being a reasonable move.

22. Lorenzen (1969).

23. Hintikka (1979).

24. Carlson (1983).

25. Hamblin (1970) and (1971).

26. Mackenzie (1981).

27. Barth and Krabbe (1982).

CHAPTER TWO: HOT RHETORIC AND ARGUMENT

The first group of fallacies we discussed in the previous chapter were the "hot" appeals to emotion. These fallacies are worth discussing as a group because conversational quarrels and debates are heavily interlaced with emotional appeals. Some have even suggested that political debates, for example, are largely decided on the basis of emotional factors. We have already seen how the *ad hominem* attack is a powerful and central refutation in political debate. In this chapter, we will concentrate mainly on appeals to force, pity, and popular sentiment as strategies of emotional persuasion, though we include *ad hominem* argument for study as well. However, our indepth study of *ad hominem* argument will not be carried out until chapter 9.

Emotion is intimately involved with the objective of rhetoric. For rhetoric is the attempt to persuade a specific, target audience. And an emotional relationship is a personal link between individuals. To become involved in an emotional relationship, two people concentrate their attention on each other, they "build a wall around themselves and exclude others" (Bailey, 1983, p.48). An emotional relationship suggests that we suspend calculation and logic, that we trust and grant credit to each other. According to Perelman (1982, p.17), persuasive discourse is addressed to a person's unthinking reactions, as opposed to convincing discourse which appeals to reason.

A longstanding problem with the fallacies that trade on emotion is that they have always seemed to be quite separate from any standard structures used by formal logic. However, we will see that our new models of argument and dialogue structures show promise of assisting us in the analysis of these heretofore elusive fallacies. Let us therefore turn to a closer study of some of these famous emotive fallacies.

1. Appeals to Popular Sentiment

The *ad populum* fallacy is usually characterized, we noted in the last chapter, as an argument that appeals to mass enthusiasms or popular senti-

ments in order to win assent for a conclusion. However, the initial observation in relation to this characterization is that there is nothing intrinsically wrong in appealing to mass enthusiasms in an argument. Indeed, in a democratic society, such mass appeal will be positively required if one's argument is to be successful in winning over an electoral majority. Thus the logic textbooks usually add that the *ad populum* type of argument becomes fallacious when the emotional appeal is used as a diversion to disguise the argument's failure to be backed up by proper evidence. By these lights then, the *ad populum* is really a fallacy of irrelevance.

The most common type of example cited by the textbooks as *ad populum* reasoning is that of commercial advertisements. For example, commercial messages for life insurance tell us very little about the complexities of the different kinds of policies that are available. Instead the commercial commonly appeals to general attitudes of an average family using phrases like "peace of mind today" and "security for the future." The commercial message, for example, may be placed against scenes of a family happily engaging in everyday recreational activities on a river bank. These activities include fishing, and praising the insurance company as a place where the family and the insurance agent can "work things out together." The friendly insurance agent also happens to be fishing on the same river bank. Clearly such a scene is concocted specifically in order to appeal to popular sentiment. The insurance agent is portrayed as being a typical, even lovable sort of person, who goes fishing and has the same aspirations as most of us.

Of course there need be nothing wrong *per se*, as we have already noted, in such an appeal to popular sentiment. However, what one suspects might be questionable about the commercial is its exclusive preoccupation with the emotional impact of the appeal, and the conspicuous absence of any attempt to tell us about the relative merits of the insurance policies that the company makes available, the capabilities of the company, or any of the more "relevant" aspects of insurance policies that should properly play a role in our decision to buy insurance from this particular company. However, it can't be denied that the folksy appeal of the commercial message does indeed succeed in winning the acceptance of its target viewership and in helping to induce them to buy insurance from this company.

A similar example that could be cited is a commercial advertisement for a lumber company which stresses a theme message of "back-to-the-land" and "do-things-for-yourself." The character in the commercial is an

appealing handyman do-it-yourself person who pleasantly conveys feelings of accomplishment and pride of building things for yourself. By creating an emotional appeal to the popular sentiment of personal pride in building something for yourself, this commercial advertisement certainly conveys a popular message that does probably do quite an effective job of winning over customers. But one's suspicion is aroused by the observation that facts about the quality of the tools or lumber sold there, which might enable one to intelligently arrive at a decision about whether to consider buying those tools or lumber, is entirely missing from the message. Thus the provision of adequate evidence that would enable a rational consumer to decide whether or not to buy these products has simply been evaded in place of a popular appeal to personal accomplishments.

More subtle types of *ad populum* appeal can occur in advertisements for automobiles or electrical appliances, where, for example, there may be legitimate facts about technical specifications and other truly relevant information mixed in with the appeal to feelings. Including this genuine information sometimes has the psychological effect of heightening the persuasiveness of the appeal. For example Goebbels pointed out that audiences found falsified and heavily emotional patriotic appeals of reports from the battlefront were believable if some general factual information was mixed in with the lies and propaganda.[1]

One can certainly appreciate the widespread ethical deficiencies of advertising practices that are reflected in mass emotional appeals. Therefore it is easy to concede the importance of the *ad populum* as a fallacy that does have wide influence in persuasion. But we have to be extremely careful when characterizing this type of persuasion as a fallacy. For a fallacy, as we have noted, is a fallacious argument. Therefore we have to be very clear on precisely what is fallacious about an emotional appeal to popular sentiments. What is fallacious then about such an appeal? The main answer given by the textbooks as we noted above, is that the popular appeal may be a diversion from correct argument. That is, we seem to be confronted with a fallacy of irrelevance. So the main question for the *ad populum* is this: precisely what is meant by irrelevance in this context? However, there is a previous point that should be considered as well. Since many an *ad populum* appeal seems to comprise mainly a visual and emotional appeal to sentiment, can we truly say it is an argument? For example, does the demagogue even argue at all when he whips his audience into mass approval by theatrical means of playing on the audience's emotions? Our

comments on the use of popular appeal in advertisements suggest that the fallacy may consist rather in the avoidance of argument altogether.

In the lumber company example the point has been evaded by appeal to the pride of personal accomplishment. Perhaps then something evasive or manipulative has transpired, but where is the fallacy and where is the argument? What seems to be wrong is that argument of any sort has been foregone in favor of a direct appeal to sympathies and attitudes. We have to ask: where precisely are the premisses and conclusions in such an appeal? If they are not there to be found, then there is no argument, therefore there can be no fallacy. Yet perhaps it could be that the fallacy consists in the evasion itself. What could be wrong is the lack of argument through the irrelevance of the emotional appeal, a kind of deception by distraction.

Many textbooks support this view that what is fallacious about the *ad populum* is that the emotional appeal is irrelevant to the argument. But does this mean that the emotional appeal is an irrelevant argument, or does it mean that it is no argument at all, and therefore nothing relevant to the argument has been given? So the point remains that if, in fact, there is no identifiable argument that is given — no set of propositions that makes up the argument — then there cannot be a fallacy or fallacious argument, except by default, by reason of the lack of argument. Our lumber company has ostensibly committed a fallacy by changing the subject from the quality of their products to the popular folklore of back-to-the-land fantasy. But is a fantasy a statement or an argument? If not, it remains questionable whether the *ad populum* appeal can genuinely be analyzed as a fallacious argument. A fantasy may be effectively used by an advertiser who wishes to glamorize his product by sketching out a daydream for us that excites our approval and admiration. That fantasy may make a statement of sorts but can we literally assume that such a fantasy can be broken down into a specific set of statements with determinant truth values? In the examples given above it is by no means obvious how such an analysis could be carried out. To that extent then we should remain reluctant to acquiesce too readily in the assumption that the *ad populum* appeal is a fallacious argument.[2]

There are three kinds of cases to be analyzed. If the emotional appeal to popular pieties cannot be stated in propositional form, as a set of premisses, then there may be no argument at all, only the semblance of argument. In that case, we need to ask: can the avoidance of argument be fallacious? Much depends here on how we undertake to define 'fallacy'. Yet in the context of a game of dialogue, the failure to engage in the game by making an

appropriate response could certainly qualify as a good reason for a fair judgement that a participant should lose the game. Hence evasion of argument, or refusal to argue, could be accounted a kind of fallacious step in dialogue — a failure to follow the agreed-upon procedure. This is the sixth fault of argument listed in chapter 1 — the failure to argue.

The second kind of case is that where the emotional appeal can be stated as a proposition or set of propositions. Here we have an argument in the sense of a set of premisses and a conclusion. Whereas the fault in the first type of case is that there are no real premisses at all, the problem here could be that there is simply too little in the way of good premisses to establish the arguer's conclusion. It could be a case of the first type of fault of argument, that of wrong premisses. Instead of advancing reasonable premisses to prove his conclusion, the arguer goes on with many weak premisses that appeal to popular solidarity as a basis for his argument.

The third kind of case is one where the arguer may have some reasonably good premisses in his argument, but may interweave popular emotional appeals with those premisses. Here the problem is to try to sort out the factual premisses from the emotional baggage. As our examples of advertisements using *ad populum* strategies showed, the most effective *ad populum* arguments tend to be of this sort. The failure here is the seventh fault of argument — too many arguments.

Other kinds of faults may be associated with *ad populum* arguments as well. The appeal to emotion may be, in some cases, a straying off the topic set as the issue of the argument.

One worrisome factor is that underlying these various faults, the basic thing to be remembered is that an appeal to popular sentiments may not be fallacious. Although, as we have seen, the *ad populum* appeal is associated with several faults of argument, there is nothing intrinsically wrong, in some cases, in appealing to popular sentiments. Hence care is needed to not leap too quickly to conclude that any popular appeal is an *ad populum* fallacy.

We have previously claimed that the legitimate objective in a logical game of dialogue is to prove your conclusion from the other arguer's premisses. Therefore, you must and should argue from premisses that your target audience does or will accept. In some cases, given this objective of argument, it is not only legitimate but positively appropriate to use premisses that are highly acceptable, i.e., popular pieties, to your target audience. Hence we must stress that, in some cases, there may be nothing unreasona-

ble about an argument that may, on the surface, appear to be *ad populum*.

In many cases however, the worst fault of the *ad populum* appeal is the attempt to avoid argument altogether by identifying both sides of the dialogue with the position of some mutual interest group. It's as if the arguer says: "We are both true believers in a common cause. The others, whom we must exclude, are the common enemy or evil parties. Let's both belong to this group and not worry about 'truth' or 'falsehood'. Nothing matters but our common group solidarity."

Bailey (1982, p.134) warns of the kind of rhetoric that compartmentalizes the moral world into true believers and outsiders, insisting that truth is all on the one side. As an example (p.134) he quotes a speech of Walter Reuther from 1957 on the subject of racketeers in trade unions.

> I think we can all agree that the overwhelming majority of the leadership of the American movement is composed of decent, honest, dedicated people who have made a great contribution involving great personal sacrifice, helping to build a decent American labor movement .... We happen to believe that leadership in the American movement is a sacred trust. We happen to believe that this is no place for people who want to use the labour movement to make a fast buck ...

As Bailey points out, the intent of this speech is to put its message beyond all doubt and questioning by offering it as a fact to which everyone must agree. The listener is left no choice. There is no room for argument left. Hence the whole purpose of argument as reasonable dialogue is undercut at the outset. There is meant to be no need for real dialogue in this type of *ad populum* rhetoric. The "we" who believe in the "movement" are included. The "people" who want to make a "fast buck" are excluded. That is the whole message. Either join in the labor movement position, or be excluded as an infidel — that is the only choice offered to the listener. Hence Bailey calls this type of *ad populum* argument a "rhetoric of belonging" (p.135). Clearly it is not a form of reasonable dialogue, but an attempt to avoid the necessity for argument as reasonable dialogue. It lacks the give-and-take of interpersonal dialectic.

We conclude that although appeal to popular sentiment need not necessarily be, in itself, fallacious, it is often associated with one or more faults of argument in a characteristic way. Anyone attempting to evaluate arguments ought to be aware that appeal to popular sentiment is very often a signal for one or more of the faults. In some instances then, a case can be made out for judging *ad populum* argumentation to be fallacious.

2. Appeals to Force

The *ad baculum*, as we saw, is the fallacy traditionally said to be committed when one appeals to force or the threat of force to make one's audience accept a conclusion. A typical sort of example cited by the textbooks would be the following: a large heavy-set man comes to the door, knocks on the door and says to Dagwood, who opens the door, "I am selling this window cleaner." Poking Dagwood in the chest, he says, "And I'm not a guy who likes to fool around. Either you buy it or I'll punch your lights out!" In the next frame we see Dagwood walking back into the house with two bottles of window cleaner, saying, "He has a very persuasive sales approach." Here it is not too difficult to appreciate the force of the *ad baculum* in persuasion. However, one has to be very careful to ask whether such an appeal is clearly an argument. Consider the salesman's utterance, "Either you buy it or I'll punch your lights out!" Here is a disjunction, the first disjunct being an imperative and the second being, to all appearances, a statement of intention. Certainly there is a difference between an imperative utterance and a statement. Statements are true or false, whereas imperatives do not clearly or at least directly take truth values as properties. Rather, they are satisfied by the action or inaction of the person to whom they are addressed. Is the salesman then really constructing an argument or is his speech-act of some other type? The use of the connector word "or" suggests argument, but on the other hand, the use of the imperative expression "You buy it!" suggests that if there is argument, it is certainly not a "factual" argument of the more usual sort.

Another point we should keep in mind is that appeal to force may not always in itself, be logically incorrect. If two Prime Ministers are arguing over whose country is more powerful, and one is able to show that his country has a greater number of tanks, aircraft, etc., the statement of this Prime Minister may in fact constitute an appeal to force, yet it may have quite a legitimate role to play in the diplomatic negotiations. Thus, although what we might have here is in some sense an appeal to force, there is a good question about whether or how such an appeal to force is fallacious.

Another example is the law that gives as a penalty for conviction of drunk driving the suspension of one's driving license. Such a law may constitute an appeal to force or threat to force, or perhaps even to fear, but nonetheless one would hardly want to dispute the legitimacy of such a law. Certainly it is not clear why such a law would constitute a fallacious appeal to force.[3] We conclude that an appeal to force need not be in itself falla-

cious. One must be very careful in approaching such cases to attempt to precisely determine what is thought to be fallacious.

Certain kinds of reasoning in natural language have to do with practical decision-making about actions. In the context of practical reasoning, certain kinds of inferences may be reasonable even if they do not conform in a self-evident way to the standards of classical deductive logic.

Examples of practical reasoning can be drawn from the literature on the theory of action.

One view of practical inference is that the agent has some goal or intention and contemplates undertaking some action necessary to bring about that goal. Foremost among the exponents of this approach is von Wright who proposes the following schema for practical inference (1972, p.48). E is an end, A an action, and X an agent.

> X intends to make it true that E.
> X considers that unless he does A, he will not achieve this.
> Therefore, X sets himself to do A.

The sort of example von Wright (1963) has in mind is the following. X intends to meet his fiancee in London. Unless he takes the next train, he will not meet her. Therefore, X will take the next train. This sort of example of reasoning is quite plausible as an instance of an inference we commonly make. But there are many puzzling aspects of it. If the conclusion is an action, as von Wright's schema suggests, then the inference is not deductively valid. For even if X truly intends to meet his fiancee, and taking the train is necessary to achieve this, there might be any number of reasons why X might in fact fail to take the train. Accordingly, von Wright considers various modifications of this basic schema.

Whatever precise form the ultimate expression of this schema might take, let us call it the *necessary condition schema* of practical inference. By contrast, other philosophers have contrasted on what we might call the *sufficient condition schema*. Anscombe (1957) was one of the first in recent times to draw our attention to the existence of this form of argument in several interesting passages of Aristotle.

The type of example Anscombe and Aristotle thought most important is one of this sort: this medication is effective to cure condition C; this patient has condition C; therefore this medication is indicated for this patient. One wonders here whether the conclusion of this practical inference should be an action or some form of policy or recommendation to

carry out a certain type of action. As with the necessary condition schema, it remains unclear with the sufficient condition schema what sort of inference is involved. At any rate, parallel to von Wright's initial schema, the following tentative form of the sufficient condition schema seems appropriate.

> X intends to make it true that E.
> X considers that if he does A, he will achieve this.
> Therefore, X sets himself to do A.

Again, whether the conclusion should state that X will do A or that X sets himself to do A or that X should do A remains unclear.

Despite these unclarities and uncertainties about the precise form of the practical inference, a fair presumption in this type of inference may sometimes be "reasonable" or "correct," even if it is not clear whether or when it is deductively valid. At least, it would be unwarranted to claim that all instances of practical reasoning are "fallacious" or "incorrect."

Now the problem posed for us here is that if first-person practical inferences can be reasonable in some sense, then third-person practical inferences that take the form of a warning — advice to someone to avoid adverse consequences — could also be a reasonable type of inference. For example, I might say to you: "If you persist in carrying out course of action A, disaster will ensue. Therefore, you should avoid persisting in carrying out course of action A." On the model of practical reasoning, such a warning might be reasonable, and not in itself "fallacious" in a given instance.

Now the *ad baculum* threat is supposed, on the traditional account, to be a fallacy. But here is the problem: what is the difference between a threat and a warning? If a warning can be a reasonable form of advice, according to the standards of practical reasoning in the context of decision-making about actions, when does a reasonable warning become a "fallacious" threat in argument?

I don't claim to have a solution to this problem. I simply want to point out that it should be regarded as a very serious problem by anyone who would undertake to give an analysis of *ad baculum* as a fallacy. The solution to this problem should be sought in the theory of speech acts in argumentative discussions developed by van Eemeren and Grootendorst (1983). What is the difference between the speech act in which a threat is issued and the speech act that comprises a warning to avoid certain consequences. Common intuitions tell us that the distinction is there to be made, but it is not

obvious what guidelines should be appealed to.

This problem is a realistic one for the dialectic of *ad baculum* argumentation because anyone who issues a threat by the *ad baculum* argument will, of course, deny that he has made a threat when his ploy is challenged. In realistic argumentation, the easy way out is to ingenuously claim that a reasonable warning was only intended. But if we do not know how to tell whether a particular speech act was really a threat or merely a warning, how could a criticism of *ad baculum* fallaciousness even be nailed down? The charge could never be made to stick if this escape route is always available in reasonable procedures of dialogue.

3. Appeals to Pity

A third type of argument in this class of irrelevant emotional appeals is the fallacy of *ad misericordiam* or appeal to pity. The textbooks commonly cite cases where the defendant in a criminal trial brings his wife and children into the courtroom, and the lawyer takes up a strategy of playing directly on the emotions of the jury, instead of trying to put up good arguments for the innocence of the defendant. The suggestion here is that the emotional distraction is really beside the point, and therefore commits a fallacious *ad misericordiam* appeal.

However, a study of actual examples of appeals to pity reveals that it is often not too clear whether, or to what extent, such appeals are fallacious. An advertisement for the Foster Parents Plan of Canada shows a picture of an appealing but pathetically distraught young boy around five years of age, underscored by a large headline, OSMAN KNOWS HUNGER AND ALL ITS PAIN. This little boy is described as hungry, hopeless and confused. The ad says that he knows hunger and pain but does not realize that there is any other way of life. Then the appeal goes on, "By becoming a foster parent you can help a child overseas. Your support will provide food, clothing, shelter, and so many more children wait. Please — complete the coupon below, or call us toll-free." The picture and the headline are very definitely a direct appeal to pity, but is it fallacious?

Hamblin (1970) joins us in pointing out that in many contexts a proposition is presented primarily as a guide to action. So the same sort of problem of practical reasoning we found in the *ad baculum* is present here as well. Where action is concerned it is not so clear that pity is irrelevant. Pity is a Christian virtue, and in this case could perhaps be as good a reason as one might like for contributing money to the Foster Parents Plan of

Canada.

What then could be fallacious if anything, about such an appeal? The traditional move of the textbooks with this alleged fallacy, as with others we have seen, is to claim that the fallacy occurs when the emotional appeal is used as a diversion. The fallacy, it is urged, is one of irrelevance. The suggestion in this particular case then may be that the appeal to pity, while reasonable in itself, falls short of correct argument insofar as it fails to supply details of precisely how the funds solicited will be spent.

With any appeal from a charity it is, of course, quite reasonable to ask what percent of the funds are actually getting to the alleged recipients as against the percentage of funds that are being used for administrative or other purposes. Any potential donor who is experienced with the workings of charitable organizations should request or expect some assurances about the efficiency of the organization in achieving its desired objectives. If, however, there is an entire absence of such information and instead merely a heart-tugging picture is printed and some remarks directly appealing to pity, then there is a good question whether the issue is being evaded.

In this particular case, however, it seems hard to say. Should the Foster Parents Plan of Canada advertisement have included more information, or at least some information about how the money is administered, and precisely what happens to your contribution? Or were they justified in exclusively directing their advertisement towards a direct appeal to the charitable instincts of the reader? The answer depends on what the conclusion of the argument really is. Therefore perhaps the lesson at this point is that one must be very careful in analyzing the alleged fallaciousness of such appeals to first of all determine precisely what are the statements that supposedly make up the premisses and the conclusion of the argument.

Consider as another curious example the following argument. Premiss: the seal hunt is a bloody, brutal murder of baby animals. Conclusion: therefore [to protect the species from extinction] the hunt must come to a stop. What is interesting in this particular argument is that if the bracketed part is omitted, the argument may not be fallacious. However, notice that if the bracketed part is included then the objection is much more plausible that the premiss is an irrelevant ground for arguing to the conclusion. In such a case then one must be extremely careful to attempt to discern initially what is the issue; what propositions are being disputed; what is the conclusion that the arguer is allegedly putting forward as his or her thesis. Having determined this, then we can work towards an analysis which may enable us

to arrive at some estimate of the extent to which the premiss is relevant. However, in the absence of a clear statement of the conclusion, any judgement of the fallaciousness of such an appeal based on relevance founders for lack of information.

The problem is that in many natural language disputations, particularly in ordinary quarrels or debates, there is no clear agreement on the part of the participants precisely what the issue is to be disputed, or what is the proposition that each participant is set to prove as his or her conclusion. In the absence of this prior determination, it is not possible to adjudicate on appeals to pity, fear or popular sentiments.

In relation to the question of whether such an appeal may or may not be incorrect or fallacious, Kielkopf (1980) reminds us that too often students are encouraged to acquiesce in the superficialities of the standard treatment by alleging that a fallacy has occurred as soon an any appeal is made to the emotions of pity or popular piety, whether fallacious or not. The tendency widely encouraged by the textbooks is to cite a fallacy of *ad misericordiam* or *ad populum* as soon as it becomes evident that there is any emotional appeal being made in an argument. However, as we have seen, such a move may be presumptuous and unfair given that emotional appeals are at any rate sometimes reasonable enough.

Another problem with these emotional fallacies is posed by the fact that each has now been characterized according to the standard accounts of the textbooks as being at bottom, a case of irrelevance or diversion. On the other hand, each constitutes, it appears to be claimed, a distinctive type of irrelevance. The *ad populum* is defined as irrelevance by popular appeal. The *ad baculum* is defined as irrelevance by appeal to force. The *ad misericordiam* is defined as irrelevance specified by appeal to pity. Therefore we have to ask this question. Are these fallacies all instances of one fallacy, namely the fallacy of irrelevance — often traditionally called the *ignoratio elenchi* fallacy — or is there some clear basis upon which we can differentiate amongst these three as being distinct fallacies in their own right? Now the problem here, taking the *ad misericordiam* as an example, is that the emotion of mass enthusiasms or popular sentiments is not a factor in argument that we would know how to identify with clarity and precision in any kind of logical model or by means of precise guidelines. In fact the emotion of appeal to mass enthusiasms seems to be a psychological factor or quantity. Now we have to be quite clear here that the question we are asking is whether the *ad misericordiam* is a fallacy in the sense of it being an incor-

rect argument. That is, we want to ask precisely when is such an appeal incorrect or wrong, normatively as a type of clearly identifiable argument, without at least directly raising or involving the question of when such a type of argument is effective rhetorically or persuasive psychologically. The problem is that there could be some danger in trying to identify the *ad misericordiam* as a specific type of fallacy by identifying it by means of the presence of a psychological factor of mass enthusiasms. Presumably our task is the logical, or at least the normative task, of trying to identify precisely when such a type of argument is incorrect or invalid. Can we say that such an argument is incorrect, although it may be irrelevant, precisely because it commits the specific type of irrelevance identified with mass enthusiasms?

Are we thereby asking whether there can be a specific set of criteria that will enable us to determine when an argument appeals to mass enthusiasms? This question seems somewhat misguided. It is really an empirical matter or perhaps a psychological matter when an argument is an appeal to mass enthusiasms as opposed to, say, an appeal to the emotion of fear or the threat of force. If this is correct, it may be then that all three of these types of emotional appeals are really sub-classes of one specific type of fallacy, namely that type of argument that goes wrong by virtue of irrelevance, and that a way of differentiating between these three types of irrelevance involves matters more of a pragmatic than a purely logical character. Thus the question here is — are there really three fallacies or just one fallacy with three different psychological manifestations? This is a good question and it tests what we mean by the expression "informal fallacy."

4. Overly Personal Argumentation

Another interpretation of what is fallacious about the *ad populum* argument is that such an argument is directed to a specific audience rather than being an argument from objective premisses. It is sometimes pointed out that the *ad populum* arguer adopts a strategy of selecting premisses specifically so that they will be accepted enthusiastically by the audience that is being addressed. The fallacy here would be scheming to convince an audience by appealing to assumptions that appear tolerable to that audience rather than arguing from premisses that are known to be true, or at least that can be shown to be true independently of their appeal to a particular audience. Perhaps what appears wrong with such a strategy is its subjective orientation which subverts the goal of arriving at the truth by choosing premisses independently of their appeal to the particular audi-

ence.

In analyzing this interpretation of the *ad populum* however, one must be very careful not to accept a questionable presumption that the only legitimate function of argument is to reason from premisses that are known to be true. As we have already pointed out, sometimes legitimate arguments in dialogue proceed from premisses that are conceded or accepted, but that are nevertheless not certainly known to be true.

A properly dialectical perspective on the concept of argument should allow arguments from premisses that may not be known to be true. We need to be reminded that there need be nothing illogical *per se* in arguing from presumptions that may be plausible to a participant in the argument but yet may not be known to be true or even true with high probability. However, we have already stressed the dialectical model of argument as our central concern in this monograph.

Perhaps what this interpretation of the *ad populum* argument alludes to is, however, a different kind of fallacy which Johnson and Blair (1977, p.158) called the *fallacy of popularity*. This sort of argument occurs in two forms.

F1. Everyone believes p, therefore p is true.
F2. No one believes p, therefore p is false.

As Johnson and Blair point out, F1. and F2. are forms of arguments that stated as they are, would not be likely to fool most audiences. However, they could be forms of argument that are implicit in fallacies that are closely related to the *ad populum*. Certainly it could be highly fallacious to start with a dialectical premiss like 'Everybody believes that p' or 'This audience believes that p quite enthusiastically' and proceed to conclude directly that p must be true for every possible audience. However, this fallacious move in itself would not seem to represent, at least exclusively, what is meant by the *ad populum* fallacy because in the forms F1. and F2., there need be no emotional appeal to popular sentiments or mass enthusiasms in a particular case.

However, this interpretation of the *ad populum* fallacy does raise the interesting question of to what extent it is legitimate to reason from premisses concerned with a specific arguer or group of participants in argument. The question is: what is the relationship between dialectic and truth?

The same sort of problem is posed by a fourth kind of fallacy that also often pertains to emotional diversions. This is the *ad hominem* argument or

"argument against the man." Modern texts, as we saw, standardly distinguish between two forms of *ad hominem*, the circumstantial and the abusive variety. The abusive *ad hominem* was said to be committed when an arguer attacks his opponent directly instead of trying to disprove the opponent's argument. This form of argument is often called "character assassination."

As with the previous three fallacies, however, one must be very careful here. Sometimes in a court of law, for example, it might be quite reasonable to question the witness's character or the defendant's personal characteristics or memberships in groups or parties, evidence that might be prejudicial against the case. On the other hand, often such an appeal to personal presumptions about the arguer's character can be clearly specious and unfair. As with the previous three fallacies, in order to attempt to sort out between the correct and the incorrect instances, the notion of relevance may be appealed to, the claim being that the argument on the basis of the opponent's personal characteristics is incorrect when there is an evasion of correct argument or genuine evidence, and instead personal vilification is substituted as an emotional appeal. In this respect then, the *ad hominem* is quite similar to the previous three emotional fallacies, and insofar as it is claimed to be a fallacy of irrelevance, similar problems are posed in its analysis.

The circumstantial *ad hominem* consists in the attempt to refute a person's argument by alleging an inconsistency between the opponent's thesis and some action brought about by the opponent or other circumstances pertaining to the person of the opponent. Most typically a circumstantial *ad hominem* allegation consists in the accusation that the arguer does not practice what he or she preaches. For example, a driving instructor tells you not to drink and drive because it leads to accidents. Upon inquiry you discover that he himself recently had an automobile accident as a result of drunken driving. You might well argue that his argument is worthless because he himself is guilty of the very kind of act he counsels against.

The classic example of the circumstantial *ad hominem* is an argument we will call the *sportsman's rejoinder*.[4] When accused by a critic of sacrificing innocent hares or trout for his amusement, the sportsman replies to his critic, "Why do you feed on the flesh of harmless cattle?" Commonly this reply is said to commit a fallacy because the sportsman does not try to prove it is right to sacrifice animals for his amusement, but rather dwells on the critic's own circumstantial inconsistency posed by the fact that the critic himself eats meat. Thus according to Copi (1972, p.76), this fallacy is really

a failure of relevance. "Arguments such as these are not really to the point; they do not present good grounds for the truth of their conclusions but are intended only to win assent to the conclusion from one's opponent because of the opponent's special circumstances." Copi seems to be suggesting that an argument presents good grounds for the truth of its conclusion and is therefore a correct argument only if its premisses are really to the point, that is, relevant. However, precisely what relevance consists in, in such correct arguments is something we are not told by Copi, nor do other standard textbooks on fallacies tell us very much about precisely what type of relevance could be meant here.

The circumstantial *ad hominem* is clearly an interesting, yet at the same time, difficult conception to analyze. It may well be true in argument that dwelling on inconsistency in an opponent's position is unfair if it is an evasion from evaluating propositions that may directly bear on the opponent's thesis as conclusion. Yet on the other hand it may seem in some cases quite reasonable that if the opponent has committed himself to a position that is internally inconsistent one should attack the inconsistency. On the other hand, typically the type of inconsistency cited in an *ad hominem* allegation is not a logical inconsistency but rather a pragmatic sort of inconsistency between the propositions that the arguer has asserted and the actions or other background circumstances of that arguer. The fact that other than direct logical inconsistencies are involved also leads to certain complications in pinning down and adjudicating *ad hominem* allegations. We return to the important *ad hominem* fallacy in a later chapter to consider it in much greater detail.

All the fallacies we have looked at so far in this chapter involve the lively interpersonal exchange characteristic of the personalistic and emotional processes characteristic of quarrels and debates. Of course, in the ordinary conversational quarrel, whether domestic or public, the lack of clear guidelines or rules amounts to the anarchy of argument. At that level, the fallacies remain as elusive as ever. However, we know that organized debates are often regulated. Could the debate provide a medium of argument appropriate to the study of fallacies?

5. The Rhetorical Debate

The principle objective of a participant in forensic debate is to win by a majority vote or by judgement of the referee. The referee or the majority characteristically arrive at a ruling by means of rules for debate which will

be stipulated in advance and made known to the participants. Thus the debate is regulated, and thereby has an important advantage over many quarrels and disputes in natural argumentation that may be entirely unregulated. In many an ordinary quarrel, as we all know too well, there are not specific rules that permit an adjudication on who wins or loses specific moves in the argument. Nor are there rules constituting what constitutes a correct or incorrect argument, nor rules concerning clear violations of procedural mechanisms for ensuring fair disputation. However, the debate often does have clear rules to regulate these functions and thereby initially, at any rate, seems to have some quite decisive advantages over the ordinary quarrel. By means of these rules the debate would appear to have an element of objectivity that is conspicuously lacking in many an ordinary quarrel.

Because it is partially regulated, and yet partially unregulated, a debate can therefore very often quite effectively bring out the arguments for and against a position. Thus the debate can serve the course of proof and correct argument in an effective way.

However, it should always be kept in mind that debate is adversarial in the sense that its primary object is for the participant to win even at the expense of correct argument. Thus in debate, the argument that serves effectively to convince the audience or referee, and thus contribute to the winning of the debate, may be fallacious from a logical point of view and yet still rhetorically effective as an argument. Therefore an argument that is successful in a debate — successful in the sense of attaining its rhetorical objective of persuasion — may be logically incorrect and fallacious in itself. This possibility suggests that debating techniques as instruments of reasoning should be viewed with considerable caution. In fact, there are sound reasons for believing that there is considerable divergence between rhetorically effective debating technique and correct logical reasoning.

In debate the contending debaters put the proposition at issue to test by questioning and answering. Ideally all the participants in the debate can ask probing questions, and answerers must try to provide effective answers. However, what constitutes a rhetorically effective answer may not necessarily be a relevant answer or a logically correct answer. Nonetheless, as the debate progresses certain alternatives that may have been considered as policies or proposals will drop from contention and no longer be supported. These proposals will fail the test of scrutiny by participants in the debate. Perhaps in debate, if it is successful, a consensus will be reached. Very

often this consensus is a compromise which has arisen out of the opposed contentions of the debate. The proposition that survives is then one thought likely to be worthy of political support and action. But is that survival due to its logic?

We must ask whether the process of debate might still tolerate quite a degree of deviance from logical correctness in the arguments that are used to arrive at that conclusion. A traditional defence of the debate as an instrument of responsible reasoning is through what we could call the *survival of the truth hypothesis*. This hypothesis is that truth is more highly valued than falsehood in the free marketplace of disputation, and that therefore truth more often survives the destructive forces of opposition and criticism than falsehood. Defenders of the cogency of debate have thereby hypothesized that truth has a natural tendency to prevail in most cases, if the debate has been sufficiently thorough and fair. This is an optimistic point of view on the rhetorical debate as an instrument of logical reasoning.

The practical problem with the hypothesis is that rarely are parliamentary debates or legislatures free markets of opinion and argument. Parliamentary debate is too often plagued by the inattentiveness of the participants, and too often the issue receives insufficient attention during the heat of a contested issue to really give the argument its due careful analysis so that fallacies and other inexactnesses are detected or avoided. Such a failure is not simply an indication of the laziness of parliamentarians, but may be due to practical constraints of time and party and caucus discipline.[5]

Members of parliament are rarely free to be rationally persuaded to accept or reject a position. Rather they are required to adhere to a party line and to reject arguments that might give the opposition an advantage, even if that rejection involves sharp practice or overlooking of some finer points of logical precision. Very often nowadays, parliamentary debates are televised and therefore there is considerable pressure upon the debaters to cut a good figure in persuading the broad mass of viewers to certain courses of action which are consistent with one's official party policies. In such a rhetorical setting the participants are often driven to ploys and strategems which, while scarcely logical, may effectively serve the purposes of the exercise provided only that they persuade the target audience or defeat the opposition. Thus a fundamental shortcoming of the debate is that its audience-directed adversary structure causes it to be essentially open to a systematic acquiescence in a dangerous form of *ad populum* reasoning. For the very function and purpose of the debate is to win over the broad majority

to a certain course of action. Thus the objective of the parliamentary debate has the model of *ad populum* reasoning built into it as a condition of its very success and rhetorical effectiveness in argumentation.

From the logical point of view this *ad populum* feature is a most impressive shortcoming of the debate. Legal debate in criminal and civil trials is of course legally regulated, and in this regard has similar favorable characteristics to the argumentation of parliamentary debate. Nevertheless legal argumentation, like parliamentary debate, has as its goal the defeat of the opposition. The structure of legal argumentation is again essentially a rhetorical and adversary procedure. The objective the attorney has in mind then is the effective, legal defeat of his opponent's arguments regardless of the intrinsic correctness of his own arguments or in the incorrectness of the opponent's arguments. The goal is not to be "logical" as such. If there is a conflict between logical reasoning and persuasion of the jury then persuasion of the jury must be given priority, if one is to play the game and win. Therefore, exactly as in the political debate, the model of *ad populum* reasoning is also built into the success conditions of legal argumentation. Ultimately the goal must be to rhetorically convince the jury and if this goal involves the emotional use of the *ad hominem* or *ad misericordiam* fallacy, then such strategems are not only permissible but positively required in order to effect the favorable outcome — that is, to win the case for one's client. This sink-or-swim aspect is not just an incidental part of legal argumentation but is inherent in the very structure of the process.

Thus it is clear that there is no guarantee that a sequence of legal reasoning in adversary courtroom procedures that is rhetorically effective as argumentation will thereby be logically correct and free from fallacies.

As with parliamentary debate, however, this is not to say that legal reasoning is not very often illuminating, instructive, and consistent with its own stated goals. For sometimes the best way to be perceived to be reasonable is actually to be reasonable.

In chapter six we will look at a case study of legal disputation. Let us now turn to an example of parliamentary debate.

6. Case Study: Parliamentary Debate

The following specimen dialogue from the House of Commons Debates in Canada is quite interesting because it involves an attempted refutation or reply to a speaker's question that combines elements of three traditional fallacies, the *ad hominem*, *ad verecundiam* (appeal to authority),

and the *ignoratio elenchi* (fallacy of irrelevance). Mr. Rae, the New Democratic Party shadow minister for finance, asked Mr. MacEachen, the Liberal Finance Minister, whether reduced loan rates ought to be made available to farmers and small businessmen, given that bank profit figures show recent substantial increases. This question occurs in the second segment, under the heading *Banks and Banking*, the transcript of an oral question period in the debate. Mr. MacEachen replies to the question by referring back to a previous part of the debate where Mr. Rae had asked other questions. The transcript of this part is the first part printed below, under the heading *The Economy*. Mr. MacEachen's answer to Mr. Rae's question in part 2 is that Mr. Rae had earlier contradicted himself in part 1, by first relying on Statistics Canada as a source of information, and then saying that we should disregard Statistics Canada as an unreliable source. The topic of Mr. Rae's earlier arguments which were claimed to be inconsistent by Mr. MacEachen's reply had to do with employment trends in the construction industry. Hence there is a good question here just how relevant Mr. MacEachen's reply is. Hence the possible involvement of the *ignoratio elenchi* fallacy, which has to do with irrelevant refutations.

But the *ad verecundiam* fallacy — the subject of chapter six — appears to be involved as well, for Mr. MacEachen has accused Mr. Rae of a misuse of the appeal to authority. Indeed, Mr. MacEachen has accused Mr. Rae of an inconsistent appeal to the authority of Statistics Canada. Therefore, since an allegation of inconsistent position is being maintained, there may be some elements of an allegation of the circumstantial *ad hominem* fallacy as well, a fallacy that has to do with refutation of an inconsistent position.

Let us look at the actual wording of the debate and then proceed to an analysis of it.

1. THE ECONOMY
MEASURES TO MAINTAIN EMPLOYMENT

Mr. Bob Rae: Madam Speaker, my question is directed to the Deputy Prime Minister and Minister of Finance. The figures released today by Statistics Canada show that unemployment hits hardest those who are, in a sense, in the front line of the government's interest rate policies, such as construction workers, where employment is down by 6,000, and agriculture, where employment is down by 2,000, to name just two industries.

Will the minister not now repudiate the view of Governor Bouey of the Bank of Canada that labour markets are tight?

Oral Questions

Will he not now take measures which will change the policy before interest rates start eating away further at employment?

Hon. Allan J. MacEachen: Madam Speaker, I draw to the attention of the hon. member that although seasonally adjusted unemployment is up slightly from last month, which was the best employment record in five years, there is another figure which he or his party draws to our attention occasionally, namely, the actual count of unemployment. The number of unemployed decreased from April to May by 32,000.

These are important facts the hon. member ought to bear in mind, plus the fact that in the last year the number of jobs created in Canada has been the best of any industrialized country in the world. It seems to me that these facts do not encourage anyone to take the action which the hon. member recommends.

Mr. McGrath: Tell that to the million unemployed.

STATISTICS OF UNEMPLOYED

Mr. Bob Rae: Madam Speaker, in the "Allan in Wonderland" world in which the minister inevitably lives, he has managed not only to readjust the employment rate seasonally, but in the case of the construction industry, he has managed to adjust the seasons. We are now heading into the winter downturn of the construction industry, which is quite an achievement for the minister.

The minister asked us to look at the real figures. One spokesman for Statistics Canada was quoted this week as saying that if an interviewee were asked the question whether or not he or she had worked during the week, and that person had worked for one hour during the week, the person would be classified as employed for the purposes of the statistics.

Does the minister not think it is time that the Statistics Canada survey indicates what are the real levels of employment, under-employment and enforced idleness in the economy? We know that in addition to the over 800,000 people who are listed in the figures, there are another approximate 500,000 who have been either laid off or lost jobs and are discouraged from seeking further work. If the minister wants to talk about the real figures, does he not think a more realistic figure, or one that could be provided in the Statistics Canada survey itself, would be 1.35 million unemployed, rather than the 845,000 unemployed figure which the government released today?

Hon. Allan J. MacEachen: Madam Speaker, I do not agree at all with the private statistical service which the NDP usually provides to us, when economic indicators are rather strong, in order to distort the economic picture in Canada.

Mr. Rae: Madam Speaker, if reliance on Statistics Canada is a private survey, then it is something in which the minister himself engages more than once a day.

2. BANKS AND BANKING

INCREASE IN PROFITS OF CHARTERED BANKS — INCREASED CHARGES TO FARMERS AND SMALL BUSINESSMEN

Mr. Bob Rae: In light of the fact that profit figures for the chartered banks today indicated a substantial increase, up 49 per cent — an increase which follows a 27 per cent rise for all chartered banks for the period between 1979-80 — and since tax rates for the chartered banks are still at 20 per cent, will the minister now reconsider his government's rejection of a policy which would require the chartered banks to set aside a fixed portion of their financial portfolios for mortgage loans, loans to farmers and small businessmen, at rates which bear some relation to their costs, and the borrowers' ability to pay, so that we can stop this policy of driving people to the wall and forcing idleness and real hardship on the Canadian people?

Hon. Allan J. MacEachen: Madam Speaker, I may have misunderstood the member's first question. I thought he drew upon Statistics Canada and its information to demonstrate certain employment trends in the construction industry. Then in his next question he said that we should disregard Statistics Canada —

Mr. Rae: That is not what I said.

Mr. MacEachen: — upon which he relied in his earlier question, because it is not reliable.

Mr. Rae: That is just misleading.

Mr. MacEachen: Maybe the hon. member would clarify his own thinking before he puts questions to me on the orders of the day.

Looking over the whole sequence of argumentation, we can break Mr. Rae's question-asking moves into three basic parts. In his first segment of dialogue, Mr. Rae is asking about the topic of unemployment. He asks Mr. MacEachen: (1) whether he will now repudiate the view that labour markets are tight, and (2) will he not take measures to change fiscal policy before interest rates cause further unemployment. In response, Mr. MacEachen challenges Mr. Rae's employment figures. In his second segment of dialogue, Mr. Rae goes on to challenge the methods used by Statistics Canada to collect and tabulate official government employment figures.

Thus it was Mr. MacEachen who really brought up the question of the reliability of employment statistics, and Mr. Rae's second question represents a counter-attack. Finally, Mr. Rae's third question, as we already noted, asks whether reduced loan rates ought to be made available to farmers and small businessmen, given the increases in bank profit figures. This is a third distinct topic of question-asking, though not entirely unrelated to the subject-matters of the two preceding questions.

Now we turn to the question of the fairness of Mr. MacEachen's reply to Mr. Rae's third basic segment of question-asking dialogue. Two distinct questions about this reply need to be distinguished.

(1) Is Mr. MacEachen's allegation of inconsistency basically accurate in itself? That is, did Mr. Rae actually contradict himself at some points?

(2) Should it be acceptable for Mr. MacEachen, in his answer to Mr. Rae's third question, to accuse Mr. Rae of contradicting himself whether in fact his accusation was accurate or not — in his previous two questions? Was Mr. MacEachen being in some sense "irrelevant" by failing to answer the third question and instead launching an interesting, and perhaps evasive, attack against parts of the previous dialogue? Neither of the questions can be easily resolved.

The first observation that should be made about (1) is that Mr. MacEachen's accusation is based on a correct proposition. There certainly is a contradiction involved — Mr. Rae did draw on Statistics Canada information, and then cast doubt on the information provided by Statistics Canada. Mr. Rae's first two questions justify the attribution of both a proposition A, and its negation[6] ¬A, as part of the position he adopts. In fact, it is plausible to suggest that it is this underlying correctness of Mr. MacEachen's allegation that makes it rhetorically quite effective as a refutation of Mr. Rae's argument. Mr. Rae is made to look silly, and his reply "That is just misleading," while perhaps accurate, is ineffectual. Clearly, Mr. MacEachen has scored heavily in the debate.

But what of the logic of the dialogue? Should the refutation be treated as a correct response to Mr. Rae's questioning? Classical logic is by itself no help. In classical logic, an inconsistent set of propositions implies any proposition you like.[7] In other words, classical logic provides very little direction concerning how to handle inconsistency beyond ruling that an inconsistent set of propositions cannot collectively be true. Should we simply say then that Mr. Rae is refuted?

Before acquiescing too quickly, we should check to see if both A and

¬A are propositions about the same subject-matters. For it could be that Mr. Rae is justified in relying on Statistics Canada for information on one topic and condemning Statistics Canada's inaccurate information on another unrelated topic. Statistics Canada, for example, might have reliable banking statistics on interest rates, yet quite unreliable statistics on employment trends. So, at any rate, might one *consistently* claim.

The general lesson here is that simple, topic-neutral inconsistency of A and ¬A is not enough to refute one's position, where that position may be on different subjects. The question of relevance may intrude.

However in this case Mr. Rae is squarely caught. His reliance on Statistics Canada in his first question was specifically on the topic of employment figures. Whereas his questioning of the reliability of the methods used by Statistics Canada to collect information was also on the subject of employment figures. Hence the stated inconsistency is directly on the same topic. Hence Mr. Rae is refuted fairly enough as far as question (1) is concerned.

To turn to (2) now, was Mr. MacEachen justifiable in adducing the inconsistency of the first two questions as a response to the third question? This question is more difficult to rule firmly on. As far as the conventions of the rules of debate for the House of Commons Debates are concerned, Mr. MacEachen's reply would appear to be acceptable. The Oral Question Period allows quite a latitude in the answering and posing of questions, and if Mr. MacEachen chooses to recast his remarks back to previous questions, that is his privilege. However, concerning the fairness of the disputation apart from specific parliamentary conventions, is there still room for criticism?

Some would point out that in fact Mr. MacEachen never did answer Mr. Rae's third question. Was his final reply therefore not a successful evation of the question, and open to criticism on that count? The observation is a good one, but the topic of the third question is not entirely unrelated to those of the first two, having also to do with economic statistics. Moreover, if Mr. Rae is inconsistent in his evaluation of statistical sources, does not Mr. MacEachen's refutation weigh heavily against Mr. Rae's whole argument, and not just the first two parts exclusively? So there are two sides to this issue.

That the issue is non-trivial for the logic of dialogue is suggested by the general remark that very often some will argue that *ad hominem* refutation of a position by allegation of internal inconsistency of the opponent's cir-

cumstantial position is essentially an irrelevant move. Reason: the real issue of whether the opponent's argument, or some consistent part of it, offers genuine evidence for his conclusion is not thereby addressed or resolved. For some, *ad hominem* refutation is always, in a certain sense, beside the point of the argument. For others, *ad hominem* argument is legitimate and relevant because it does evidence a weakness in the arguer's overall position on which his argument is based. This is not the place to resolve this issue, but merely to note that it is a genuinely interesting general point concerning the logic of *ad hominem* refutations.

To sum up then, Mr. MacEachen's refutation is correct as far as (1) is concerned. But although it is partially correct in regard to (2), there could be also some grounds for questioning it as a relevant answer in relation to the concerns of (2).

We are now in a position to evaluate the analysis of this debate given by the *Informal Logic Workbook* (1981, p.73).

> In answering Mr. Rae's question, Mr. MacEachen does not address the issue of interest rates. Instead, Mr. MacEachen initiates a *shift* in the focus of debate. He chastises Mr. Rae for using Statistics Canada information when Mr. Rae had previously criticized the accuracy of Statistics Canada's unemployment rate. Mr. Rae, however, did not indict the credibility of Statistics Canada as an institution, but only challenged the unemployment rate, the accuracy of which he feels is debatable. The thing to be noted here is that Mr. Rae does not cite Statistics Canada as the source of his information concerning bank profits. In addition, Mr. Rae only questioned the accuracy of the unemployment rates, an issue which was not even remotely related to the profits of some of the chartered banks. Mr. Rae's questions are therefore *not* inconsistent.
>
> Debating Mr. Rae's use of Statistics Canada information is irrelevant and does not answer Mr. Rae's question concerning government policy and interest rates. It constitutes a Red Herring because it shifts the focus of the exchange, and takes place in an adversary context (the House of Commons debates). By changing the subject, Mr. MacEachen instigates a shift of focus in the exchange, and fails to defend his government's position against Mr. Rae's implied criticism that it should be changed. (False Charge of Inconsistency, Red Herring).

The thrust of this allegation of irrelevance (Red Herring) given in the second paragraph is, as we have seen in our remarks on (2), partially justifiable. However, the specific allegation of irrelevance made in the top paragraph is based on a mistaken interpretation of Mr. MacEachen's argument.

According to the *Workbook* account, Mr. Rae does not cite Statistics

Canada as a source of information concerning bank profits, and he only questioned Statistics Canada on the accuracy of employment rates. Because bank profits and employment rates are, according to the *Workbook*, "not even remotely related," Mr. Rae's questions are not inconsistent. As we noted above, there could be a legitimate question about the relatedness of subject-matters in evaluating this dialogue. However, as we saw above, Mr. MacEachen does not allege that Mr. Rae's third question-asking segment about banking is inconsistent with his second question-asking segment where he berates the accuracy of Statistics Canada's methods of collecting employment figures.

As the examination of the whole dialogue clearly shows, Mr. MacEachen is citing an inconsistency between the first two question-asking discourses of Mr. Rae. I think it is quite clear what Mr. MacEachen refers to when he speaks in his rejoinder under 2. of Mr. Rae's "first question" and his "next question" respectively. He refers to Mr. Rae's first dialogue under 1. as the "first question," and then Mr. Rae's long three-paragraph dialogue starting with the "Allan in Wonderland" reference as his "next question." In both these questions, as we showed in our analysis above, the topic is the same, namely having to do with employment trends and statistics.

The problem here is that the *Workbook* analysis has failed to get Mr. MacEachen's arguments right by concentrating too exclusively on the dialogue under 2., and thereby failing to correctly account for the preceding context of dialogue here fully quoted under 1. The lesson is that any critic must be very careful to first of all be clear on what the argument is. What are the questions and propositions that actually make up the dialogue? The way many realistic dialogues and debates are, it may be very hard to tell. And therefore this initial step of analysis is non-trivial. Here we see instructively how a lapse in getting the argument well-located can result in a grievous skew of correct analysis.

So Mr. Rae is indeed inconsistent in a way that is really damaging to his argument. His lapse of good argument was adroitly picked up by Mr. MacEachen, and provided a basis for him to avoid directly answering Mr. Rae's third question. The refutation works because the alleged inconsistency is on the same topic — employment figures — as the overall dialogue, noting especially the first part, makes clear. This does not mean that Mr. Rae's argument is worthless altogether or completely unrepairable. Given an opportunity to respond fully, perhaps he could explain why his reliance

on certain Statistics Canada figures is not undercut by his questioning of certain aspects of their methods. Too often however, the pressure of time and party discipline in parliamentary debate does not allow for fully adequate reflection and response.

Another factor that should be mentioned in connection with (2) above concerns the nature of Mr. Rae's third question. If a question is unfairly "loaded," e.g. "Have you stopped beating your spouse?" it may be acceptable for an answerer not to directly answer it.[8] Instead, the answerer may call for the question to be clarified, or he may question or challenge a presupposition of the question. In short, sometimes failure to directly answer a question is fair practice in dialogue.

Mr. Rae's question is a loaded one, at least in the sense that a negative answer implies that the answerer will not reject "a policy of driving people to the wall and forcing idleness and real hardship on the Canadian people." Surely the loaded nature of this question could offer justification for Mr. MacEachen's avoidance of a direct answer.

The way Mr. Rae's question is phrased implies that the government's rejection of the policy Mr. Rae proposes has driven people to the wall and forced hardship on the Canadian people. To pack such a conjecture into the question presumes far too much and makes the question unfairly aggressive. The language of "driving people to the wall" is also unduly emotional (*ad misericordiam*).

Another interesting question about this dialogue is this: Mr. MacEachen's answer refuted Mr. Rae's first two questions by showing an inconsistency, so to what extent is it reasonable for an onlooker to assume that the answer refutes (or answers) the third question as well? Now note that in Mr. Rae's third question, no mention is made of the source of his figures, nor is it indicated or not whether the claims made about bank profits are based on information from Statistics Canada.

Thus there is possible danger of fallacy here for the uncritical reader or listener who may assume that Mr. MacEachen's reply is such a telling blow that it challenges or even refutes the third question directly. Such an assumption is one we must be careful to avoid.

Another critical point is that Mr. MacEachen's first answer (in part 1.) does not match up perfectly with all of Mr. Rae's first question. Mr. Rae's figures pertained to unemployment in construction and agriculture, whereas Mr. MacEachen's figures given in his answer are general statistics for all occupations. So there need be no conflict, for it is perfectly consis-

tent for unemployment to be heavy in one sector, but not heavy overall during a certain period. Nonetheless, Mr. MacEachen's response is basically correct in that it is addressed to Mr. Rae's last question of his first dialogue, pertaining to the effect of interest rates on unemployment (generally, we may presume).

7. Conclusion

We can now easily see why the parliamentary debate is a fascinating data bank of specimens of the fallacies so far identified and other interesting moves in argument. But we have also seen the grave difficulties in trying to pin down justified allegations of fallacious argument in such debates.

As we look at specimen examples of parliamentary debate and legal debate in real life and in this book, many questionable moves that are made in the heat of the adversary struggle can be revealed later — with all the advantages of hindsight — in an objective perusal of logical analysis. It is easy to denigrate these political debates and say that the participants are simply stupid or inept. However, we must recall that it is one thing to analyze and dissect a debate at one's leisure, using logical tools of analysis to comb through the printed sentences, whereas it is quite another thing in the heat of debate to struggle and contest with opposing parties in an unruly adversary procedure, given also the previously noted constraints and limiting objectives of parliamentary and legal debates.

We conclude then that these constraints and limitations mean that there will always tend to be a good deal of slippage or skew between the logically correct argument and the effective political or legal adversary debate. It is not that we should be disappointed by the astounding illogicality of debates when we look at them in hindsight. It is rather that the intrinsic objectives built into the very nature of the debate itself must mean that the proceeding of the debate along precisely logical lines is not something to be expected or hoped for. The coincidence of successful argumentation in debate with purely logical lines of reasoning is at best a partial overlapping.

Many very ordinary quarrels and disputes are hopelessly subjective and therefore while they are often quite interesting and revealing as sources of material on the fallacies, the problem is that there are no objective guidelines that will allow us to determine in a fair and unbiased way whether an argument is definitively correct or fallacious. The problem is that if participants in argument do not formulate in advance clear and well

defined rules concerning what constitutes a good argument and what constitutes the procedural rules for conducting the argument, then it will not be possible to pin down fairly and precisely when one participant in argument has committed a fallacy against another.

In the parliamentary debate and the legal adversary argument however, there is more hope for some objective regulation of the argument just because law courts and parliamentary debates are partially regulated. The problem, however, as we have seen, is that such regulation is of a weak nature. Although the asking and the answering of questions is regulated, nevertheless the regulation is not clear and precise enough to effectively rule out fallacies nor is the type of regulation involved precisely designed for that end. On the contrary, although it is designed to allow a favorable interchange of ideas and conflict of viewpoints, nevertheless it quite openly allows the fallacious argument to win conclusively.

The debate then is open to the fallacies we have examined because of its essentially subjective nature. Where can we turn for an objective account of what constitutes a correct or incorrect argument? Let's first look to formal logic, to see what it offers. Another question that looms large — what could we possibly mean by 'relevance?' The next chapter addresses both questions.

NOTES

1. Jacques Ellul, *Propaganda*, New York, Knopf, 1972.

2. For a fuller elaboration of these points, see Douglas N. Walton, 'Why is the *Ad Populum* a Fallacy?' *Philosophy and Rhetoric*, 13, 1980, 264-278.

3. For further discussion, see Kielkopf (1980).

4. A very interesting account of the sportsman's rejoinder was given by Richard Whately in his *Elements of Logic* (New York, William Jackson, 1836). As we will see, Whately's account was criticized by DeMorgan (1847). We return to a fuller treatment of the sportsman's rejoinder in chapter seven, part two.

5. Elaborations on some of these shortcomings of the debate as a model of argument are given in Woods and Walton (1982, chapter 2).

6. Negation is defined more fully in the next chapter.

7. Chapter two explains why.

8. This point is returned to in greater detail in chapter three, part three.

CHAPTER 3: THE LOGIC OF PROPOSITIONS

In the last chapter we pursued the conception of argument as a lively and often fractious process of personal exhortations and emotional interrelationships between arguers or between a speaker and audience. This viewpoint is heavily laden with interpersonal psychological and sociological dynamics. Perhaps our problem is that it is too rich and unmanageable as a place for logic to get much of a grip on argument.

The viewpoint of formal logic, a mathematical discipline, takes a very austere conception of argument as its central preoccupation. From this viewpoint, an argument is a set of propositions, entities that have the properties of being true or false, never mind all that unruly interpersonal dynamics of claim and counterclaim.

A big issue for us will be the applicability of such an austere, formalistic approach to the realities of actual argumentation in natural language. But before tackling such heady questions, it is well to review the basic elements of formal logic.

Deductive formal logic has to do with arguments like this one. If Bob moved his pawn, then he is in check. Bob moved his pawn. Therefore, Bob is in check. This argument is said to be deductively correct in the sense that if both premisses really are true, then the conclusion *must* also be true. There is no weaseling out of it. The argument's correctness is a matter of its logical *form* because replacement of its two component propositions, 'Bob moved his pawn' and 'Bob is in check,' with any other pair of propositions, still retains the correctness of the argument. For example, the following argument, because it has the same form, must also be deductively correct. If Socrates is a man, Socrates is mortal. Socrates is a man. Therefore, Socrates is mortal. Let us turn to an outline of the basic elements of classical deductive formal logic.

1. Deductive Validity

What is an argument? Some would think our theory of argument in chapter 1 much too generous, and would incline to a narrower conception.

From the point of view of classical deductive logic, an argument is a set of propositions. The propositions in an argument are divided into two subsets, the premisses and the conclusion. An argument is said to be deductively valid (correct) if it is logically impossible for the premisses to be true while the conclusion is false. Deductive logic is a kind of fail-safe procedure — it is designed in such a way that it can never take you by a valid form of argument from true premisses to a false conclusion. If you start with true propositions, then you must only go to true propositions by valid deduction.

Consider the following argument. This parrot is either dead or asleep. If it is dead, it will not be bought by Studs Terkel. It is not asleep. Therefore, it will not be bought by Studs Terkel. Logic, in its classical guise, does not tell you whether the premisses are true or not. In fact, it is quite possible that the parrot could be faking unconsciousness, and thus be neither dead nor asleep. And logic does not tell you that the premiss is true, that the parrot is not asleep, for example. Probably we may base our knowledge of this premiss on some empirical finding, e.g. we prodded the parrot and it did not respond as if it were awake. However, logic certainly assures us that if the argument is valid and the premisses are true, then the conclusion has to be true too. The argument is deductively valid in just this sense: it is not logically possible for both premisses to be true and the conclusion false.

As far as classical deductive logic goes, it is quite enough for validity of an argument that the truth of the premisses be sufficient for the truth of the conclusion. Thus it is no disparagement of the validity of an argument if one or more of the premisses happens to be false. Consider this argument. Either Dick Cavett is a professional football player or a professional hockey player. If he is a professional football player, he has a wooden leg. If he is a professional hockey player he has a wooden leg. Therefore, Dick Cavett has a wooden leg. Now notice in this argument that all the premisses are false. And as we all know, the conclusion is false. Nonetheless the argument is certainly valid in the sense we just defined. For if the premisses were true, the conclusion would certainly have to be true too. Such an argument could never take us from true premisses to a false conclusion.

The lesson here is just because an argument is deductively valid, that does not mean it is as good as it could be in all possible respects. As we have seen, it might have false premisses, and therefore in light of its premissary worth, it could be a bad argument. It could also be viciously circular. The argument, 'Dick's hair is brown, therefore Dick's hair is brown' is

deductively valid. Certainly this type of argument could never take you from true premisses to a false conclusion — it doesn't even go anywhere. But it is not an argument that is as good as one could like in all possible respects. In fact, if you asked me to prove that Dick's hair is brown and I advanced the argument, you would justifiably think it a very bad argument indeed. Yet it is deductively valid.

Indeed, the above way of defining validity has the curious consequence that any argument with inconsistent premisses must be valid. If the premisses contain an inconsistency like 'Dick is in Berkeley' and 'Dick is not in Berkeley,' then the premisses can never be true. So you could not possibly go from true premisses to a false conclusion. Hence by default, as it were, such an argument must be deductively valid. This is a curious consequence indeed of the very narrow way we have defined deductive validity of arguments, and we return to further discussion of the point subsequently.

For now however, it is enough to remember that an argument will be said to be deductively valid if it is impossible for the premisses to be true and the conclusion false. All that is required then is that the truth of the premisses be sufficient for the truth of the conclusion — never mind whether the premisses are true or consistent, whether the argument is free of vicious circles, or whether the premisses are connected to the conclusion in any other way. All that we need for deductive validity is the fail-safe requirement that we must never be able to go by valid deduction from true premisses to a false conclusion.

2. Formal Logic

Does deductive argument as a type of reasoning have any place in managing real-life disputes like the parliamentary debate we studied in the previous chapter? Yes, it does — for two reasons, mainly. First, deductive logic can be studied as a formal logic — that is, a logic that identifies certain forms of argument as universally valid. It follows that deductive logic can be a reliable way of assuring you that your own or your opponent's arguments are deductively correct. Second, if one of your opponent's arguments happens to be deductively incorrect, you can use this fact to criticize his argument, provided you observe some precautions. As we will eventually see in this book, formal deductive logic has other uses as well. It enables us to reconstruct arguments that are only partially given. It can do this by showing us different ways of adding to the given argument that would make it into a valid argument.

Formal logic is that part of logic that has to do with the form of an argument. What is the form of an argument? Here is an example. Consider the pair of arguments.

> If Bob is a bachelor then Bob is single.
> Bob is a bachelor.
> Therefore, Bob is single.
>
> If Professor Cresswell writes on the board, the chalk will squeak.
> Professor Cresswell writes on the board.
> Therefore, the chalk will squeak.

What these two arguments have in common is the same form. This form is a common one, long acknowledged as a valid form of argument: if the first thing then the second, but the first thing, therefore the second thing. The traditional name of this form of argument is *modus ponens*.

We get the notion of a common form of the above two arguments by observing that certain aspects of both of them are the same (constant), while other aspects are variable. What is common to them is the conditional, 'If -----, then -----.' What varies is the propositions that go in the blanks (the first thing and second thing respectively). If we let the first proposition be symbolized by the variable letter p, and the second be symbolized by the variable letter q, then both arguments have the same form: if p then q, p, therefore q. The 'if p then q' and the p are the premisses, and the q is the conclusion.

Below are displayed some deductively valid forms of argument that we familiarly recognize as forms of reasoning an argument may take.

If p then q.	If p then q.	If p then q.
p	Not q.	If q then r.
Therefore, q.	Therefore, not p.	Therefore, if p then r.
Modus Ponens	*Modus Tollens*	*Hypothetical Chain*

Here are some examples of arguments that have the respective forms above.

Modus Ponens
If the kettle is boiling, the water is hot.
The kettle is boiling.
Therefore, the water is hot.

Modus Tollens
If you graduated, you paid your tuition fee.

You did not pay your tuition fee.
Therefore, you did not graduate.

Hypothetical Chain
If Fred moved his knight, Bob is checkmated.
If Bob is checkmated, Fred won the game.
Therefore, if Fred moved his knight, Fred won the game.

That these forms of argument are universally valid follow from three presumptions. First, validity in an argument is defined as never going in any instance from true premisses to a false conclusion. Second, 'If p then q' is defined in such a way that if it is true, you can never go from a true p to a false q. Both validity of arguments and truth of 'if-then' statements are "truth-preserving" relationships. Third negation, not p, is defined as being the opposite in just this sense: not p is true (false) where p is false (true).

Why do we make these presumptions? Well, we don't have to, but they have always seemed so reasonable that they have become conventions of what is now called the "classical" approach to formal logic. Perhaps they just reflect the basic idea of deductive logic as a form of argument that, whatever else it accomplishes, should never take an arguer by valid argument from truth to falsehood. That is, deductive logic should always be reliably truth-preserving.

Here we make a distinction between the validity of an argument and the truth of a proposition. Propositions are true or false. For example, suppose I am holding a piece of chalk in my hand. The statement 'This chalk is white' may then be true — if, in fact the chalk is white. But we may also speak of conditional statements or if-then statements as true or false. For example, suppose the piece of chalk is long and spindly. Then it may well turn out to be the case that the following conditional statement is true: "If I throw this chalk against the board, the chalk will break." But then again, it might turn out to be false. In any event, we can see that complex statements like conditional statements can take on the properties of being true or false.

But arguments are not true or false — they are correct or incorrect. And when speaking of deductive arguments, we say that an argument is valid or invalid. Arguments are the sort of things that have premisses and conclusions. And, to repeat, a deductively valid argument is one that never takes you from true premisses to a false conclusion.

To see why our three forms of argument above must be universally

valid by the criteria set out above, we can reason as follows. Take *modus ponens* first. The first premiss says 'If p then q.' That is, it tells you that you can never go from a true p to a false q if this conditional is true. So assume it's true, and that the second premiss, p, is also true. Then q could not be false. Hence according to our understanding of negation, as agreed above, q must be true. Hence *modus ponens* must be valid — on the assumption that the premisses are both true, the conclusion *must be* true. You can't wiggle out of it.

As an exercise, you can go through a similar proof to assure yourself that *modus tollens* is universally valid as a form of argument. Let's look at the third form, *hypothetical chain*. Does it always have to be valid as a form of argument? We can prove it as follows.

The first premiss says that you can never go from a true p to a false q. So if we assume that p is true then q has to be true, as in our reasoning for *modus ponens* above. By similar reasoning, looking at the second premiss we see that if q is true, r has to be true. Putting these two truths together, we see that if p is true, then given these premisses, r always has to be true. Hence *hypothetical chain* is universally valid as a form of argument.

In short, we can see that once we have defined our constants, like 'if ... then' and 'not' in a certain way, these definitions can determine certain forms of argument as generally valid or invalid. That is the way of formal logic.

3. Classical Propositional Calculus

A very simple model of a class of deductively valid arguments that nevertheless admits of a decisive and clear test of validity and invalidity of arguments is the so-called classical propositional calculus (PC). The variables in PC are proposition-letters, p, q, r, ..., and the constants are defined as follows.

Negation

p	⌉p
T	F
F	T

Conjunction

p	q	p ∧ q
T	T	T
T	F	F
F	T	F
F	F	F

Disjunction

p	q	p ∨ q
T	T	T
T	F	T
F	T	T
F	F	F

The negation of a proposition p has the opposite truth-value of p. p ∧ q (read 'p and q') is only true if both propositions are true. p ∨ q (read 'p or

q') is true if either or both of the propositions p and q are true. Sometimes another type of 'or' is also introduced called the exclusive disjunction: p $\veebar$ q is true if one or the other but not both p and q are true. However, this exclusive type of disjunction can easily be defined as $(p \vee q) \wedge \rceil(p \wedge q)$.

The way the three constants are defined above, each of them is truth-functional, meaning that each row has a definite truth-value filled in. This means that there are no gaps. As soon as we know the value of the basic propositions p and q, the value of the complex proposition made up by means of the constants and variables is always known. Consider the complex proposition that defines the exclusive disjunction for example.

p	q	$p \wedge q$	$\rceil(p \wedge q)$	$p \vee q$	$(p \vee q) \wedge \rceil(p \wedge q)$
T	T	T	F	T	F
T	F	F	T	T	T
F	T	F	T	T	T
F	F	F	T	F	F

To see how this works, we first of all put down a column of truth-values for all combinations of truth and falsity of p and q. There are four possibilities. Then we set down the column for $p \wedge q$. The negation $\rceil(p \wedge q)$ will be just the opposite of the preceding column. Then we set down a column for $p \vee q$. Finally, the whole expression $(p \vee q) \wedge \rceil(p \wedge q)$ is simply the conjunction of the two previous columns (the order doesn't matter). So we see that any expression made up of constants and variables, no matter how complex, always has a fixed truth-value provided the truth-values of the component propositional variables are fixed. Hence PC is often called truth-functional logic.

Looking at the truth-table above, we can see how the expression $(p \vee q) \wedge \rceil(p \wedge q)$ is indeed equivalent to the exclusive 'or' meaning 'either p or q but not both.' For if we wanted a truth-table definition of the exclusive 'or,' it would look like this.

p	q	p $\veebar$ q
T	T	F
T	F	T
F	T	T
F	F	F

Exclusive Disjunction

The exclusive disjunction says that either p or q is true, so it is the same as the truth-table for the inclusive 'or,' except that it says "not both." Hence

the only difference between it and the inclusive 'or' is that the first row, where p and q are both true, will be false for the exclusive 'or.' Notice that this result is the very same set of truth-values as those in the final column of the truth-table for $(p \vee q) \wedge \rceil(p \wedge q)$. Thus $\veebar$ can be defined in terms of $\vee$, $\wedge$, and $\rceil$.

One other major constant needed for PC is the conditional, 'if p then q.' Are conditionals truth-functional?

p	q	If p then q
T	T	T
T	F	F
F	T	?
F	F	?

Example: If I drop this chalk, it will break.

Suppose I have a long, spindly piece of chalk in my hand. Suppose it's true that I drop it (p) and it's true that it breaks (q). Then most of us would probably agree that the conditional, 'If p then q' is true. Suppose however that I drop it, but it doesn't break. Then most of us would say that the conditional 'If p then q' (If I drop it, the chalk will break) is false. So the first two rows of the truth-table are truth-functional.

But what are we to say if I don't drop the chalk at all, as in the last two rows of the table? Most of us would probably say that until you drop the chalk, you can't really tell whether the conditional 'If I drop the chalk it will break' is true or false.

The lesson of this example appears to be that 'If ... then' is not truth-functional. However, in order to have a simple logic, it is desirable to have all the complex propositions determinable in truth-value only by the truth-values of the basic propositions. Can we legislate a truth-functional 'If ... then' and still get a useful logic. How to do it?

If we let both question-marks be F's, we get an 'If ... then' that is the same as 'and.' But that is no good. For 'If ... then' is very different from 'and.' If we let the first question-mark be T and the second F we get a column of truth-values the same as that for q. But that can't be right either. 'If I drop the chalk it will shatter' is very different from 'The chalk will shatter (whether I drop it or not).' As a third trial, what about putting F for the first question-mark and T for the second? This result would say that 'If p then q' only comes out true when p and q have the same truth-value. By this approach 'If p then q' would always be equivalent to 'If q then p.' It wouldn't matter which way you go. But 'If ... then' is not like this. In gen-

eral, 'If I drop this chalk it will shatter', and 'If this chalk will shatter, I drop it.' are quite different. The second seems to imply that the only way it could shatter is if I dropped it. Whereas the first has no such implication. And in general, 'If p then q' is not the same as 'If q then p.' 'If I graduate, I will have paid my tuition' is quite different in its truth-conditions from 'If I pay may tuition, I will graduate.'

Of all the possibilities, only one remains.

p	q	p ⊃ q	
T	T	T	
T	F	F	
F	T	T	*Material Conditional*
F	F	T	

The type of conditional defined in the above table is called the *material conditional* or "hook." In keeping with the general account of validity for deductive logic, it only comes out false if the p is true and the q is false. Otherwise it is ruled to be true. This definition of the conditional, while admittedly arbitrary in the last two rows, is truth-functional and still preserves many desirable valid forms of deductive argument. Below are some valid deductive forms of argument in classical PC.

p ⊃ q p q	*Modus Ponens*	*Example*: If the Rangers win, the Bruins are out of the playoffs. The Rangers win. Therefore the Bruins are out of the playoffs.
p ⊃ q ¬q ¬p	*Modus Tollens*	*Example*: If the Rangers win, the Bruins are out of the playoffs. The Bruins are not out of the playoffs. Therefore, the Rangers do not win.
p ⊃ q q ⊃ r p ⊃ r	*Transitivity* of ⊃.	*Example*: If I take your knight I put you in check. If I put you in check, I win the game. Therefore, if I take your knight, I win the game.

In general, the above way of defining the conditional in classical PC turns out to be reasonable as long as all you mean by 'If p then q' is 'It's not the case that p is true and q is false.'

The splendid thing about classical PC is that there is always a finite procedure for determining precisely whether any form of argument expres-

sible in classical PC is valid or invalid. All you need to do is construct a truth table. Consider *modus ponens*.

	p	q	p ⊃ q
(1)	T	T	T
(2)	T	F	F
(3)	F	T	T
(4)	F	F	T

p ⊃ q	*Modus*
p	*Ponens*
q	

As you scan over the four rows of the truth-table, you easily see that there is no row where both premisses (p ⊃ q and p) are true and where the conclusion (q) is false. Hence *modus ponens* must be valid. However consider this form of argument: p ⊃ q, q; therefore p. Sometimes called *affirming the consequent*, this form of argument is easily shown to be invalid by looking at the same truth table above. In row (3), p ⊃ q is true and q is true, but p is false. Hence this form of argument must be invalid — it permits a possible assignment of truth-values that takes us from true premisses to a false conclusion. And we remember that a deductively valid argument is one that can never take us from true premisses to a false conclusion.

No matter how many component propositions we begin with, classical PC always provides a test for validity or invalidity. One further example may serve to illustrate.

p⊃ q		*Example*: If Bond goes to Istanbul
r ⊃ s		he will be attacked by mad scien-
p ∨ r	*Dilemma*	tists. If Bond goes to Macao he
q ∨ s		will be followed by KGB assassins.
		Either Bond goes to Istanbul or
		Macao. Therefore, either Bond
		will be attacked by mad scientists
		or followed by KGB assassins.

The truth-table for this form of argument is quite long, since you have to have $2^4 = 16$ rows of a truth table in order to represent all possible combinations of truth-values for p, q, r and s. However, there is a short-cut method called the *fell swoop* (Quine). We want to see if there is a possible assignment of truth-values that could make all three premisses true and the

conclusion false. So we could reason as follows, to see if this is possible.

In order for the conclusion (q ∨ s) to be false, both q and s have to be false. Reason: q ∨ s is only false if both disjuncts are false, by definition. Assuming the conclusion is false, could all the premisses be true? Well, if q is false, the first premiss (p ⊃ q), could only be true if p is false. Reason: otherwise p ⊃ q would have the values T ⊃ F and thereby be false, by the truth-table definition of ⊃. Similarly, the second premiss can only be true if r is false, given that we know that s has to be false for the conclusion of the whole argument to be false. However if both p and r are false, as is required to make the first two premisses true, then the third premiss (p ∨ r) has to be false. In other words, the only possible assignment of truth-values that makes the conclusion false is such that if the first two premisses are to be true, the remaining premiss has to be false. In short, if the conclusion is false, the premisses can't possibly all be true! Consequently the argument must be valid. Reason: it is just not possible to assign truth-values in such a way that the premisses are all true while the conclusion is false.

If you have trouble following all the reasoning of the paragraph above, construct a truth-table yourself for the *dilemma* and carefully scan across all the rows of the table. If you have constructed it right, there will be no row of the table (possible assignment of truth-values to the basic propositions) where the premisses are all true and the conclusion is false.

Now we can see the beauty of formal logic. Once you can identify the form of an argument, you can always decide whether a given argument is valid or not.

4. Applying Deductive Logic to Arguments

Now we have seen some examples of deductively valid forms of argument. You may want to examine some deductively invalid ones as well. These are ones where, in some instances, you can go from true premisses to a false conclusion. Two examples are given below.

If p then q.	If p then q.
q	Not p.
Therefore, p.	Therefore, not q.
Affirming the Consequent	*Denying the Antecedent*

An example of the former would be: "If you graduated, you paid your tuition fee. You paid your tuition fee. Therefore, you graduated." Clearly this

is an invalid form of reasoning. In the example, you may have paid your tuition fee, but failed all your courses. Hence, it does not follow that you have graduated. Look at the premisses of *affirming the consequent*. The first one says that you'll never go from a true p to a false q. But that doesn't mean that you couldn't go from a true q to a false p. Hence, if the second premiss is true, that doesn't exclude the possibility of the conclusion being false.

For similar reasons, *denying the antecedent* turns out to be invalid as a form of deductive argument. For example, the following argument is incorrect: "If you're in Toronto then you're in Canada. You're not in Toronto. Therefore, you are in Canada." This argument is invalid because the premisses could be true in the case where you're in Chicago. But it does not follow that you are in Canada.

Now we can see the promise of deductive logic as a useful tool in evaluating arguments. If we can clearly differentiate between valid and invalid forms of argument, we are now surely in a position to get the best of any opponent who advances invalid arguments or refuses to be convinced by our own valid ones.

Perhaps unfortunately, applying deductive logic is not so straightforward as one might think or like. First, an opponent who does not wish to accept the conclusion of your deductively valid argument can simply reject the premisses of it. We have already noted that a deductively valid argument is one that has a form that can never go from true premisses to a false conclusion. But it does not follow that the same deductively valid argument cannot go from a false conclusion to false premisses. Quite possibly it could.

The lesson in general is this. Your opponent must accept your conclusion if your argument has a deductively valid form *and* the premisses are accepted as true by that opponent. Otherwise there is always the loophole: "I accept the validity of your argument. But its very validity, coupled with the fact that I cannot accept your conclusion, forces me to infer that I cannot accept all of your premisses." In such a case, your use of deductive logic might not only fail to force the concession of your conclusion by your opponent in argument. It might even point out to him which group of your premisses he needs to argue against in order to refute your argument. It seems then that one needs to be careful in how one might attempt to use deductive logic as a method of reasonably convincing an opponent or making a case to refute that opponent's position. However, deductive logic could be useful in locating more exactly the set of propositions on which participants in

argument disagree.

What then is the value of formal deductive logic in argument? Its value is that a valid form of deductive argument is universally valid in the sense that *every* argument that is an instance of it must never have both true premisses and a false conclusion. This means that if your opponent rejects the validity of a valid argument he may, with all the force of deductive logic, be accused of being inconsistent. And logical inconsistency of position in dispute is the most deadly form of vulnerability. We have seen the power of allegations of inconsistency in the examples of *ad hominem* criticism we studied in the previous two chapters. We will subsequently see other examples.

One who is clearly and provably logically inconsistent in the position he advocates often assumes the burden of seeming to be either a fool or a hypocrite. Persistence in an inconsistent position can easily make an arguer open to ridicule, and perhaps even eventually to accusations of insanity or incompetence to understand rational discourse. Needless to say, this is not a good position for an arguer to be in. And sometimes it is not an easy position to get out of.

What we are saying is that deductive formal logic can be used in argument as a powerful vehicle for criticism of an opponent's position. Suppose, for example, your argument can be shown to have the form of *modus ponens*. And suppose your opponent is foolish enough to reject your argument as incorrect. Suppose in fact he accepts the premisses of it, even though he rejects the conclusion. What do we have here?

Your opponent, let's say, rejects the following argument.

> If a million people are unemployed, Canada is in a recession.
> A million people are unemployed.
> Therefore, Canada is in a recession.

He rejects the conclusion, but he is not inclined to reject the premisses. In fact, let's say, it can be shown from his conceded position as a whole that he is committed to accepting these premisses.

Now we know from deductive logic that the above argument has the form of a valid argument. Consequently, the above argument is, without question deductively valid. Just repeating that the argument is valid is not likely to impress your opponent or your audience, unless they too know about and accept classical formal logic. How could you use formal logic to criticize your opponent's vulnerable position in this instance?

The way to do it is as follows. Your opponent is inclined to accept the premisses. So you ask him: "Do you agree that a million people are unemployed?" He might reply: "I don't deny it." Then you ask him about the other premiss: "Do you accept the proposition that if a million people are unemployed, we are in a recession?" Again, he is not likely to agree, but let's say he concedes that this is possible by replying: "I don't deny it."

How you criticize his position is by way of *modus tollens*. First, by means of examples, or any other means of persuasion, you get him or your audience to agree that, whatever else is true, *modus tollens* is a valid form of inference. Having secured agreement on this, you then argue as follows. "You state firmly that Canada is not in a recession. But suppose it's true that if a million people are unemployed, Canada is in a recession. Put these two statements together, and it can't be true that a million people are unemployed. So you must reject the one statement or the other, or you are inconsistent. You must choose one or the other of the pair below.

Canada is not in a recession.	If a million people are unemployed, Canada is in a recession.

But you don't deny the first one, by your own acknowledgement. And given that you don't deny the first one, you can't accept the second one unless you also accept that it's false that a million people are unemployed. So deductive logic assures us. But as you already admitted, you don't deny that a million people are unemployed. Therefore, you are inconsistent and your position is incoherent and worthless. You accept the very same proposition that you deny."

Here then is an instance revealing how deductive logic can be useful in criticism. Any participant in argument who is ambivalent in what he accepts or refuses to accept as part of his position can be criticized by reducing his position to inconsistency using deductive logic.

Moreover, deductive logic can also be used as a positive tool for building up your own position in argument.[1] For remember that any argument that has a valid form can never take you from true premisses to a false conclusion. Consequently, if your premisses are acceptable as true, any conclusion you derive from them by valid inference must also be acceptable as true.

Notice however that we have been discussing the use of deductive logic by one participant in argument to criticize the position of another partici-

pant in the argument. If a participant's position is ambivalent,[2] then an arguer can, by means of dialogue, carry through an argument to reduce his position to inconsistency. But deductive logic is only one part of this whole process of refutation by dialogue. All the other elements of dialectic we covered in chapter 1 must clearly also play key parts in the whole process of criticism or refutation thereby carried out.

Consequently our thesis is that classical deductive logic should be contained in the concept of logical dialogue to give us a theory of argument adequate to understanding how criticism of arguments can be reasonable and justifiable. Propositional logic, so conceived, is the inner core of argument. The game of dialogue is the other shell of argument. The two combined offer a theory of argument that shows how logic can be applied to realistic argumentation. The remainder of this monograph will be devoted to arguing towards the thesis that the best way to understand the normative force of reasonable criticisms and well-argued refutations in realistic controversies is through the use of formal logic in dialogue. But these days, one must also ask "Which formal logic?"

There are many problems inherent in our argument, and these problems will continue to subject to controversy and further study as the field of argument study develops. One sort of problem is posed by the fact that there are now many other formal, deductive logics other than classical logic. Hence we will have to study questions of which non-classical logics might be appropriate for various contexts of dialogue. There are also many theoretical questions of the relationship between semantics and pragmatics in the study of argument. If classical logic represents "semantics" and regulated games of dialogue represent "pragmatics," then it seems that, according to the proposal above, semantics is (in a way we will see) contained within pragmatics. However, there are many controversies about the nature of this sort of relationship. We will return to these controversies subsequently. For the present, let us at least provisionally concede that classical deductive logic can be usefully applied to argumentation within at least some contexts of dialogue. If we are right that this presumption will turn out to be reasonable, then applied logic is possible within the present state of the art of logic as a discipline.

5. Invalidity and Fallaciousness

Buoyed up by the prospects of applying classical logic as a powerful tool, we might be inclined to think that an opponent in argument could also

be criticized for committing formal fallacies. We might think then that if an opponent's argument can be shown to have the form of an invalid argument like *affirming the consequent*, his position can be refuted as worthless. But there are grounds for caution in this negative use of formal logic.

It so happens that not all instances of invalid forms of argument are themselves invalid arguments. An example will illustrate.

> If California is in the U.S., then California is in the U.S. and Los Angeles is in the U.S.
> California is in the U.S. and Los Angeles is in the U.S.
> Therefore, California is in the U.S.

This argument is of course valid, for it is impossible for the premisses to be true and the conclusion false. If even the second premiss is true, the conclusion has to be true as well. Yet this argument has an invalid form. Let q stand for 'California is in the U.S. and Los Angeles is in the U.S.' and p stand for 'California is in the U.S.' Then our argument above has the form of *affirming the consequent*, an invalid form: if p then q; q; therefore p. Here then we have an invalid form of argument, but an instance of it happens to be valid.

This peculiar consequence stems from the presumption that the schematic letters p and q can stand for any propositions whatever. The only restriction is that once you have used a letter, say p, for a proposition, then you must always uniformly use the same letter, p, to stand for that proposition everywhere else in your representation of the form of the argument. That rule of uniformity was certainly adhered to in our representation of the form of the argument above.

The problem however is posed by the fact that the same argument can have various different forms. For example, suppose we let p stand for 'California is in the U.S.' and q stand for 'Los Angeles is in the U.S.' Then our representation of the form of the argument above will be this: if p, then p and q; p and q; therefore p. This form is certainly valid. For even if the second premiss is true, the conclusion has to be true.

One might criticize the argument above, having seen our second representation of its logical form, by pointing out that the first premiss is "redundant" or "irrelevant." The first premiss is not even needed to establish validity. For if the second premiss is true, the conclusion cannot possibly be false. Indeed, one might also criticize the argument as being circular or trivial. In effect, all it says is this: "California is in the U.S. and Los Angeles

is in the U.S., therefore California is in the U.S." If asked to prove that California is in the U.S. and I offered that argument to prove it, you could quite justifiably criticize me for arguing in a circle! These observations are quite revealing about the limitations of deductive logic. For neither circularity nor irrelevance in argument make any difference to, or are modelled by classical deductive logic.

But back to the main point, namely this. The same argument can have various different legitimate representations of its logical form. Sometimes the same argument might have one valid form and one invalid form! The following lesson must be our conclusion. If it is shown that an argument has a deductively invalid form, it need not follow that the argument is invalid.

It follows then that deductive formal logic is more limited as a tool of negative criticism for the refutation of an opponent's argument by finding formal fallacies exemplified in his argument. The formal invalidity does not necessarily imply that the argument itself is invalid.[3]

The problem here is that there are degrees to which any formal representation of an argument cuts into the deeper structure of that argument. In our example above, it could be said that the second formalization was more complete or deeper than the first. But there is no general way for telling us when a formalization of an argument is deep enough to include all the forms it could possibly have. Consequently, deductive formal logic can never by itself be a reliable test for invalidity or incorrectness of sequences of argument in a natural language like English.

What can we say then about formal fallacies? It seems that the best we can say is that if an argument is formally invalid, it may be open to criticism as falling short of deductive validity. But then again, it may not be, either. We can only refute an opponent's argument in the weak sense of refutation — we can say that he hasn't established his conclusion yet deductively by means of formal logic. But it would be a fallacy to conclude that his argument is refuted in the strong sense — we can't say that it has been shown to be invalid.

6. Relevance and Validity

The decisive advantage of formal deductive logic over the unregulated quarrel and debate as a method of evaluating the correctness of an argument lies in the fact that formal logic evaluates certain objective relationships in sets of propositions. Thus formal logic appeals to objective factors to settle disagreements rather than leaving the issue to the sayso of the dis-

putants themselves, for they may never agree on whose argument is better if left to their own devices.

On the other hand, formal logic has certain limitations built into its structure. We remember that in classical formal logic, an argument is valid if it is not possible for the premisses to be true and the conclusion false. This rather narrow definition of validity ignores many factors that one might wish to take into account in evaluating arguments however. Foremost among these is the factor of relevance.

Is classical deductive logic a good model of natural argumentation where disputes that may involve fallacies take place? This question is itself a disputed one and has to be approached with some caution. The main objection to classical logic as such a model concerns certain inferences that have a valid form in classical logic but that do not seem to represent correct arguments. The two most famous of these "paradoxical" inferences are these.

Not p. If p then q	*Example*: It is not raining. Therefore, if it is raining then 2 is a prime number.
p If q then p	*Example*: Auckland is in New Zealand. Therefore, if chlorine is heavier than air then Auckland is in New Zealand.

As the examples suggest, this sort of reasoning seems bizarre or astounding. But the forms of argument on the left are undoubtedly valid in classical deductive logic. Consider the top one. The only way the conclusion 'If p then q' could be false is if p is true and q false. But if p is true, the premiss, not p, must be false. Hence there is no consistent assignment of truth-values that could make the premiss true and the conclusion false. Therefore, by the classical account of validity, any argument of that form must be deductively valid.

These arguments are certainly correct from the classical point of view — they could never take us from true premisses to a false conclusion. But what is it about them that makes them seem deleriously inappropriate as correct arguments?

Well, certainly one thing about them is that the basic propositions, the p and q, don't seem to have any connection with each other. What does the weather have to do with 2 being a prime number or not? What does Auckland have to do with the weight of chlorine? We were most concerned about fallacies of relevance in chapter 1. If there are such things as fallacies

of relevance, these argument forms must be the granddaddies of them all! Can an argument be valid yet fallacious? We seem caught in a conundrum.

However, perhaps at this point it is well to remember that classical logic did not really address itself to the notion of relevance. We purposely defined 'If p then q' in the previous section in such a way that all that was demanded that we never go from a true p to a false q. The 'If ... then' in classical logic is defined in a manner in keeping with the conception of validity there adopted. Classical logic does its job as long as it never allows us to go by valid argument from true premisses to a false conclusion — never mind the intermediate steps or interconnections of how we got there. Perhaps then, classical logic is not wrong as an account of correct argument, but it is simply limited to one aspect of the nature of correct argumentation. Relevance is yet another aspect.

One approach is that of Grice (1975) who argues that classical logic is correct but incomplete in that it requires supplementation by conversational trimmings in order to fully reflect the argumentation of natural conversational interchanges. According to Grice, we normally follow co-operative principles of conversation like the maxim, 'Be relevant!' By the conversational approach then, the above two inference-forms are not incorrect but simply incomplete. In polite conversations, we avoid the rudeness of irrelevant transitions like 'If it's raining then 2 is a prime number.' But from a point of view of deductive logic, there's nothing wrong with such a conditional, the question of relevance apart.

One problem with Grice's approach however is that relevance becomes a matter of conversational politeness rather than a matter of precise logical regulation. Consequently, if there arises a dispute about whether two propositions in an argument are relevant or not, it is not clear how it is to be settled. Grice offers no precise guidelines. So it seems we are back at the level of the quarrel and the debate. If we can't agree whether p is relevant to q or not, and the dispute turns on the issue of relevance, how is it to be settled? Politeness may help, but may not resolve a substantive dispute. It seems we are back to the psychological criterion of adversarial rhetoric. Whoever can persuade the opposition, the audience, or the referee to his side — that p is relevant or irrelevant — wins the argument. But is this approach good enough?

Much depends on how seriously we take the claim that failure of relevance really is fallacious. Is the irrelevant argument truly incorrect, or is it merely a lapse of manners or rhetorical persuasion?

7. Subject-Matter Relatedness

One recent approach takes seriously the thesis that irrelevance is a logical failure. This approach, initially suggested in a seminar in 1976 by David Lewis, postulates that an argument can be thought of as taking place relative to a set of topics. Let us call this set of topics, T, the most specific set of topics that represent what the argument is about. In many quarrels and debates, the set T is never clearly specified, but that does not mean that it couldn't be, or shouldn't be! If relevance is at issue, the set T should always be carefully specified in advance by the disputants. Then what we do is to assign to each basic proposition in the argument a subset of T called the *subject-matters*. The subject-matters represent the topical content of each basic proposition in the argument.

As a simple illustration, supposing the set T in an argument is {bananas, yellow, nutritious, edible}. And suppose we encounter two propositions: p is the proposition 'Bananas are yellow' and q is the proposition 'Bananas are nutritious.' Then the subject-matter of p is the set {bananas, yellow} and the subject-matter of q is the set {bananas, nutritious}. In other words, each proposition in the argument will take on not only a set of truth-values, as in classical logic, but also a set of subject-matters. Then it is natural to rule that p is relevant to q in one important sense (or better, p is related to q) if p shares subject-matter overlap with q. In the present example, we say that 'Bananas are yellow' is related to 'Bananas are nutritious' because each proposition shares the common topic 'bananas.' However, in the two "paradoxical" argument forms above, it is easy to see a failure of relatedness. For example, 'It is raining' does not share any common subject-matters with '2 is a prime number.'

Relatedness of propositions in argument could refer to many different types of relationships. Clearly however, one fundamental type of relatedness is subject-matter overlap of propositions. As a general notion, subject-matter relatedness has three defining properties. First, it is a reflexive relation — that is, a proposition is always related to itself. For example 'Bananas are yellow' shares subject-matters with itself. Second, it is a symmetrical relation — that is, if p is related to q then q must be related to p. For example, if 'Bananas are yellow' shares subject-matter with 'Bananas are nutritious' then the second proposition must also share a subject-matter with the first. One could scarcely doubt that subject-matter relatedness has these two properties.

But when we come to a third property, that of transitivity, we see it

fails. It may be the case that p is related to q, and q is related to r, yet it may not be true that p is related to r. For example, 'Bananas are yellow' is related to 'Bob ate six bananas' and 'Bob ate six bananas' is related to 'Bob has six children.' However, 'Bananas are yellow' does not share any subject-matters with 'Bob has six children.' Thus subject-matter relatedness is not transitive, as a general characteristic.[4]

Now we have at least one clear basic idea of what relevance in arguments could mean, how does such a conception affect the correctness or incorrectness of arguments? Following a formalization of Epstein (1979) we can construct a relatedness propositional logic that will be just as formal a logic as classical logic.

The 'if ... then' (conditional) is a fundamental way of forming complex propositions in any formal logic. In classical deductive logic, 'If p then q' is defined so that it is false only where p is true and q is false. This approach reflects the basic idea of classical logic that hypothetical reasoning should at least be truth-preserving, whatever its other properties might be. Hence 'p $\supset$ q' (if p then q) in classical logic is defined as true except where p is true and q is false. In relatedness logic however, the 'if ... then' incorporates the idea that p and q share some common subject-matter (are related to each other). Hence, the conditional in relatedness logic, $p \rightarrow q$, is defined as true except where p is true and q is false, or where p and q are not related. The negation of p, $\rceil p$, is defined the same way in both logics. It is false where p is true, and true where p is false.

This new type of formal logic does take into account whether the subject-matters of propositions are related to each other in an argument. So it does at least partially overcome the failure in classical logic to take relevance into account in evaluating arguments. To see how, let us go back to consider the examples above of "paradoxical inferences."

The reason why the first one seemed bizarre was that 'It is raining' seemed to have nothing to do with '2 is a prime number.' This failure is reflected in the way relatedness logic deals with the argument. Since 'It is raining' shares no common subject-matters with '2 is a prime number,' the inference fails to be valid. Reason: the conclusion 'If it is raining then 2 is a prime number' is false, because of failure of subject-matter overlap of the two component propositions it contains. Yet the premiss, 'It is not raining' could quite well be true even while this conclusion if false. Hence the argument is not valid in relatedness logic. Similar considerations show the invalidity of the second inference in relatedness logic.[5]

Now we have at least a working idea of one thing that might be meant by "relevance." But in subsequent chapters, we will see that there are other kinds of "relevance" as well as subject-matter overlap that play important roles in the study of fallacies. With relatedness we have just begun the study of relevance in argumentation. Subject-matter relatedness turns out to be one important aspect of relevance that plays a role in the analysis of arguments, but it is only one among many aspects.

Next, we show how Epstein (1979) has developed a formal propositional calculus based on the idea of relatedness.

8. Relatedness Logic

First we have to define new constants, in line with our new model of argument. The most trouble we had in classical logic was with the conditional. The problem seemed to be that completely unrelated propositions could make up true conditions just because of their individual truth-values. This problem suggests that in order for a relatedness conditional to be true, the basic component propositions should be related by common subject-matters. The following type of definition is thereby suggested. Let $\mathcal{R}(p,q)$ stand for 'p is related to q.' What we mean by $\mathcal{R}(p,q)$ can vary for different interpretations. However, in line with the present discussion, we mean by this relation that p and q share some common subject-matters.

In this new kind of formal logic, we need to define our logical constants in a new way. The most important constant is 'If ... then.' How do we define it, to take into account subject-matter relatedness? The best approach is to define a new conditional constant $\rightarrow$ that is the same as the classical $\supset$ except that it comes out false if p is not related to q. The truth-table for $\rightarrow$ is below.

p	q	$\mathcal{R}(p,q)$	$p \rightarrow q$
T	T	T	T
T	F	T	F
F	T	T	T
F	F	T	T
T	T	F	F
T	F	F	F
F	T	F	F
F	F	F	F

Relatedness Conditional:
$p \rightarrow q$ is false only if
(1) it is the case that
p is true and q is false
or (2) p is not related
to q.

By the above definition, $p \rightarrow q$ requires both that the truth-values are right (like the material conditional) and also that p is related to q.

Now how do we define the other connectives? First consider negation. Here relatedness does not seem to matter. If p is related to q, then]p will also be related to q. If p is not related to q, then]p will not be related to q either. For example, if 'Bananas are yellow' is related to 'Bob ate a banana,' then 'Bananas are yellow' will also be related to 'Bob did not eat a banana.' Hence negation can be defined the same way as in classical logic — we need not worry about the factor of relatedness at all.

Similarly, with conjunction relatedness does not seem to be important. If we conjoin together two propositions 'Bananas are yellow' and 'Bob has six children' then that conjunction is true if both of the component propositions are true, never mind that one is not related to the other. Hence we can define conjunction using the same truth-table as in classical PC.

Disjunction, however, appears to require relatedness. That is, the proposition 'Bananas are yellow or 2 is a prime number' does not seem to be true because the two component propositions are unrelated. Therefore we define the relatedness 'or' as follows: 'p $\vee$ q' is true just in case (1) at least one of the pair {p,q} is true and (2) p is related to q.[6]

Now we have given truth-tables for all the constants of relatedness PC, we seem to have all we need for a logic. But there is still one question to be resolved. In classical PC all the constants were truth-functional. But these new ones, at least the $\rightarrow$ and $\vee$, are not. Thus we have to make a decision on how the basic propositions are related to the complex ones. When is a simple proposition p related to a conditional, $q \rightarrow r$? Does p have to be related to both q and r, or is it enough that it be related to just one of them? For example, is 'Bananas are yellow' related to 'If Bob is a canary then Bob is yellow'? Well, it does seem to be. That is, 'Bananas are yellow' is related to part of the conditional 'If Bob is a canary then Bob is yellow' (namely the consequent), so it seems that we want to say it must therefore share some subject-matter with the whole conditional. If so, the rule we need to adopt is this one: p is related to $q \rightarrow r$ just in case p is related to q or p is related to r.

We adopt similar rules for $\wedge$ and $\vee$: p is related to $q \wedge r(q \vee r)$ just in case p is related to q or p is related to r. Thus the general approach is this: one complex proposition is related to another complex proposition if any one component proposition of one complex is related to any one component of

the other complex. For example if we have two complex propositions '$(p \rightarrow q) \vee (r \wedge \neg s)$' and '$(t \vee u) \rightarrow \neg w$' then we know that they have to be related if any of their parts are related. Suppose for example that q is related to w. Then we immediately know that the two complex propositions are related to each other.

Just as in classical PC, there is always a finite decision procedure for determining correctness or incorrectness of arguments in relatedness PC. Consider *modus ponens* in relatedness logic.

	p	q	$\mathcal{R}(p,q)$	$p \rightarrow q$
(1)	T	T	T	T
(2)	T	F	T	F
(3)	F	T	T	T
(4)	F	F	T	T
(5)	T	T	F	F
(6)	T	F	F	F
(7)	F	T	F	F
(8)	F	F	F	F

$p \rightarrow q$ *Modus*
p *Ponens*
---
q

As you scan over the eight rows of the truth-table, you can see that there is no row where both premisses ($p \rightarrow q$ and p) are true and where the conclusion (q) is false. Hence *modus ponens* is valid in relatedness PC.

Also, just as in classical PC, we can see that affirming the consequent is invalid in relatedness PC. In row (3), $p \rightarrow q$ is true and q is true, but p is false.

Hence we see that the conception of validity is the same in relatedness logic as in classical logic. A valid argument is one that never goes from true premisses to a false conclusion. But the difference is that in relatedness logic, subject-matter relevance is explicitly taken into account in the way we define the constants of the logic.

We should also note that relatedness PC will turn out to be a subsystem of classical PC. All arguments valid in relatedness PC will also be valid in classical PC. But there are some forms of argument that are valid in classical PC but that fail to be valid in relatedness PC. Some examples may be instructive.

$$\begin{array}{ll} p \rightarrow q & \textit{Transitivity of the} \\ q \rightarrow r & \textit{Relatedness Conditional} \\ \hline p \rightarrow r & \end{array}$$

Could the premisses of this form of argument be true while the conclusion is false? Well, we have already seen that consideration of truth-values alone would not permit an assignment that would make the premisses true and the conclusion false. But as formulated above, the form of argument with $\rightarrow$ instead of $\supset$ requires the right arrangement of subject-matter relationships as well. What if the subject-matter of p fails to be related to that of r. Still, it is quite possible that p is related to q, and q is related to r. If the truth values were right in such a case, then both premisses would be true and the conclusion false. Thus there is at least one row of the truth-table where both premisses are true and the conclusion is false. One of them is as below.

p	q	r	$\mathcal{R}(p,q)$	$\mathcal{R}(q,r)$	$\mathcal{R}(p,r)$
T	T	T	T	T	F

This possible assignment of truth values makes the premisses true and the conclusion false. Hence the form of argument above for transitivity of the relatedness conditional is invalid.

Another valid argument form of classical PC that fails to be valid in relatedness PC is *exportation*.

$$\frac{(p \wedge q) \rightarrow r}{p \rightarrow (q \rightarrow r)} \qquad \frac{(p \wedge q) \supset r}{p \supset (q \supset r)}$$

Looking on the right, we see that exportation as a form of argument is valid in classical PC. The only way the conclusion could be false is if p and q are both true and r is false. But given these values, the premiss must be false as well. The premiss cannot be true while the conclusion is false. Hence exportation is valid in classical PC.

But what about validity in relatedness PC? Look at the form on the left. Consider these values.

p	q	r	$\mathcal{R}(p,q)$	$\mathcal{R}(q,r)$	$\mathcal{R}(p,r)$
T	T	T	T	T	F

If q is not related to r (as above, then the part $q \rightarrow r$ of the conclusion must be false. But if p is true (as above), then the whole conclusion $p \rightarrow (q \rightarrow r)$ must be false by virtue of the truth-values. However, it is still possible for

the premiss to be true, even given these values. If p,q, and r are all true, then $(p \wedge q) \rightarrow r$ will be true provided one or the other of p or q is related to r. To make the conclusion false, we made q not related to r. But we could still consistently assume that p is related to r (as above). Such an assignment (as above) makes the premiss true and the conclusion false. Hence this form of argument is not valid in relatedness PC.

These examples show that relatedness PC is every bit as much of a precise decision procedure to determine validity or invalidity of arguments as classical PC. However, the class of valid arguments turns out to be different. Reason: in relatedness logic, relevance of subject-matters is taken into account.

In fact, relatedness propositional calculus turns out to be a subsystem of classical propositional calculus in just this sense. All the valid forms of argument in relatedness logic are classically valid forms. But there are some forms of argument, like the examples we have examined above, that are valid in classical logic but invalid in relatedness logic.

The exciting thing about relatedness logic is that it offers a formal decision procedure that takes subject-matter relatedness of propositions into account. It therefore offers one clear and potentially useful way of defining relevance in argumentation, and of managing criticisms of arguments on the basis of claims of irrelevance. This is an exciting prospect.

However, there are grounds for caution. Our studies of fallacies like the *ad hominem*, *ad populum* and so forth, have already suggested that many objections to arguments on grounds of irrelevance pertain to factors in argument other than subject-matter relatedness. Many a fallacious *ad hominem* argument is effective as a persuasive strategy precisely because the "irrelevant" personal claim made is indeed subject-matter related to the conclusion or proposition at issue. Despite subject-matter relatedness, the argument may be perceived as fallacious.

In fact, many faults of argument perceived as failures of relevance are pragmatic failures in procedures of proper dialogue, rather than failures of subject-matter relatedness.

9. Semantics and Pragmatics

A basic theoretical problem for the study of fallacies, enthymemes, and other aspects of practical argumentation is the relationship between the pragmatic concepts of criticism, refutation, fallacy, and so forth, and the semantic concepts of truth and valid argument. The semantics of argument

has to do with relationships like validity and consistency conceived of in terms of truth-conditions. A valid argument is one where it is never true in the semantical model that the premisses are true and the conclusion false. An inconsistent set of propositions is one where all members of the set cannot be true in a model.

As far as semantic evaluations are concerned, a valid argument is one where you can never go in any case from true premisses to a false conclusion. By valid deductive argument, truth is always preserved. In this framework, it doesn't matter where the premisses came from. They are simply a designated set. It doesn't matter where the conclusion came from, strictly speaking, either. For nothing in the semantic model determines which proposition in the set designated as the argument comes after the "therefore." Semantically, it doesn't matter whether the premisses are related to the conclusion — at least in the classical model of argument — because if you start with an inconsistent set of premisses, then you can never go from true premisses to false conclusion, even if the conclusion is entirely unrelated to the premisses. Semantically, it doesn't matter whether the argument is circular, or whether the premisses are well-established, or whether the conclusion is related to the issue of some particular dispute.

From a pragmatic point of view, however — the point of view appropriate to the study of informal fallacies — a proposition may not be a proper conclusion of an argument unless it is appropriately related to the issue under dispute. An arguer's conclusion is, ultimately, his thesis to be proven in that context of dispute or dialogue. What an arguer may take as premisses in a proof are therefore limited to certain classes of propositions. They may, in some contexts of dialogue for example, be restricted to propositions that are commitments of the other party to the argument.[7]

Semantics then is a matter of one kind of relationship between the premisses and conclusion of argument. However, what really defines those propositions as "premisses" and "conclusion" is a matter of pragmatics. Pragmatics is concerned with where the premisses came from, and whose premisses they are in the argument. Pragmatics is concerned with where the conclusion came from, its relationship to the issue.[8] Pragmatics is concerned with certain relationships between premisses and conclusion, comprising the general direction and flow of the over-all argument as a chain of sub-arguments in a sequence of replies to questions.

At present, there is considerable disagreement about the relationship between semantics and pragmatics. Many of those in "informal logic" feel

that semantics has no place in the reasonable evaluation of real arguments. The more traditionalist defenders of formal logic as the only important model of argument take the opposite view that semantics is all there is. These critics of pragmatics sometimes suggest that pragmatics in an argument is an empirical matter that is separate to each discipline. By these lights, pragmatics is not a single field of inquiry in the evaluation of arguments.

Still others argue that pragmatics is a kind of outer trimming around the semantic core of argument. By these lights, classical logic is trimmed with pragmatic maxims of conversational appropriateness. Yet another alternative might be to argue that pragmatics represents something that comes from the inside of semantics. By these lights, some principles of classical logic need to be reduced or altered in different pragmatic contexts.[9]

Reasonable justifications have been given for each of these views. But I propose here an alternative viewpoint that I think is more justified by recent work in the field of argumentation studies. According to this view, pragmatics already presupposes the existence of semantics, and would be useless without it. Pragmatics is built around semantics and is an extension of it. The basic concepts of semantics are truth and falsity. By classical logic, these concepts are extended to include validity and consistency. The basic concepts of pragmatics are assertion, retraction, and questioning. These are defined in the context of a game of dialogue. A game of dialogue is a set of players, moves, and procedural rules. These rules comprise locution rules, dialogue rules, logical rules, commitment rules and win-loss rules. The logical rules define what constitutes a valid argument and a consistent set of propositions. Hence semantics is included in pragmatics. The remaining kinds of rules all function together to define assertion, retraction, and questioning for the different contexts of dialogue. An *assertion* of a proposition p by a player *a* is made where, according to these rules, p is added to *a*'s commitment-set when it was not included there before. A *retraction* of a proposition p by a player *a* is made where, according to the rules, p is deleted from *a*'s commitment-set. A *yes-no question* 'p?' is asked by *a* where, according to the rules, where the other player *b* at the next move either asserts p, retracts p, asserts ⌋p, or makes an illegal move. A *why-question* 'Why p?' is asked by *a* where, according to the rules, the other player *b* at the next move either, (i) retracts p, (ii) asserts some proposition q that implies p, where q is a commitment of *a*, or (iii) *b* makes an illegal move. Then questioning is defined as asking a yes-no question or a

why-question. In some games of dialogue, other kinds of questions, e.g. whether-questions, may be allowed as well.[10]

We have already studied subject-matter relatedness of propositions as one kind of relevance. We could call it semantic relevance, although there may be other kinds of semantic relevance as well. Semantic relevance is a kind of local relevance — relevance between pairs of propositions.

By contrast, pragmatic relevance has to do with procedural rules in games of dialogue. Pragmatic relevance is a kind of global relevance because a whole network of moves in a sequence of dialogue may need to be taken account of in order to determine the pragmatic relevance of one particular move in the game. One kind of pragmatic relevance is the notion of a relevant answer to a question in the context of a controversy or issue. We will study this type of relevance in the fifth section of the next chapter. The problem here has to do with how direct an answer must be to avoid a reasonable criticism that it is "irrelevant."

Another type of pragmatic relevance has to do with the conclusion set to be proved by a participant in dialogue. The fallacy here is one of getting the wrong conclusion even if the argument may be valid. This was, of course, one of the major faults of arguments we studied in chapter one. We return to the analysis of this type of problem in the sixth section of the next chapter.

Yet other types of criticism of irrelevance have to do with the charge that there are too many premisses or not enough premisses. We have acknowledged these criticisms as well, and will return to them.

The dialectical framework sketched out above, at least so I think, represents the most mature account of the relationship between pragmatics and semantics. According to that account, semantics is included in pragmatics as its basis. Semantics is what makes a game of dialogue "logical." Pragmatics is what makes a game of dialogue applicable to realistic contexts of questioning and disputation of a thesis at issue. However, there is one exception I must now make to this tidy arrangement.

In realistic arguments, the rules of dialogue are too often not defined precisely. Our case studies of argumentation show that, in realistic contexts like political debates, it is sometimes not clear what the issue is supposed to be, or how the objectives of the dialogue are to be defined. But before an argument can be evaluated for "fallacies," or for fairness of arguments, the participants must have come to agreement on certain procedural matters at the outset. What are the topics of the argument, what is the thesis each dis-

putant is supposed to prove, and so forth. In many a realistic case of argument, however, these matters become themselves subject to dispute! In such cases, there can be some latitude in choosing one set of rules over another. Yet nothing can be constructively evaluated as a reasonable outcome of the dispute until some clear and precise procedural rules have been agreed upon by the participants in the argument.

Hence it is that a certain degree of conventionalism is tolerable in reasonable games of dialogue. Some rules are more favorable than others in certain contexts, but it is paramount that the arguers be brought to accept some clear set of procedural rules if their dispute is to be reasonably resolved or evaluated.

One implication of this tolerance of degrees of conventionalism in the pragmatic framework is that in some contexts, non-classical logics may reasonably be adopted as providing alternative logical rules for dialogue. In some contexts, where relevance of subject-matter is highly contested, adoption of relatedness logic as the core logic in a game of dialogue — instead of classical logic — can not only be tolerated but positively approved. But what does this mean in terms of the pragmatics *versus* semantics distinction? Have we cut down the semantic component to a subset of the classical rules and added 'subject-matter overlap' to the pragmatics? Or would it be more accurate to say that we have replaced the classical semantics by a non-classical semantics? There is legitimate room for dispute here.

I am inclined to think that what we have done here is to keep part of the classical semantics in place while adding the pragmatic dimension of subject-matter overlap to our pragmatic structure. But I think that Dick Epstein might legitimately disagree here, adopting the point of view that relatedness logics, and their nonclassical cohorts, are really alternative semantical models to classical logic. Not wanting to be dogmatic, I would like to leave this issue, to some extent, open to further discussion. Relatedness logic is fairly new on the scene, and much remains to be discussed about its place in the scheme of things. I see it more as an applied logic — a pragmatic structure — than its other proponents appear to. Much the same disputed issue carries over to relevance logics generally. I see them as applied logics appropriate to various contexts of criticisms of irrelevance in the context of dialogue. However, I think the creators of these logics have seen them in a very different light. They have tended to see them as alternative accounts of semantics to classical logic. They see classical logic as incorrect (fallacious) and relevance logic as the "true" account of deductive

validity in all contexts of arguments. I tend to see classical logic as applicable to some contexts of realistic argumentation — where relevance is not at issue — and relevance logics as applicable to various other contexts of argument where criticisms of relevance are at issue.

It seems that it must remain the borders between semantics and pragmatics be subject to further controversies. Nonetheless, I have striven to make my position in the controversy as clear as it can be for the present.

10. What is a Fallacy?

We have now come to a point that needs resolution in our exploration of the logic of the fallacies. It seems that we have found that formal logic has its uses in helping us to construct criticisms and refutations of an opponent's position in argument, even though it also has clear limitations for such purposes. Formal logic has to do with the internal truth-theoretic structure of validity in arguments. True, formal logic can be extended to encompass matters of relevance like subject-matter overlap of propositions. But the fallacies we looked at in the first chapter — *ad hominem*, *ad verecundiam* and so forth — involved much broader notions of relevant defensibility of positions than these narrow truth-theoretic or subject-matter conceptions of validity could possibly be brought to bear on.

For example, the study of these fallacies in our sample parliamentary debate involved alleged fallacies of question-asking. The issue there was whether a certain reply to a question posed in parliament was "relevant" or "unduly evasive." Also involved were questions of whether appeals to authority were appropriate or relevant.

One of the problems in the development of applied logic is to get a workable and reasonable notion of what a fallacy is. A fallacy is of course an error in argument, or an incorrect argument, it is true. But virtually all of the fallacies we have examined and will examine turn out to have correct forms of argument as well. If so, there is nothing inherently or deeply negative about the study of the fallacies, even if the initial impetus to study a particular type of argumentation is a concern with pathological instances of it. Thus the goal of the study of fallacies and related specimens of interesting argumentation should be the clear and reasonable sorting out of cases into valid or invalid classifications, and not an exclusive preoccupation with incorrect arguments *per se*.

Another problem is the psychologism inherent in the doctrine that a fallacy is an argument that seems valid but is in reality not correct. Does

this mean that in order to be fallacious, an argument must truly seem valid to some reference group — a typical audience, most of the people some of the time, at least one person — how do you choose? If so, the study of fallacies is at least partly then a branch of psychology, or some social science.

In order to deal with this difficulty we need to distinguish clearly between the correctness/incorrectness of an argument and its effectiveness/ineffectiveness in persuading a target audience or disputant. The latter is surely psychological, whereas the former is a normative question and surely also to some extent a question of formal models or at least clearly laid out decision procedures or rules. The confusion between these two questions is often, quite rightly, inveighed against by formal logicians, who see their discipline as not psychological but mathematical.

I think the best approach to the difficulty is this. Surely a particular fallacy does come to be of interest in studying applied logic precisely because it is a tricky deception of argument that is important to study because it is deeply and widely influential in commonplace instances of persuasion. The more a particular type of argument, like appeal to arguments from expertise, is widely influential in modifying the beliefs of actual participants in persuasion, the more its claim to prominence as one of the "famous fallacies" is assured or enhanced.

Thus the study of fallacies is indirectly linked to linguistics, psychology, rhetoric, and other empirical sciences. But that doesn't mean that a particular instance of argument must seem valid to some particular person or audience to qualify as a fallacy. What is most important is that to be justified in claiming that an argument is fallacious, or a fallacy, it is not enough to show that the argument seems invalid to some actual persons. It is a normative claim that the argument is in some sense bad, unsound, invalid, or at least open to reasonable criticism. And that is a claim that must be justified by an appeal to the relevant theory of (good) argument.

The demand of some commentators then that "actual instances" of fallacies are mandatory and that artificial examples of any sort are inadmissible — even if they are moderately realistic, or strongly suggestive of interesting steps of reasoning — is a confused and needless requirement. The fact that Mary Brown enunciated a particular argument on May 18, 1982, on the Maryland Bridge at 8:30 p.m. does not suddenly elevate the argument from mere theoretical abstraction of no interest to a "real fallacy." The effectiveness aspect of fallacies is what makes the applied logic of the fallacies "applied," but does not mean that psychological considera-

tions play a decisive role in the logical considerations of when an argument is correct, incorrect, or even a distinct type of argument to be considered.

This however brings us to a main controversy in the study of applied logic today. The question is to what extent formal logic is applicable to natural language conversational disputation. This question is fundamental to our enterprise, and we will have to return to it again and again in this book.

The answer we will propose is that formal logic can be used by a participant in disputations to build up his own argument or to criticize his opponent's argument. But in speaking of criticism in disputation we are importing a framework, a conception of argument that includes more than just the semantic structure of the propositions that make up the core of the argument. It includes as well the pragmatic structure of certain conventions or rules of argument — locution rules, dialogue-rules, commitment-rules, and strategic rules. The locution-rules define the types of locutions permitted as moves in the dialogue. For example, certain types of questions, statements, or withdrawals may be allowed. The dialogue-rules define admissible sequences of moves. For example, a dialogue-rule may require that when one player asks a question of the "yes-no" form, the other player must respond at his next move by replying 'Yes,' 'No' or 'No commitment.' The commitment-rules define how commitments are inserted into or deleted from a store of commitments assigned to each participant in the dialogue. The strategic rules define which sequences count as a "win" or "loss" of the game.

This answer will be fleshed out more as we proceed. But two aspects of it are of immediate note. First, the rules of the best sort of games incorporate a formal logic. It is the "language" of the players, and defines which propositions follow by deduction from other propositions. Of course, one can always ask which formal logic is the best for the logic of dialogue. But we have already shown that classical logic, and its extension, relatedness logic, can be useful in managing criticisms and refutations.

Second, psychologism is avoided by defining commitment-stores after the fashion of Hamblin (1971) as sets of propositions. By this approach, you can think of a commitment-set as a set of propositions written on a slate and set out in public view of the participants and onlookers of the dialogue. These propositions then do not necessarily represent the psychological beliefs of the players.

By the above concept of argument, a fallacy is a type of move in a game of dialogue that violates a certain rule of the game. Such a fallacy may

be one of the kinds traditionally called an "informal" fallacy. Formal fallacies are those that pertain to the formal logic element, the core of the game that has to do with relations of validity in the set of propositions advanced or withdrawn by the players. Informal fallacies have to do with rules and procedures of reasonable dialogue.

Much turns then on what the best conventions or rules of dialogue are in relation to the practical contexts of argumentation like the parliamentary debate. The study of the applicability of these rules of dialogue, and their formulation within the theory of logical dialogue itself, is the best means towards the analysis of the fallacies.

The theory of the fallacies is not, at any rate exclusively, to be found in formal logic. It is best pursued in the theory of argument, otherwise known as logical pragmatics or the theory of logical dialogue-games.

NOTES

1. A discussion of logic as a device for creating new arguments — the logic of discovery — is included in the last section of chapter eleven.

2. An arguer's set of commitments is said to be ambivalent if he becomes committed to a proposition p during the course of an argument, but then, during the same argument, indicates that he is not committed to p.

3. Massey (1981) makes use of this fact to cast doubt upon the use of formal logic to study informal fallacies. Massey's arguments are criticized in Walton (1985, ch.1).

4. An account of the notion of subject-matter relatedness is given in Walton (1979) and a formal analysis of relatedness logic is given by Epstein (1978).

5. A much fuller account of paradoxical forms of inference in classical and relatedness propositional calculi is given in Walton (1982).

6. Other possibilities are allowed by Epstein (1979). However, the simple approach given here is very natural, and is adequate for our present purposes.

7. These sorts of restrictions have already been discussed in chapter one, but they are elaborated on in subsequent chapters.

8. As we saw in chapter one, an argument can be criticized because it has too many premisses, too few premisses, the wrong conclusion, and so forth.

9. In connection to the question of relevance, we might distinguish between local relevance in an argument, e.g. subject-matter overlap of the propositions, and global relevance. Global relevance pertains to pragmatic questions of "where the argument is going" as the unfolding of a controversy, issue, or dispute.

10. The next chapter will give detailed examples of formal games of dialogue with question-answer rules.

CHAPTER 4: LOGICAL DIALOGUE-GAMES

The conversational quarrel and the forensic debate are dynamic and interpersonal processes that capture in a lively way the cut and thrust of realistic argumentation. The approach of the formal logic of propositional inference is, by contrast, an impersonal, static conception of argument, one that essentially views an argument as a set of propositions. Granted that a set of propositions constitutes the core of an argument, can we not follow up the suggestion of these more lively processes that there could be more to an argument than just the set of propositions that makes up its essential core? The problem with the quarrel and the debate however, is their essential subjectivity. Being adversary procedures, and only partially regulated, disputes within them cannot be clearly resolved on the point of whether a given argument is to be adjudged correct or fallacious.

By contrast, in deductive logic we have a clear methodology, an objective way of determining whether the argument once given is correct or incorrect by set standards. In order to gain some of the advantages of all these models of argument and at the same time overcome the essential restrictions of each, in this chapter we take the approach of viewing an argument as a logical dialogue.

Basically, a logical dialogue consists not only of a set of propositions but also a set of questions that stand in certain relationships to these propositions. Moreover each question and its related proposition (answer) is indexed to a participant in the dialogue who may be at different times an asker or an answerer of a question.

Formally speaking, the dialogue is a game. That is, a dialogue is defined by a set of rules which regulate permissible moves that the participants can make, and each move consists of a question or a proposition. Thus the core of a game of dialogue is a set of propositions and questions, each of which is indexed to a participant.

For each game of dialectic[1], rules are defined that determine what constitutes a set of winning moves and a set of losing moves for each participant. Dialectic can be studied in a purely formal manner, as in the sort of

game two computers might play, where rules and moves are all precisely defined. But it is also possible to have realistic games of dialectic that are only partially formalized, and where the sequence of argumentation corresponds more nearly to what most of us would consider natural argumentation. Outright naturalism might take place in a quarrel or debate. Thus, many an interesting yet fairly well regulated sequence of dialectic would occupy a position halfway between the purely formal game of dialectic and the very realistic but very loosely regulated debate or quarrel. Thus the dialectic approach of utilizing formal games of dialogue shows some promise of effecting a compromise between realistic "actual" conversational argumentation and abstract formal models of valid or invalid argument.

1. Different Approaches to Formal Dialogues

The original conception of the dialectical model of argument is due to Aristotle, who formulated it roughly as follows. First there is to be one questioner and one answerer in a game of dialogue. Second, the answerer is obliged to defend some thesis on a topic. Third, the questioner puts forward probing critical questions. Fourth, the answerer is then obliged to answer as clearly and straightforwardly as he can, these questions, one by one. It is required of the questioner that he or she ask clear and straightforward questions. If a question is misleading or unclear, the answerer must have the option of not responding and perhaps also the option of asking that the question be clarified. The answerer must try to give as direct answers as he can to the question and not attempt to use specious means to avoid answering the question. However, if he truly cannot answer the question through ignorance, he should reply that he does not know the answer and the questioner must go on to formulate new questions that may be able to overcome that ignorance. If the answerer provides an answer that contradicts one of his previous answers, then the contradiction should be dealt with, perhaps by removing one of the answers to eliminate the contradiction.

According to Aristotle's conception, such a game of dialogue concludes if the answerer is refuted or if it is clear to both participants that the questioner's refutation will not succeed. This outline of Aristotle's basic conception of dialogue gives a general indication of the shape, character and intentions of such dialectical games. But as the framework is stated above, there remains considerable room for negotiating how precise rules should be formulated in particular types of games. We will see subsequently

that there are particular types of games which have quite different properties, but all of these games will share the general characteristics of dialectic outlined above by Aristotle's model.

According to Hamblin (1970, Chapter 8) an important aspect of games of dialectic concerns the nature of the commitments made by the participants in their asking and answering of questions. Hamblin constructs a type of game of dialectic which we will here call the game H which has two participants, White and Black. The language of the statements advanced at each move is that of classical propositional calculus. Each participant in the game can ask or answer questions, and in so doing they commit themselves to certain propositions by means of the way the rules for asking and answering questions are stated. The answering of a question by means of advancing a certain proposition p automatically places p in the answerer's commitment-store, according to the rules of H. The asking of a question 'p?' automatically puts p in the asker's commitment-store, but only puts it in the answerer's commitment-store if he fails to indicate that he is not committed to p. In this way then, both participants in the game build up a stock of statements in their respective commitment-stores.

One of the most useful resources for the study of fallacies in dialogues is the logic of questions, the formal theory of questions and answers developed in recent years by Åqvist, Belnap, and Hintikka. The pragmatic applications of the theory of questions to the context of interactions between a questioner and an answerer in acts of communication have been developed by David Harrah (1963), (1980) and (1984). Harrah has developed formal models of communication where a sender's messages arrive over a period of time. The receiver can reject some messages, accept others, change his mind in various ways, and can apply various evaluation functions to build up a "usable message total." Messages are evaluated in light of the receiver's background knowledge.

Harrah's proposal, that getting a usable message in communication involves selecting out maximal consistent subsets on the basis of the order that the messages are received, is an interesting one in relation to the pragmatics of dialogues. In conversational arguments how would the order of the communication events affect the management of inconsistent sequences of messages? There would seem to be several possibilities.

On some occasions, the later message might be the more acceptable, where it conflicts with a previous message. The reason might be expressed as follows: "Since you now say such-and-such, given that it conflicts with

what you said earlier, such-and-so, this must mean that you have decided to give up your previous viewpoint." In another context, quite the opposite ordering could be the more plausible: "What you are saying now cannot be accepted, because it conflicts with the basic position you started with at the beginning." By these lights, the earlier commitment could be, in some sense, the more fundamental in the development of argument.

The problem is the classic one for the theory of dialogue. When confronted by an inconsistency in an arguer's collective moves, how should retraction be most reasonably organized where (1) retraction is allowed in the game generally and (2) where retraction is the appropriate move for a player who has sent out a set of propositions that turns out, or is shown by the other player, to be inconsistent.

A formal theory of questions and assertions in dialogue developed by Ruth Manor (1979), (1981), (1982), and (1983) studies pragmatic properties of an utterance as a function of the context of dialogue. Assertions are considered as pairs of questions and answers. The context of an assertion is determined by the question "under discussion." Thus notions of relevance and commitments of answers are determined by the moves a player makes in the question-answer game. Manor (1983, p.71) has commitment sets for participants in a game of dialogue, and uses this device to study problems of retraction and assertion.

According to Hamblin a commitment is not necessarily a belief of the participant in argument. Rather, Hamblin thinks of a commitment-store as a set of tokens of statement or propositions that the player becomes committed to through the way he plays the game. Thus, according to Hamblin, a good way to conceive of a commitment-store would be as a sheet of paper with a number of sentences written on it, or perhaps as a memory bank of a computer.

As the dialogue proceeds, propositions are then added to this commitment-store, or in some cases if rules allow for retraction, propositions can also be deleted from the commitment-store. It is important to note that in a Hamblin game, if a participant is committed to a certain proposition he is not thereby always automatically committed to all the logical consequences of that commitment. Moreover, according to Hamblin, commitment-stores need not always be consistent. As Hamblin sees it, these requirements of implication and consistency can be varied with the type of game that is involved. Thus as Hamblin sees games of dialectic there is considerable room for flexibility in how the rules of a game can be set up and how the

commitment-store operations can be organized.

According to Hintikka (1979) a symmetrical model of dialogue can be given that incorporates rules for questions and anwers. In a Hintikka game, there are two participants, α and β, and each puts forward an initial thesis A_0 and B_0 respectively. In order to prove his thesis, each player is allowed to use only two kinds of premisses. First each player may use the other party's initial thesis. Second, each player may use the answers given by the other party to one's own questions. Using these premisses, the object of each participant is then to win the game by proving his thesis according to the rules of logic allowed by the game.

Hintikka allows that some particular games of dialogue are not of this symmetrical type. In some games, one party is required to answer questions which the other party is restricted to asking. This type of game, familiar from the example of the Socratic dialogues portrayed by Plato, is a one-sided or a symmetrical type of game. In this type of game, usually called the *obligation game*, the object of the questioner is to try to trap the answerer into inconsistent concessions. He wins if he succeeds in doing this. However, his opponent wins if he fails to achieve this object, after an agreed upon finite number of moves.

According to Hintikka, the symmetrical model of dialogue is especially favorable as a foundational beginning for the study of dialectic because other types of games can be shown to be special subsystems of the basic symmetrical game. Sometimes in a Hintikka game, the objectives of the players are incompatible in the sense that the thesis of one is the negation of the thesis of the other. In this type of game, to prove one's own thesis is in effect to refute the opponent's thesis. Therefore, in this basic type of game the two players are directly opposed. Hintikka calls this special type of game a *dispute*.

In short, the Hamblin games and Hintikka games are basically similar in general outline, and both come under the general umbrella of Aristotle's conception of dialectic. There are differences of detail between the two approaches. But the main difference concerns the objective of each type of game. According to Hamblin (1970, p.137), "the purpose of the dialogue is the exchange of information among the participants." What precisely constitutes "exchange of information" is not sharply defined by Hamblin. This means that Hamblin games have a certain open-ended quality to them. However, Hamblin's assumption that dialogues should be "information-oriented" (his term, p.137) has definite implications for the design of the

rules of his dialogue-games.

The basic feature of the Hamblin game (H) of special interest here is that an answerer has a no-commitment option. If asked a yes-no question, a player may reply "No commitment' as an allowed alternative to 'yes' or 'no.' If asked 'Why p?', a player may reply 'No commitment p' as an allowed alternative to offering justification for p. This openendedness is quite a good thing when it comes to some of the fallacies. For we have already seen in several of our case studies that an answerer should not always be forced into a position of having to give a direct answer to every question in a reasonable dialogue.

The Hintikka conception of dialogue is much less open than the Hamblin game (H). In the Hintikka game, the 'No commitment' response is not fully available to an answerer — indeed, the answerer may be forced by the questioner to commit himself either to the presupposition of a question or the negation of the presupposition. This convention certainly speeds the game along, but it gives the questioner a good deal of power, and thereby makes the answerer relatively powerless in the game.

In a Hintikka game, an answerer may refuse to answer a question. But if he refuses, the negation of the presupposition of the question is immediately added to his commitment-store. For example, if an answerer refuses to answer the question 'Who lives in that house?,' he immediately becomes committed to the proposition 'Nobody lives in that house.' Or if he refuses to answer the question, 'Is this zebra black or white?,' he becomes committed to the proposition, 'This zebra is neither black nor white.' So the questioner can press forward with aggressive questioning in this sort of game and get some revealing answers.

The other significant feature of the Hintikka game is that win-loss objectives for the players are precisely defined. The player wins who first deduces his thesis, by means of the logical rules, from the other player's concessions. This means that the Hintikka games are not open-ended in their ultimate objective in the way that the Hamblin games are.

A third approach to logical games of dialogue is that of the Erlangen School, based on the insights of Paul Lorenzen, and including the collaborations of his colleagues and students Kuno Lorenz, Wilhelm Kamlah, and Oswald Schwemmer. The rules for Lorenzen dialogues are even more tightly defined than for Hintikka dialogues. This tightness is achieved by making the dialogue-rules isomorphic with rules for a formal deductive logic. In effect, the rules for deductive logic, e.g. propositional calculus, are

re-interpreted as dialogue rules for the players' moves in a game.

Kamlah and Lorenzen (1967) presume that in a game of dialogue, the participants have access to a method of verifying simple (elementary) sentences. This checking is carried out by expert and rational participants in the game who are able to carry out the objective process of verification in a correct manner. The process is called "interpersonal verification," and it means that in a Lorenzen game of dialogue, the truth-value of the simple sentences can, at least in principle, be established in the game. However, the point of the game is for the players to determine how the complex sentences are built up from these simple sentences by means of rules for the logical constants.

Each of the logical constants for propositional calculus is defined dialogically as follows in Lorenzen (1969). If a player (the proponent) asserts the conjunction $A \wedge B$, then the other player (the opponent) wins if he successfully attacks either A or B. The proponent wins only if he successfully defends the attacks on both A and B. If the proponent asserts the disjunction $A \vee B$, then the opponent must mount two successful attacks in order to win. He must attack both A and B. However, if the proponent successfully defends either A or B, then he wins.

Now suppose the proponent asserts a conditional, $A \rightarrow B$. When the opponent attacks this conditional, he is obliged to assert A. If he fails to successfully defend A against the proponent's attack, he has lost. If he succeeds in defending A however, then he must go on to defend B. If he succeeds in defending B, he wins. Otherwise — if his defence fails — he loses.

Finally, there is the rule for negation. Suppose the proponent asserts $\neg A$. Then if the opponent successfully defends A, he wins. If the opponent is unable to defend A successfully, then the proponent wins.

Given the above four dialogical definitions of the logical constants, two kinds of dialogue-games are outlined by Lorenzen. In a *material dialogue-game*, winning depends on successfully defending an elementary (simple) sentence, in accord with the following three dialogue rules called *conventions* by Kamlah and Lorenzen. First, the proponent starts by asserting a thesis. Second, the proponent wins if he successfully defends an attacked elementary sentence, or if the opponent fails to successfully defend an attacked elementary statement. Third, at each move, each player must either attack a previous move of the other player, or defend against a previous move of the other player. In this type of material dialogue-game, the assertion of complex sentences ultimately decomposes into the assertion of

simple statements, according to the rules. Hence the ultimate question of who wins depends on the successful attack or defence of a simple sentence.

By contrast, in a *formal dialogue-game*, the question of who wins does not depend on the simple sentences. In these games, the compound sentences asserted or attacked by the players are tautologies or inconsistencies. This sort of game involves modifications of the three rules of dialogue given above for material dialogue-games. Kamlah and Lorenzen regard the formal dialogue as an abstraction or formalization of the material dialogue.

The Lorenzen games are closer to Hintikka games than to Hamblin games in the respect that there are precisely formulated win-loss rules in the Lorenzen and Hintikka games. Yet in another way, the Lorenzen games are quite different from either of the other two types of dialogue-games. In the Lorenzen games, every move begins with an assertion, then continues in a regulated sequence of attacks and defences. Once the initial move is made, the whole remainder of moves in the game is regulated so that neither player is allowed to make any new assertions — at penalty of losing — until the game is won or lost. By contrast, the Hamblin and Hintikka games allow for the asking of new questions, or the introduction of new statements, at various points in the game.

Moreover, the Hamblin and Hintikka games both involve sequences of question-asking and question-answering moves. The Lorenzen games are much simpler and less open in the sense that they do not really involve the asking of questions by the participants at all. In a Lorenzen dialogue, there are only assertions, and then certain responses to those assertions, as determined by the rules for complex sentences.

We could sum up the main differences in the three approaches as follows. In the Hamblin and Hintikka games, there is a core propositional logic, but surrounding this core, the outer dialogue-rules permit considerable freedom to the players in asking and anwering questions. However, there is less freedom in the Hintikka game, because win-loss rules are exactly formulated. In the Lorenzen games, the whole game is taken up by the propositional logic — that is, by the rules for the complex sentences — so there is no outer structure of the game beyond the three types of dialogue rules. These rules permit little freedom of movement to the players. In the formal dialogue-games, win or loss is exclusively determined by the rules for the logical constants. In the material dialogue-games, win or loss is determined by the truth or falsity of the simple sentences as established by the "rational experts," and by the rules for the logical constants.

2. The Ad Ignorantiam Fallacy

We have seen already that a number of the fallacies relate to the asking and answering of questions. Consequently, one of the first proving grounds for any theory of dialogue, in relation to the fallacies, must be its adequacy in the reasonable management of the process of question asking and answering. Therefore, a good place to start in the theory of dialogue will be for us to ask how each of our three major approaches to dialogue-games regulates the process of questioning.

Let us examine each of the three approaches individually, then turn to comparisons. We start with the Hamblin games.

Without setting up all the elaborations needed for a fully regulated formal dialogue game,[3] it will be enough for our purposes to adopt some elements of a Hamblin (1970) game in order to illustrate some questionable sequences of moves. In this type of game, called by Hamblin a "Why-Because-Game-with-Questions," each player may ask questions of the form 'Why p?' The rule for answering why-questions in the game requires that the answerer either (a) furnish another proposition that implies p by *modus ponens*, e.g. 'q ⊃ p, q, therefore p,' or (b) indicate "no commitment" to p. Such a rule immediately disallows the following type of ploy.

WHITE	BLACK
Why p?	Why]p?

This sort of move in a dialogue-game is quite generally interesting, and in fact models a traditional type of fallacy called the *ad ignorantiam* fallacy. This fallacy is said to occur where an arguer tries to prove some proposition p by arguing from the premiss that p has never been disproven. For example, someone might try to argue that extra-sensory perception must exist because nobody has ever been able to prove that it doesn't exist. In another form, one argues *ad ignorantiam* by attempting to conclude that p is disproven because p is not proved. For example, someone might argue that extra-sensory perception does not exist because nobody has ever been able to prove definitively that it does exist.[4]

According to the dialogical model of this fallacy represented above, the error has to do with a shift in the burden of proof. When White asks "Why p?", the burden of proof is put on Black to furnish proof for p in the form of some proposition that implies p. Black, however, tries to shift the burden of proof off herself and back onto White by responding with a ques-

tion "Why]p?" Clearly the problem with allowing this sort of move in games of dialogue is that it would make it too easy for an answerer to always avoid answering a question.

This points up a general problem about Hamblin games. What do you do with the "skeptic" who, in answer to any question always replies "No commitment." The Hamblin game (H) allows an answerer the freedom of a "No commitment" reply to any question and that, as we saw, could be a good thing. For if the answerer were not allowed some option of this sort, a form of *ad ignorantiam* fallacy could be built into the game. Suppose a questioner asks 'p?' Without the no-commitment option, an answerer would have to reply 'p' or ']p'. But suppose in fact he doesn't have good evidence for knowing whether p is true or not. If forced to commit himself immediately to p or to]p, he is in effect committing a form of the *ad ignorantiam* fallacy. Surely the rules of the game should not be designed to force an answerer to commit a fallacy. Consequently, the availability of the no-commitment option in (H) is generally a good thing as a feature of reasonable dialogue. But a problem results. How do we contend with the answerer who filibusters by always replying 'No commitment' in answer to any question he wishes to avoid?

In a Lorenzen dialogue, this problem can never arise at all, for there is no freedom of asking questions or answering them, at least in the same way allowed in a Hamblin dialogue. Once an assertion is made, it must be defended or the proponent loses. The opponent must attack it, or he loses. The problem of avoiding commitment can never arise in the sequence of moves in a Lorenzen game. However, the problem is avoided at some cost.

According to the negation rule in a Lorenzen game, when the proponent asserts a proposition]p, the opponent can win only by asserting, and then successfully defending p. This means that if the proponent asserts "There are no ghosts," the opponent must assert "There are ghosts" and then prove it. But suppose, in fact, that the opponent has no evidence either to prove or refute the existence of ghosts. Nevertheless, in a Lorenzen game, he must be committed to the assertion "There are ghosts" and prove this assertion. In effect then, he must commit a form of the *ad ignorantiam* fallacy. Of course, the Lorenzen game presupposes that "rational experts" provide evidence for at least the simple propositions in the game. But does that assumption help us here? I do not see how it does.

This type of problem is indicated by the quantifier rule given by Loren-

zen (1969, p.24): if the proponent asserts](∀x)Fx, then, the opponent may assert (∀x)Fx and the proponent will ask him to defend it. If the defence succeeds, the proponent loses. Otherwise, the proponent wins. Lorenzen adds that if the opponent does not know how to defend (∀x)Fx, it is advisable for him not to challenge the original thesis](∀x)Fx. This evidently means that in the Lorenzen game of dialogue, if the opponent does not know whether (∀x)Fx is true or not he can't make any move in the game. If he challenges](∀x)Fx at all, he must prove its negation (∀x)Fx or lose the game.

This solution is the diametrical extreme of Hamblin's. Hamblin's answerer had virtually complete freedom. Lorenzen's challenger really has no freedom. If he can't refute, he'd better not even challenge an assertion or raise the question of whether it might be true. I think neither of these ways of managing *ad ignorantiam* sequences of dialogue is adequate to the study of *ad ignorantiam* as a fallacy or criticism of arguments.

Hintikka's concept of dialogue represents a midpoint between the two extremes of absolute freedom and absolute constraint. According to Hintikka (1979, p.237), if the answerer refuses to answer a question, the presupposition of the question is added to his commitment-store. But we will see, and we have seen, that this approach can lead to problems of its own. It means that the questioner has the power to make the answerer become committed to either the presupposition or its negation of any question that he (the questioner) may choose to ask.

When we come shortly to a discussion of the fallacy of many questions, it will be clearly evident that this approach gives too much power to the questioner. The problem is even evident with simple yes-no questions. The simple yes-no question p? has as its presupposition the tautology p ∨]p. But the negation of that presupposition (in classical logic) is equivalent to the contradiction p ∧]p. Therefore, in a Hintikka game with rules strong enough to yield classical logic, any answerer who refuses to answer any yes-no question immediately becomes committed to a contradiction, and thereby loses the game.

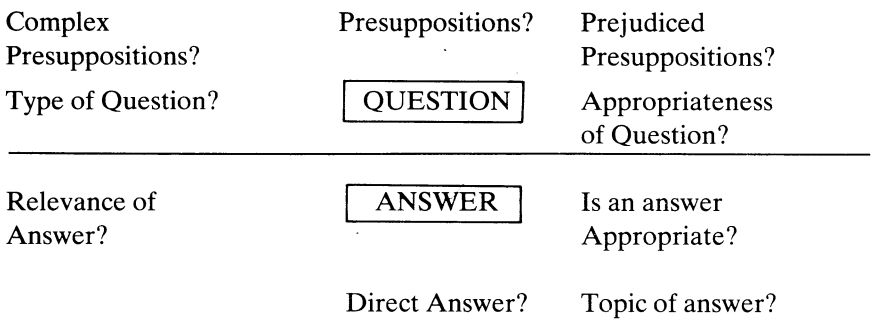
In short, the Hintikka conception of dialogue is the best of three approaches in managing *ad ignorantiam* argumentation, but it still has some severe difficulties as solution by itself. The solution I will propose in this chapter involves accepting Hintikka's general conception of logical dialogue, but modifying it in a certain way. Before going to this new type of

game based on the Hintikka conception however, we must look to some other fallacies that have to do with question-answer dialogue.

3. Fallacies of Question-Asking

Now we have raised the topic of questions, it may be somewhat disconcerting to realize that not all fallacies involve propositions. Sometimes the mere asking of a question can be fallacious, or at least logically questionable. For example, suppose the prosecuting attorney in a criminal trial asks the defendant the question, "What did you use to wipe your fingerprints from the gun?" This question has several presuppositions that the answerer may not want to commit himself to. For example, it has the presupposition that the defendant wiped his fingerprints from the gun. It has the presupposition that the defendant did this wiping at a certain time. It therefore also has the presupposition that the defendant handled the gun, perhaps also the presupposition that the defendant removed these fingerprints for some suspicious or criminal purpose. If the defendant is in fact innocent, and never at any time handled or even saw the alleged weapon, he may be hard pressed to know how to answer or at least try to avoid answering the question. If so, the defendant will probably say something like, "I didn't ever wipe my fingerprints from the gun with anything at any time." However, we should notice that the prosecuting attorney is directing the respondent away from this sort of answer by phrasing the question in such a way that the citing of some particular item (used to remove fingerprints) is required to qualify as a direct answer to the question. If the defendant has never even seen the gun in question, he may feel that the attorney is being somewhat unfairly aggressive in his questioning.

When evaluating a real question-answer segment of dialogue for possible fallacies or criticisms, one needs to evaluate the answer. But first, one must look to analyzing the question. What type of question is it? A simple yes-no question has a safe presupposition. But many other types of questions may have significant presuppositions that should be carefully enumerated at the outset. If a question has several presuppositions, it may be many questions rolled into one. Other factors to be considered are included in the schema below.



There is nothing wrong or fallacious, as such, with a question that has several presuppositions. For example, "Is the man at the back of the room wearing the red sweater and glasses looking at his neighbour's examination paper?" may be a non-fallacious question in some circumstances. It has a conjunction as a presupposition. But that does not, by itself, make the question fallacious.

However, if a question has multiple presuppositions, it is worthwhile being clear that several presuppositions are involved. It may be a good idea to list them. Next, it is worth asking whether any of the presuppositions are prejudiced or unfair. For example, "Are you going to resign your office, in view of your scandalous and illicit conduct in recent weeks?" contains presuppositions that many would-be answerers should not fairly be asked to accept. Whether a presupposition is fair or non-prejudiced is a matter relative to the particular circumstances of the answer. The above question could be fair if "scandalous and illicit conduct" has already been conceded by the answerer. Otherwise, the question may be unfairly aggressive and prejudicial.

The procedure for answering has to be handled with extreme care in relation to questions that have multiple presuppositions. For example, suppose the prosecuting attorney asks the defendant the question, "Did you buy this gun and then use it to shoot the victim fatally?" Let's assume that it's true that the defendant did buy the gun but did not use it to shoot anyone. Then it is difficult for him to straightforwardly answer this question. What he needs to do is divide the question in two parts and say 'yes' to the question concerning whether he bought the gun and 'no' to the question concerning his alleged use of it to shoot someone. In some instances, however, it is clear that the questioner has constructed the question in such a

way as to attempt to allow the answerer no choice in his separation of the presuppositions and thereby wants to trap the answerer into conceding something that may be dangerous to the answerer.

Indeed, there are even certain real situations where the asking of questions is rigidly formulated in such a way that the answerer has no choice but to give a single answer to a multiple question. It is well known for example that bills as "riders" are often tacked onto proposed legislative bills so that the opposition has no choice between two bills, A and B. The proposal is constructed in such a way that the opposition has to vote on propositions A and B altogether. So that it only has the choice of either rejecting both A and B or accepting both A and B. In other words, if the opposition party wants to accept A, a piece of legislation which it likes, it also has to accept B, a piece of legislation that it does not like. This nasty situation then, is similar to that of the answerer of the multiple question.[5]

This is a good time to note that avoiding giving a direct answer to a question is not always unreasonable, much less "fallacious." For if the question is highly prejudicial, the best answer may be to challenge its presuppositions. One may do this by answering the question with another question. Alternatively, one may simply refuse to answer the question at all. Both these kinds of responses may be quite reasonable if the question is not a fair one. Hence the answerer should consider whether an answer is appropriate at all. If it is not, it may be better to criticize or challenge the question itself.

Moreover, one may simply not know the answer. Or one may be able to give an informative response without giving a direct answer, perhaps because certain information is unavailable, or should not be given. Such refusals to give direct answers may, in many instances, be reasonable and in no way fallacious, either as *ad ignorantiam* or *ignoratio elenchi* fallacies.

4. The Fallacy of Many Questions

The most notorious of this group of fallacies of question-asking is the so-called *fallacy of many questions* or *complex question fallacy*. This trickiness is embodied in the famous question, "Have you stopped beating your spouse?" The presumed intent of asking this question is to speciously force the person to whom it is addressed into the position of conceding an unwelcome proposition, no matter which answer is given. In effect, the question permits only two possible simple and direct answers, 'yes' or 'no'. But either answer implies what is presumably unwelcome to the answerer, namely the proposition that he or she has at some time beaten his or her

spouse. If you answer 'yes' to this question, then you have committed yourself to the proposition, 'I have stopped beating my spouse,' which implies that at some time or other you have beaten your spouse. However if you answer 'no' to the question, you are accepting the proposition 'I have not stopped beating my spouse,' which again implies, just like the 'yes' answer, that at some time or other you have beaten your spouse. So the answerer is trapped. No matter which alternative is chosen, yes or no, she is committed to the same unwelcome implication. What may appear to be a genuine choice of alternatives is in reality a trap.

One has to be careful in the analysis of this fallacy, however, to note that it may be a reasonable presumption in many contexts — but it is still only a presumption — that the answerer has not at some time or other beaten his or her spouse. If in fact, the answerer has at some time engaged in spouse-beating and does not mind admitting it, then for that answerer in that situation there is really nothing objectionable or fallacious about the question. The answerer can then say, "Yes, I have stopped" or "No I have not stopped," and the implication of either of these responses is not, we may presume, objectionable.

However, it is for the non-spouse-beater, or at least the person who does not want to acknowledge past occasions of spouse-beating for whom the question poses a difficulty, and against whom the questioner commits sharp practice by the asking of this question. For the innocent non-spouse-beater is trapped no matter which way she answers and cannot see any obvious way clear — at least without avoiding a direct answer to the question — to avoiding the unwelcome concession of having engaged in spouse-beating.

Of course, where the answerer is not forced to give a direct answer, that is a 'yes' or a 'no,' as in most commonplace argumentation, the way to handle the question is obvious. One should simply say in response to the question, "No, I have never beaten my spouse at all. I haven't stopped, nor had I ever started". This way of replying is in effect a rebuttal of the presupposition of the question.

So what is really fallacious about the question?[6] The thing to notice is that the question is fallacious because it is designed in such a way as to call for a 'yes' or a 'no' answer. That is, the answerer who rebuts the presupposition of the question as we just indicated, is failing to give a direct answer to the question. Thus it is because the question is put in the 'yes-no' form, thereby calling for a direct 'yes' or 'no' answer, that the question is objectionably fallacious. Because it is a yes-no question, it appears to be inno-

cent, whereas in fact it is not innocent at all, because if the answerer does directly answer it with a 'yes' or a 'no,' she commits herself to some unwelcome, and in this case, incriminating proposition.

According to Belnap (1963, p.127), a question is called *safe* if its presupposition is logically necessary. For example, the yes-no question 'Is snow white?' has as its presupposition the proposition 'Either snow is white or snow is not white.' This proposition has the property of being a tautology in classical PC. That is, no matter what value the proposition "Snow is white' has, whether it is true or false, the whole proposition, 'Snow is white or snow is not white' has to be true. It is always true regardless of whether its component proposition is true or false. Therefore the yes-no question 'Is snow white or not?' is safe in Belnap's sense.

According to Belnap all yes-no questions have this property of being safe. That is, the presupposition of a yes-no question is logically necessary. It is a tautology and is therefore presumably harmless. However, the spouse-beating question, although it has the superficial form of a yes-no question, and therefore is meant to appear safe, is by no means safe at all. In fact, it is a very risky question. It has a presupposition that is not only not logically necessary, it is in fact quite unwelcome and even potentially incriminating to the answerer. Hence we can see that what is really fallacious about the spouse-beating question is that because of its superficial logical form as a yes-no question, it has the appearance of being safe. But if we analyze it more deeply and look at its underlying structure, it is not a safe question at all. Thus the fallaciousness of the spouse-beating question, in at least one important respect, is that it masquerades as something that it is not. It masquerades as safe when it is in fact, risky.

Another fallacious aspect of the spouse-beating question has to do with its being a loaded question. We presume that the answerer to the spouse-beating question does not want to assent to or commit herself to the proposition that she has at some time or other engaged in spouse-beating. Hence this proposition may be said to be unwelcome to the answerer in the sense that, in a given context of a game of dialogue, we may presume that that answerer would not commit herself to the presupposition. However, not only does the spouse-beating question have an unwelcome presupposition, but what we mean by saying that it is loaded is that no matter which way she answers the question, the answerer must thereby become committed to that presupposition. The trickiness of the question then is that it forces the intended victim to accept the unwelcome presupposition, no matter which

direct answer is selected. It is like the wellknown frustrating questions of objective examinations that require the student to give an answer to a given set of alternatives but do not allow the option "none of the above." Not only is the question loaded but all the chambers are loaded.

5. Demanding Direct Answers to Questions

A central problem in the design of formal games of dialogue is to have procedures for the asking of questions that allow the answerer to avoid these different fallacies and presumptions implicit in the asking of a question. That is, fair procedures for the handling of questions and answers must be designed in such a way that the aggressive questioner is not given too much power to unfairly browbeat the answerer and thereby win the game too easily. However, the answerer must nevertheless have to confront questions directly enough so that she is not given so much latitude that she can always indefinitely put off answering the question, and thereby too easily win the game by default.

When one begins the study of fallacies, there is an understandable tendency to criticize any answer that is not a direct answer to a question as a "fallacy of irrelevant answer." This tendency is perhaps understandable, given the advice of textbooks that "irrelevance" is a fallacy. But one must be careful to realize that with many questions, simply offering a direct answer may be very dangerous and misleading, especially if the question is complex or unfair.

One problem is that in realistic dialogues, it is not always possible to define what should reasonably count as a direct answer according to some set of precise rules of a formal game of dialogue. In the games of dialogue we have studied here, questions are restricted to yes-no questions or why-questions. In these two cases, the rules clearly specify exactly what counts as a direct answer. For a yes-no question, a direct answer is 'yes' or 'no.' For a why-question, a direct answer is to provide some set of premisses that implies the proposition queried by the logical rules of the game. But take a question like "Where is my red shirt?" posed to my wife. She might answer "In the house" or "In the bedroom" or "In the dresser" or "In your dresser by the bed" or "In the top drawer of your dresser by the bed" or "In the left side of the top drawer of your dresser by the bed, under the socks". Which answer should count as the direct answer? Clearly, it depends on the circumstances, knowledge and needs of the particular questioner and the answerer in this particular situation. Hence, beyond the simple yes-no and

why-questions of the formal games of dialogue, defining 'direct answer' is a substantive problem for the logical pragmatics of question-answering.

The problem here is similar to that of the design of any other type of game. One does not want to weight the rules of the game too heavily towards one side or the other so that it will be made too easy for the one side to win without the use of creative or interesting strategies. We saw in our sample parliamentary disputation that any answer to a question posed in debate, other than a direct one, may be called "irrelevant" by an opponent. However, the problem is to know precisely what is meant here by an irrelevant answer to a question for in fact, as we saw with the spouse-beating question and its mates, it may be quite reasonable sometimes to avoid giving a direct answer to a question. In some instances, to give a direct answer may be to fall into the questioner's fallacious trap, and in fact many questions are so aggressively loaded that it would scarcely be fair in logical games of dialogue to always require a participant to give a direct answer to any question. On the other hand, giving a totally inappropriate or wildly irrelevant answer to a reasonable question is something that the rules of dialectic should discourage and perhaps even in many cases ban. So where does one draw the line?

Part of the problem here is that it is hard to know how to precisely define the concept of a presupposition of a question, particularly given that there are several different types of questions. Belnap (1963) calls a whether-question a type of question that poses a number of different alternatives by means of a disjunction. An example would be 'Is she wearing the red dress or the green dress?' Belnap then defines the disjunction of these alternatives as *the presupposition* of the whether-question. And he defines *a presupposition* of the whether-question as any statement implied by any of the disjuncts. Each of the disjuncts is then called by Belnap a *direct answer*. Thus, the statement 'She is wearing the red dress' is a direct answer to the question, 'Is she wearing the red dress or the green dress?'

According to the approach Hintikka (1976 and 1979), a question is essentially a request for information. For example, according to Hintikka, the question, 'What is the colour of Bob's hair?' is equivalent to the request, 'Bring it about that I know the colour of Bob's hair.' The information contained in the question, for example in this case, the proposition, 'I know the colour of Bob's hair,' is called the *desideratum* of the question by Hintikka. Then *the presupposition* is defined as the existence of the thing contained within the proposition of the *desideratum*. In this case, the pre-

supposition of the question would be 'There is something such that it is the colour of Max's hair.' According to Hintikka this is only one perhaps somewhat artificial way of defining the notion of the presupposition of a question, but he thinks that it is a good place to start. For Hintikka a direct answer to a question is one that satisfies the *desideratum* of the question. In the present example, a direct answer to the question would be 'The colour of Bob's hair is red.'

One possible problem with this way of defining 'direct answer' is that what qualifies as a direct answer appears to be dependent on the state of knowledge of the questioner. For example, supposing the answerer replies, "Bob's hair is the same colour as Fred's." Would this constitute a direct answer? Well, if the questioner happens to know what colour Fred's hair is, then the *desideratum* that he know the colour of Max's hair would presumably be satisfied by the answer, and therefore by Hintikka's criterion, the answer would qualify as direct. However, in other contexts the questioner might not feel that this answer would fairly constitute a direct answer to the question. Thus perhaps what counts as a direct answer should be defined relative specifically to a particular game of dialogue, where relevance is an issue in that game of dialogue. Managing procedures for irrelevant answers may become quite difficult to construct however, if we allow other types of question of a more complex sort, like 'What is the colour of Bob's hair?' or 'Why is chalk white?' Defining the concept of a presupposition, a direct answer and a relevant answer for these types of questions are substantive problems of the logic of questions and clearly require much further study.

6. Misconception of Refutation

The term 'fallacy of irrelevance' is applied to many other kinds of failures of correct argument than lack of subject-matter overlap of component propositions. Sometimes an argument is said to be irrelevant even if all the propositions in it are connected by subject-matter relatedness. One such fallacy occurs where a participant in argument proves some proposition other than the one he is supposed to prove. True he has proved something but if he has not proved the proposition that he was supposed to, namely his thesis, he may have only appeared to succeed in his proof, and may perhaps have committed a fallacy. The proper name for this type of fallacy is *ignoratio elenchi*, as Aristotle called it, or 'ignoring the *elenchus*.' In Aristotle's dialectic the *elenchus* is the proposition that you are supposed to prove, so ignoring the *elenchus* is proving some proposition other than the

conclusion required to be proven. Such a failure of argument may occur where the proposition you actually prove is similar to, or related to, the proposition you are supposed to prove, but not identical with it, and far enough removed that the proof fails.

In ordinary conversation it is not too difficult to appreciate how this kind of failure of argument functions. For example, suppose that in debate a participant is supposed to prove the conditional proposition, 'If gun control were brought in as legislation in the State of New York, then there would be less crime in the State of New York.' Then suppose that participant produces a valid argument with the conclusion that gun control legislation undoubtedly will be brought in for the State of New York in the near future. And suppose she then appears satisfied, as though the argument is won. What has gone wrong here, as Alfred Sidgwick (1884) once put it, is that the journey has been safely performed but the party has gotten on the wrong train. That is, the argument for the conclusion that gun control will be brought in, may be quite a strong argument, even deductively valid. But the arguer has selected the wrong conclusion. She was supposed to prove the conditional proposition, 'If gun control is brought in to legislation in New York, then there will be less crime in New York.' So if you look at what she was supposed to prove in relation to what she did prove, her argument is deductively invalid. If you look at the argument as a whole, it has the form $A \supset (A \supset B)$. Now notice that the problem here is not that of failure of subject matter overlap. A is indeed related to B, and A is related to $A \supset B$. That is not the problem. Nevertheless, one might still commonly say in conversation that the failure of the argument is one of irrelevance. The conclusion actually established is "irrelevant" to the conclusion supposed to be established, at least in the sense that the former does not establish the latter by valid argument. Of course, strictly speaking, one might prefer to say that this is not so much "irrelevance" as just plain invalidity of argument.

But perhaps we should not quibble over much about precisely what such a failure should be called. The best term for it is Aristotle's and the usual translation of this term is the one we have used here, *misconception of refutation*. The arguer appears to have refuted her opponent, but has failed, because the proposition actually proven is really not the thesis to be proved, nor in a dispute then, would it be the negation of the adversary's proposition to be proven. Therefore, the move would constitute a failure of refutation of that adversary's thesis.

The difficulty with giving a precise analysis of this particular fallacy comes in when we attempt to define the term 'other than' in the phrase, 'prove something other than the conclusion to be proved'. The problem is that proof in a dialectical game is not always a one-step affair. In order to be able to move towards proving her thesis, a participant often needs to advance more than one single step of argument. She may need to extract several commitments from her opponent that will eventually enable her to link up these propositions into a sequence that will move toward her ultimate conclusion. In order to do this she must be given a certain degree of leeway, since it is not always possible to prove something to the opponent's satisfaction in one step, or even a very small series of steps. That is indeed why a game of dialectic allows for several moves, thereby giving each arguer enough scope to develop a strategy of argumentation. However, at a global level it is reasonable to require that the sequence of proof should tend to move towards the ultimate conclusion that the arguer is supposed to prove. At the local level of one single argument or a few arguments however, it may be difficult to determine whether a given argument is really tending towards the ultimate conclusion that should be proven. Therefore determining misconception of refutation at the local level is often very difficult for lack of adequate evidence. Once the game is played out to the end of course, it is much easier to determine whether a given sequence of moves can fairly be said to constitute an *ignoratio elenchi*.

The problem remains however that many actual disputes about *ignoratio elenchi* in conversation occur at the local level. At this level it may be hard to say how closely related to the conclusion the given proposition has to be in order to be said to be relevant.

A well-known example of *ignoratio elenchi* is given by Copi (1972, p.86). In this example the prosecution argues at length that murder is a horrible crime instead of attempting to prove that the defendant is guilty of the crime of murder. As Copi notes, the attorney may even succeed in proving the conclusion that murder is a horrible crime, but the misconception of refutation comes in if the attorney expects us to infer from his argument about the horribleness of murder that the defendant is guilty of that crime. The conclusion he is supposed to be proving does not follow from the one he in fact proves. However, in analyzing Copi's example, we have to be extremely careful. If in fact the attorney has finished his case, and if in fact his argument does not prove its conclusion or would even be a very weak argument to establish the guilt of the defendant, then his conclusion, pre-

sumably the one that he did establish — that murder is a horrible crime — would indeed constitute a failure, and hence possibly a misconception of refutation.

We would not want to rule out altogether, however, the possibility that the premiss, 'Murder is a horrible crime' could conceivably have played some legitimate role in the attorney's strategy to construct proofs for his conclusion that the defendant is guilty. For example, suppose that part of the evidence introduced by the attorney was the bizarre behaviour of the defendant after the time of the alleged crime. The attorney might then argue that this behaviour was consistent with the commission of a horrible crime. One could then perhaps see how the premiss 'Murder is a horrible crime' might legitimately fit into his global argument as part of a strategy for the conclusion he is supposed to prove, namely that the defendant is guilty of the crime of murder. In this type of case, the allegation of *ignoratio elenchi* might be considerably weaker or even altogether unjustified. So a lot depends on the overall network of the attorney's argumentation. Once it is finished, we can sit back and more adequately review the extent to which various premisses in it did or did not play some role in his argument for the ultimate conclusion that he was supposed to prove.

7. Case Studies of Political Debates

The deployment of the fallacy of many questions is not uncommon in political debates. It may be a sad comment on the level of parliamentary debate in many countries of the world to comment on the frequency of this form of attack, but it can at least be appreciated why resort to this fallacious strategy of debate is highly tempting to parliamentarians. The basic purpose of parliamentary debate, within its underlying structure as an adversarial process, is to attack the position of the opposing party. Indeed, some would claim that the pursuit of this objective permits the use of any move in argument, fallacious or not, provided it undermines the opposition's position. At any rate, some advocates of strong Darwinism of argument in political debate would allow such moves, provided only they follow the parliamentary rules of order enforced by the speaker in a given assembly.

Whether this strong form of Darwinism is justifiably the right model of argument for political debate may be questioned. However, it is certainly true that the main function of political debate is for each party to attempt to secure the triumph of its own collective position over the opposed positions of its adversaries. Given this basic objective, every move in argument

should be directed towards attacking an opponent's position, his set of accepted premisses or commitments. To this extent at least, the basic objective of political argument is dialectical and adversarial in nature.

It follows from this objective that basic strategy in political debate involves the posing of alternatives so that no matter which way the opponent's position is interpreted or directed, it comes out as a loser in the debate. The fallacy of many questions is a move of this sort. It poses a question that is ostensibly safe. That is, the question has the surface form of yes-no question — its presupposition is of the form of a tautology, $p \vee \rceil p$. However, beneath the surface the question is force-loaded. That is, no matter which alternative is chosen by the answerer, he accepts some commitment that is prejudicial to his own case. So deployment of a many-questions fallacy is precisely the sort of move that seems to be dictated by the principles of strategy appropriate to the objective of political debate. It forces the answerer to a losing position in the game of dialogue.

Unfortunately for those who deploy this strategy however, experienced political debaters are rarely taken in by it, and customarily deflect the question by challenging one or more of its presuppositions, as any experienced politician knows.

The following illustration of the use of a complex question in political debate is quite a good one, because the question itself is quite complex. Not only that, the question is such an aggressive attack on the answerer's position that it combines elements of the straw man fallacy and the *ad hominem* fallacy within the attack as well. The topic of this particular dialogue, taken from *Hansard* (*Canada: House of Commons Debates*, vol. 127, no.47, March 12, 1984, p.1994), was government expenditure of funds.[7] It arose in connection with a statement attributed to the minister of justice of the Liberal Party (then in power). The question was put by Mr. Ray Hnatyshyn, and answered for the Liberal Party by Mr. Marc Lalonde, then minister of finance.

> *Hon. Ray Hnatyshyn* (*Saskatoon West*): Mr. Speaker, my supplementary is directed to the Minister of Finance who, I am sure, had the opportunity of watching *Canada AM* when the Minister of Justice was interviewed by Pamela Wallen this morning. He indicated that he was not in favour of a policy of the present Government which solves problems by throwing money at them. He indicated that we cannot continue to go on that way. I ask the Minister of Finance whether he accepts that point of view and that criticism of his Government from a Cabinet colleague? Or, if he does not agree with that statement, does he think it would be more appropriate, if

these Ministers are going to be diverging from Government policy, that they should do the honourable thing and resign from their portfolios while they are seeking the leadership of the Liberal Party?

Hon. Marc Lalonde (Minister of Finance): Mr. Speaker, I am very sorry, I do not watch *Canada AM* even when I appear on it.

Mr. Epp: I don't blame you.

Some Hon. Members: Oh, oh!

Mr. Lalonde: I have to tell my hon. friend that I fail to understand how he would be scandalized by such a statement. I made it myself many times in a lot of areas. The solution to a problem is not throwing money at it.

Mr. Mc Dermid: Why do you keep doing it?

Mr. Lalonde: This is the line we have taken — pursuing a responsible fiscal and monetary policy, and also, however, showing compassion for people in need. This has been and will continue to be the policy of this Government, contrary to that of the Conservative Party who have singled out the old, the sick, and the poor, as their targets. And women, as we have discovered recently.

Some Hon. Members: Oh, oh!

Mr. Hnatyshyn reports that he heard the Liberal minister of finance say, on a radio program, that he was not in favour of the present government policy of "throwing money at problems." Already in advancing this accusation, Mr. Hnatyshyn could be questioned concerning whether the allegation is a form of straw man criticism. For it is dubious whether his report of the alleged statement by this minister fairly represents the Liberal Party's position or the government's policy. Expressed in such prejudicial terms, it is highly unlikely that such a description fairly represents the Liberal position, and Mr. Lalonde's reply confirms these doubts. Even so, now presupposing this statement that the government has a position of "throwing money at problems," Mr. Hnatyshyn's yes-no question first poses the alternative of whether Mr. Lalonde agrees with the position. Then he offers the remaining alternative: if Mr. Lalonde does not agree with the position, when is he going to resign?

The yes-no question offers two alternatives. First, if the answerer agrees to the "government position" of "throwing money at problems" then of course he is guilty of irresponsible financial management and of supporting an indefensible position. But on the other hand, if he disagrees with his (alleged) own party position, then he is inconsistent on the grounds of

divergency from his own government policy. This second prong of the yes-no question is a form of circumstantial *ad hominem* attack. The allegation is that the answerer's position is inconsistent.

Mr. Lalonde's reply is, of course, to rebut the presumption of the question by saying that he has claimed many times that the solution to a problem is not throwing money at it. He disclaims knowledge of the statement on the program by the minister of justice. Finally, he rebuts the prejudicial presumption of the question even more positively by asserting that the policy of the Liberal Party is described as "responsible fiscal policy" and "showing compassion for people in need." This description is, of course, an oppositely prejudicial account of the Liberal position to the negative description presumed by Mr. Hnatyshyn's question.

The dialogue has achieved nothing by way of clarifying the position of either party on the issue under dispute. So Mr. Hnatyshyn's attack, based on a report of someone's statement poorly documented in specifics of phrasing, comes to nought.

Mr. Lalonde failed to give a direct answer to Mr. Hnatyshyn's question. However, that is no fault of his reply in this instance because the question itself was fallacious. Mr. Lalonde's rebuttal of the presumption of the question appears to be a reasonable reply. In fact, we might say that, in the circumstances, it is a proper sort of reply to the question.

Another very interesting example of misconception of refutation occurs in the following case study of parliamentary debate from the *House of Commons Debates of Canada*, Volume 124, no.270 (First Session, 32nd Parliament, December 9, 1981, page 13906).

In this debate Mr. Friesen, the first speaker, raises a point of order concerning a rule in *Beauchesne* (the rule book for the House of Commons Debates in Canada). The rule stated in *Beauchesne* is that a member of Parliament must address the House orally and not read from a written, previously prepared speech. This does not mean that the member must not use notes, nor does it mean that he must give a perfectly original speech. He is quite free to memorize and then present orally any material that he wishes. The rule simply requests members not to read off prepared notes from a written page, in a monotonous lecture. Rather, the speaker is supposed to keep his eyes on the persons he is addressing and at least give the appearance of speaking rather than simply reading from notes.

Mr. Blaker, the Acting Speaker, then wonders whether all the members would really like this rule to be applied strictly to everyone. No doubt

many of the members do tend to take a good deal of their speaking material from prepared notes.

Then at that point in the debate, another member, Mr. Taylor, rises on a point of order and accuses Mr. Blaker of reading what somebody else wrote! That is, Mr. Taylor is accusing Mr. Blaker of reading somebody else's speech, in effect, accusing him of plagiarism. He then adds that this is contrary to the rule and suggests that he close his notes and then try to give the speech.

In responding, Mr. Blaker points out quite correctly, that Mr. Taylor's point is, as he puts it, entirely irrelevant, and that nothing the rule says is contrary to a member reading the collective works of Shakespeare word for word. The issue is not the identity of the author that the member is referring to, but whether he is *reading* a speech, not whether that speech has been written by himself or someone else. Here then is the full text of the debate.

> *Mr. Friesen*: On a point of order, Mr. Speaker, Beauchesne at page 101, rule 309, reads as follows:
>
> *It is a rule in both Houses of Parliament that a Member must address the House orally, and not read from a written, previously prepared speech.*
>
> I do not mind if the hon. member has copious notes. We know he can read. We would like to hear an extemporaneous speech from him rather than a parliamentary secretary's or bureaucrat's speech.
>
> *The Acting Speaker* (*Mr. Blaker*): This particular occupant of the Chair has had occasion to deal with this point of order before. The hon. member for Surrey, White Rock, North Delta (Mr. Friesen) is perfectly correct, members are encouraged to avoid reading speeches verbatim. The difficulty that the Chair faces whether it be myself or some other occupant, is that if the House wishes to instruct the Chair that this rule is to be followed, the Chair will instantly and with great pleasure do so, but it will apply equally to all members of the House at all times.
>
> I would recommend that the hon. member give some thought to whether indeed that is the rule he would like applied to members on all sides. If that is the case, I am sure the Chair will be notified of that. Aside from being astounded and delighted, the Chair would be pleased to put that into effect immediately. I suggest that some consideration be given in caucus to that matter before the hon. member asks me to make a decision. If the hon. member wants the rules applied, I will apply them.
>
> *Mr. Taylor*: I rise on the point of order, Mr. Speaker. The hon. member is simply reading what somebody else wrote. That is completely contrary to

this rule. I ask him to close his notes and give his speech. He cannot do it. He is reading word for word. Somebody else wrote that speech and he knows it. Also, they vote for closure and then try to waste our time. Why did you vote for closure you bunch of hypocrites?

Some hon. Members: Oh, oh!

The Acting Speaker (*Mr. Blaker*): Order, please. The point is entirely irrelevant. If the hon. member wants to read the collected works of Shakespeare word for word ....

Mr. Taylor: Shakespeare didn't write that trash!

Some hon. Members: Hear, hear!

The Acting Speaker (*Mr. Blaker*): The point would still remain that the issue is not the author of what an hon. member may refer to but rather whether or not he is reading a speech. I can add no more to what I have already said to the earlier members who rose on the same point of order.

Mr. Taylor's objection here is a misconception of refutation. What he should have objected to was the member's reading the speech instead of addressing the House orally. But instead he objected on the issue that the member who read the speech was not the author of the speech. This objection, although it may be subject-matter related to what the rule forbids, is nevertheless quite a distinct proposition. What Mr. Taylor should have objected to was that the opposition member was not addressing the House orally and not raised the issue of whether the member had in fact himself, written this previously prepared speech or not. Thus, Mr. Blaker, in his reply to Mr. Taylor's objection, quite correctly uses the word "irrelevant" in his rebuttal that Mr. Taylor's point is "entirely irrelevant." But evidently what is meant here by 'irrelevant' is that a misconception of refutation in Aristotle's sense has taken place. Mr. Taylor's objection is not entirely irrelevant to the issue that he should be addressing himself to in the sense of being entirely subject-matter disjoint. His objection does indeed share some subject-matters with the statement he is supposed to be arguing about. His attempted refutation is relevant (related to the issue). But it is still a misconceived refutation and therefore "irrelevant" in the Aristotelian sense.

Part of the problem of this particular debate appears to be related to the fallacy of equivocation. For there appears to be a certain ambiguity in how the phrase "reading a prepared speech" may be taken. The other problem is that of defining "relevance" in terms appropriate to the particular

context of argument. We have already seen that this problem is pervasive in political debates because the precise objectives of such free-for-all adversarial contests are very hard to pin down. No doubt the participants themselves could get into a lot of trouble if they tried to decide what should constitute "relevance" as they see it.

Let us conclude by summing up the main problems we have found in attempting to apply any model of reasonable dialogue to realistic debates and fallacies.

Even with simple yes-no questions only allowed in dialogue, we can get into a lot of trouble. There remains the problem of determining when a 'No commitment' answer is reasonable or permissible. Moreover, even the notorious spouse-beating question has the form of a yes-no question! Yet if one directly answers this question, one is undone. In this case, the question really is fallacious. So we have already got quite difficult problems to solve in connection with the yes-no and why-questions of games of dialogue. Defining 'direct answer' for other more complicated or richer types of questions is a more advanced problem.

What this means for the evaluator of dialogue is that one should be careful to realize that ruling on what should constitute a "direct answer" to a real question may require a good deal of judgement of the particular circumstances of the dialogue, the questioner, and the answerer. To orient this type of inquiry however, it is always good to begin with a consideration of the question-answer sequence as a regulated game of dialogue. We need to ask: what is the purpose or objective of this particular game of dialogue? We need to at least try to formulate what could be analogous to the win-loss rules of the game. In other words, it is a good idea to think of the dialogue being analyzed as an instance of one of the models of games of dialogues we have studied. In many cases, this task is not easy, and requires a good deal of judgement and empirical information. For example, suppose one is attempting to analyze a parliamentary debate, to see if an answer to a member's question should be reasonably judged as relevant. One needs to ask: what is the objective of parliamentary debate, or at least, of this particular debate? This question may be somewhat like an essay topic in political science! But it is, at any rate, worth formulating some general statement of the objectives of the dialogue in order to frame standards for the reasonableness of what should count as a direct answer to a question in the course of the dialogue.

Many of the same kinds of problems are implicit in defining the con-

cept of presupposition of a question. With yes-no questions and whether-questions, the concept of presupposition can be clearly defined in a relatively noncontroversial way. However, with questions not of these forms, judgement may be required to reach agreement on what should fairly count as the presuppositions of a particular question.

Finally, any theory of dialogue that hopes to be applicable to the fallacies should be able to contend with the *ad ignorantiam* fallacy in the management of question-asking. To contend with all these various problems of dialogue, we turn to a new kind of game of dialogue, different from any of the theories so far advanced.

8. A Game with Dark-Side Commitments

If dialectic is to be made a model of argument best suited to its pragmatic role as a method of argument and fallacy analysis, some improvements could be suggested. According to Hamblin, games of dialogue are "information-oriented," and the purpose of the game is for the participants to exchange information. Hamblin does not give specific rules for telling us when this objective has been achieved. What seems lacking is a precise formulation of what constitutes "win" or "loss" of the game.

Hintikka's conception of dialectic is quite precise in this regard. The player wins who first accomplishes his objective of deducing his thesis, by the inference-rules of the game, from his opponent's concessions. But one point where Hintikka dialectic could be queried as a model for the fallacies is the rule for answering questions. According to Hintikka (1979) a player may take the option of not committing himself one way or the other in answer to a "yes-no" question. But if he does so, the negation of the presupposition of the question is added to his list of commitments. This would mean, for example, that failure to answer the spouse-beating question results in automatic commitment to the proposition, 'There is no time at which I have stopped beating my spouse.' Is this a best solution or not? It depends on whether this reply exonerates the questioner or commits him(her) to still continuing with the practice of spouse-beating.

Because of the need to study different varieties of dialectical structures, I have proposed two types of innovations in Walton (1983). First, we may distinguish between two compartments of a player's commitment-store — his "light-side" commitments, known to him and the other player, and his "dark-side" commitments, not known to any of the players. However dark-side commitments can be guessed or inferred with plausibility, and

therefore may play some part in a player's strategy. The dark-side position of a player is a definite set of propositions, written on a slate or piece of paper, but the players do not know themselves what each player's dark-side set is. As the game proceeds, however, the dark-side propositions begin to come over to the light side. How does this take place?

If a questioner replies 'No commitment p' to a 'yes-no' question, but in fact p is in his dark-side commitment-store, then p is transferred over to the light side. In an instance like this, where the player is committed to p, but at the same time has replied 'No commitment p' we say that his position is *ambivalent*. Any ambivalent position must be challenged by the other players, and the ambivalence must be resolved or the ambivalent player loses the game. Hence in these new games of dialectic, a player is "gently forced" to make commitments in answer to questions. But he is not so strongly forced that he must accept some proposition that isn't really part of his position or consistent with his position as far as he knows.

This innovation is an exciting one, for as we have seen with many of the fallacies, an arguer's position is most often dimly known by himself or his critics, and only begins to become articulated through the course of the argument itself. By this structure, dialectic can be a dynamic and information-oriented process of argument that can handle realistic situations of disputation and criticism where "missing premisses" need to be filled in by fair criticism.

Hence this new model of dialogue is especially applicable to the problem of enthymemes and to the problem of fairly adjudicating *ad hominem* disputes. However, we reserve the study of these problems for later chapters. Our main concern of the moment is the management of reasonable procedures for question-asking in dialogue. This new game of dialogue starts at a simple level of discussion by only allowing yes-no questions. However, in later chapters we will add more complex versions that also include why-questions.

The following game of dialogue has the special feature of having the commitment-sets of each player divided into two partitions. One side of the commitment-set is on full view to both players at all times (the light side). The other side, called the *dark side*, is a set of propositions contained in the player's slate of commitments, but not in view of either player.[8] The dark side set of propositions is a set that definitely exists, but neither player can see it.

Another distinctive feature of this particular game, which we will call

the game ABV, is that only one kind of question-move is permitted. The players may ask only yes-no questions. They may not ask other kinds of questions. In the B-series of games, the players can ask only why-questions. In the C-series of games, the players can ask both kinds of questions.

The purpose of each player in an ABV game is to prove his own thesis as the conclusion of a valid argument from premisses that are commitments of the other player. Each player has a proposition designated as his *thesis* (or *conclusion*) established at the outset of play. To win, each player must prove *his* thesis from the *other's* commitments. The commitments represent the propositions that a player accepts, either before the game begins or during the course of play. A main function of the rules is to define how such commitments are incurred at each move.

There are two players, called White and Black. The game may be defined as a set of moves. A *move* is defined as an ordered pair composed of a locution and a player. Where L is the set of locutions and P the set of players, the game of dialogue may be defined as $(L \times P)^n$, the sequence of n *locution acts* (*locution events*). Where m_0 is the *first move* — by convention, White always makes the first move — the set of moves, m_0, m_1, ..., m_n, terminates in the *last move* m_n. At any move m_k ($m_n > m_k \geq m_0$) there will be a *next move* in the game.

A game of dialogue is defined as a triple <L, P, K> where K is a set of rules that defines the *legal dialogues* (set of permissible moves) for that game. For each particular game, there must be a set of *locution rules*, a set of *dialogue rules*, a set of *commitment rules*, and a set of *win-loss rules* (*strategic rules*). The locution rules define the locutions permitted as admissible moves. The dialogue rules define the permissible response (next move) for any move. The commitment rules define the alteration of commitments consequent upon each move. Each player has a *commitment-set*, a set of propositions that he agrees to accept at the outset of the game. It may be an empty set. The win-loss rules define which sequences of moves count as *win*, *loss*, or *draw* for each player. In a *zero-sum game*, one player wins if and only if the other loses. There will also be a set of *logical rules* defining what counts as a logical consequence of any set of propositions.

The Game ABV

Location Rules

(L1) *Statements*: Propositional variables, A, B, C, ..., are permissible locutions, and truth-functional compounds of propositional variables.

(L2) *Withdrawals*: 'No commitment A' is the locution for withdrawal.

(L3) *Questions*: The question 'A?' asks, 'Is it the case that A is true?'

(L4) *Argument Queries*: The query 'A_1, A_2, ..., A_n, therefore B?' asks 'Do you accept B on the premisses A_1, A_2, ..., A_n?'

Dialogue Rules

(D1) White moves first (at m_0) and asks a question.

(D2) A question 'A?' asked by one player at any move m_k must be followed by the other player at the next move m_{k+1} making exactly one of the following three types of moves: (i) 'Statement A', (ii) 'Statement ¬A', (iii) 'No commitment A'.

(D3) When one player (the responder) at m_{k+1} responds via (D2) to a question asked by the other player at m_k, then at m_{k+2} the responder must ask a question.

Commitment Rules

(C1) After a player makes a statement A, it is included in his commitment-store.

(C2) After a player withdraws a statement A, it is deleted from his commitment-store.

(C3) If a player makes an argument query 'A_1, A_2, ..., A_n therefore B?' and all the statements A_1, A_2, ... A_n (for finite n) are in the commitment-set of the player queried, and the argument queried is a substitution instance of a logical rule of the game, then the player queried must reply 'Statement B' in answer to the query.

(C4) When a player answers 'Statement B' in accord with the rule (C3) above, B cannot henceforth be deleted from his commitment-set.

(C5) If a player states 'No commitment A' and A is on the dark side of his commitment-set, then A is immediately transferred to the light side of his commitment-set.

Win-Loss Rules

(W1) Both players agree in advance that the game terminates at m_n for some fixed, finite n.

(W2) A player wins at m_k when the other player makes a statement A at m_k, where A is the first player's thesis.

(W3) If neither player wins by the last move m_n, the game is a draw.

Logical Rules

The set of logical rules can be any set of valid rules for classical propositional calculus, complete or incomplete. However, both players must specify such a set, and record their agreement in advance of play.

This game is similar to the Hamblin game (H) in having Locution Rules, Dialogue Rules and Commitment Rules. It is, however, a special case of a Hintikka game because it has Hintikka-style precisely formulated win-loss rules. It is also dissimilar to (H) in that it lacks why-questions.

ABV is non-cumulative, because a player can, at appropriate junctures, delete commitments by (L2). However, rule (C4) does mean that there is one kind of restriction on retractions. If one player proves by an argument query type of move that the other player must be "logically" committed to some proposition B because it follows from his commitments directly by a logical rule, then that second player cannot subsequently retract his commitment to B. In this way, there is a sort of "partial cumulativeness" inherent in the game ABV. Players clearly cannot retract all their commitments. But except for this one type of instance, they are otherwise free to retract commitments by means of (L2).

Readers of Walton (1984) will observe that ABV is like the game CBV in general outline, except that CBV allows why-questions as well as yes-no questions. Moreover, there are some smaller differences of formulation and detail. For example, the mechanism for argument queries is organized a little differently in CBV. These smaller differences are not meant to be too significant however, and are more meant to be improvements of formulation. In general then, ABV is meant to be a special case of CBV, a simpler game that lacks the why-question feature of CBV. The rules for CBV will be given in the next chapter.

In ABV, the dialogue rules are meant to regulate the pattern of moves made by the players. Each player must take turns asking and answering

questions. First one asks and the other answers. Then at the next move, the former answerer becomes the questioner. In this regard, we could say that the dialogue represents a *symmetrical game*, where the players "exchange roles" at each pair of moves.

In a non-symmetrical game representing a fragment-game of ABV, there could be just one questioner and the other player always has the role of answerer. In this non-symmetrical type of game, the questioner wins if he proves his thesis on the basis of the answerer's commitments in an agreed-upon finite number of moves. Otherwise the answerer wins.

One of the main stumbling blocks to studying the fallacy of many questions and related problems of question-asking was that the purely syntactic or semantic definitions of 'presupposition' did not do justice to the reality that a loaded or prejudicial question in one context might be a reasonable question in another context. For example, if addressed to an acknowledged spouse-beater, the spouse-beating question could be reasonable. In another context, it would be fallacious. However, in ABV we can define a pragmatic notion of 'reasonable presupposition' of a question in the context of a game of dialogue. A presupposition of a question is *reasonable* at some point in a dialogue if at that point the proposition expressed as the presupposition is contained in the light-side or dark-side commitment sets of the player to whom the question is asked.

This definition of reasonable presupposition is, however, a narrow one. A wider definition should include not only propositions a player does accept, but also propositions he can accept without weakening his own position in the argument. This wider definition involves notions of strategy in argument as defined in Walton (1984). We will develop these concepts of strategy in the game CBV in the next chapter. At any rate, for the present, we have developed a new basis for further studies of the practical problems of the management of questions posed in this chapter.

NOTES

1. The word 'dialectic' stems from the ancient Greek term for a discussion by means of question and answer. We use the terms 'game of dialogue' (Hintikka) and 'game of dialectic' (Hamblin) interchangeably. As we use the term 'dialectic' it is not meant to have any connection with its use by Hegel or Marx as a term for a process of historical development.

2. Variants on Hamblin games can be found in Mackenzie (1979) and (1981). A quite different sort of framework for dialectical games is to be found in Rescher (1977).

3. The theoretical structures needed to construct dialectical games are set out by C.L. Hamblin, 'Mathematical Models of Dialogue', *Theoria*, 37, 1971, 130-155.

4. A fuller analysis of the *ad ignorantiam* argument is given in John Woods and Douglas Walton, 'The Fallacy of *Ad Ignorantiam*', *Dialectica*, 32, 1978, 87-99.

5. As Peter Geach pointed out to me however, we should be clear that there need be nothing wrong *per se* with asking a conjunctive question like, "Did you buy the eggs and clean the rug?" It is only in certain dialectical circumstances that multiple questions can go wrong.

6. A fuller analysis of the fallacy of many questions is given in Douglas N. Walton, 'The Fallacy of Many Questions', *Logique et Analyse*, 95-96, 1981, 291-313.

7. I would like to thank Fong Kim Ng for drawing this debate to my attention.

8. This innovation was first suggested in a meeting of the Logic Seminar of Victoria University of Wellington (New Zealand) by Max Cresswell in March, 1983.

CHAPTER 5: ENTHYMEMES

One of the most immediate and serious problems of any attempt to apply logic to real argumentation is that in arguments as they are really stated, so much is left out. If you try to give an analysis of an extended discourse that expresses an argument, the initial problem is that there will be many gaps in the chain of argument, constituted by missing propositions that are plausibly meant to be premisses by the arguer, but that have not been explicitly stated in so many words. The first job of reconstructing any argument is to evaluate the place of missing premisses.

As we saw in chapter 1, an argument that has a missing premiss is, according to tradition, called an enthymeme, or enthymematic argument.

1. The Tradition of Enthymemes

According to traditional logic texts and manuals, and *enthymeme* is an argument with one or more enthymematic premisses. An enthymematic premiss is a premiss not explicitly stated, but tacitly presumed in the argument. The argument, 'All men are mortal, therefore Socrates is mortal,' according to the traditional doctrine of enthymemes, tacitly assumes the additional premiss, 'Socrates is a man'. In this case, when you add the missing premiss, the argument comes out deductively valid in classical first-order logic.

The tradition stems from Aristotle. In *Analytica Priora*, Book II (70a 10), Aristotle defines an enthymeme as a syllogism that starts from a generally approved proposition, e.g. 'The beloved show affection.' In *Rhetorica* (1357a 18), Aristotle writes that an enthymeme is a shortened syllogism — if one of the premisses is a familiar fact, there is no need (for purposes of persuasion) to mention it. The rhetorical persuader, we are told, should avoid reasoning that is too hard to follow because of its length.

The idea seems to be that if an argument is deductively invalid as it stands, but is "fairly close" to a deductively valid argument, then you can "plug the loop-hole" and make it into a valid argument. One problem with this, however, is that there may be different ways to plug the loop-hole. We

could have put in 'Socrates is a man and Plato is a man' and the argument would also be rendered valid by that addition.

The doctrine of enthymemes would seem to suggest the rule: always add the weakest premiss needed to make the argument valid. This will not do, however. The proposition 'Socrates is mortal' is weaker than the proposition 'All men are mortal,' but if the argument given were 'Socrates is a man, therefore Socrates is mortal,' the correct enthymeme would presumably be the latter rather than the former proposition.

It is not easy to say what could be meant by 'weaker than' as a relation here. In classical logic 'Socrates is mortal' implies 'Socrates is mortal or all men are mortal'. But is the second proposition "weaker than" the first? Possibly something like Parry's (1933) notion of analytic implication could be useful.

Even if we would bring to bear a satisfactory account of the 'weaker than' relation, two problems remain. First, the missing premiss wanted may not be the weakest proposition, but rather the "most plausible" one of the various ones that would be sufficient to make the argument valid. For example, the well-known *principle of charity* recommends adding the missing premisses that the arguer most plausibly had in mind from what we know of his position and the context of the argument. But how to select the "most plausible" proposition from the multitude of sufficient candidates available? I don't see any obviously correct general logical procedure for carrying out such a selection.

The standard doctrine of enthymemes, as it is to be found in current logic texts, is reviewed by van Eemeren and Grootendorst (1983, chapter 6). They quote one leading text as stating that the principle of charity governing enthymemes is that one should try to make the argument valid and its premisses true — insofar as this is possible. However, van Eemeren and Grootendorst (p.125) point out that the qualification "insofar as this is possible" is crucial. For sometimes making the argument valid can only be done at the cost of using a premiss that is patently untrue. How one is to apply the principle of charity, therefore, is a matter that is problematic and unclear. In this light, the question of enthymemes should be reconsidered.

Charities have sometimes been criticized as a paternalistic second-best type of solution when one should really help the needy to help themselves. In this light, should we really be asking the enthymematic arguer what he means to say, or co-operatively him to "say it better" rather than just plugging in what we — the critics — think is the most plausible proposition?

Some would call the two approaches of charity and the weakest loop-hole very dangerous from a strictly logical point of view. Strictly speaking, you should *never* assume that your opponent in argument, or one whose argument you are prepared to criticize, has made assumptions that she has not clearly stated.

Philosophers have sometimes warned us of the *enthymematic ploy*: you can always make a good argument from a bad one by filling in *some* missing premisses. But once you start fiddling with your argument, it is — strictly speaking — a different argument. You can try to defend your argument by replying to the discovery of a loop-hole: "Oh, well of course I meant to say that as well." But did you? Simply calling the missing bit an "enthymeme" is too easy a way out to *always* allow. There is danger of logic becoming unstuck here, in a sea of fluctuating premisses.

There is also the danger of making every argument into a valid argument. For example, you can make inductive arguments into deductively valid arguments by adding *ceteris paribus* clauses or closure conditions to the premisses. But this strategy has often seemed specious. You may be really only adding a premiss that can only be applied by using or presupposing some inductive technique. The suspicion is that by rendering the argument deductively valid you have begged and obscured the questions of whether and why it is any good. Could it be that the whole doctrine of enthymemes is pernicious as a part of logic? It seems to make a certain amount of sense to just ask the arguer: "Is this missing premiss what you want to say?" If so, determining enthymemes is a matter of the psychology of belief, or a question of asking for additional information, not a matter of logic. It may be that Aristotle had something like an empirical approach in mind in *Rhetorica* (1357a 20) where he gives the following example of an enthymeme: "... to show that Dorieus has been victor in a contest for which the prize is a crown, it is enough to say 'For he has been victor in the Olympic games,' without adding 'And in the Olympic games the prize is a crown, a fact which everybody knows." Here "what everybody knows" could be cashed out as some empirical *datum*, perhaps. But such an outright empirical approach is not quite fair to the traditional doctrine of enthymemes. For the idea behind the doctrine seemed to be that somebody's argument might be *committed* to some unstated, but clearly necessary and relevant assumption, which should therefore be counted in to the argument, even if disavowed, perhaps when later recognized as open to criticism.

Van Eemeren and Grootendorst (1983, p.141) seem to agree on this

point. They reject the idea that the critic of an argument, when explicitizing unexpressed premisses, must try to select propositions that the speaker actually believes. Apart from the practical difficulties, e.g. in written texts, they believe this approach to be fundamentally mistaken. It is their view that the critic of an argument must try to establish what propositions the arguer is *committed to*, with the assistance of valid argument forms and the context of argumentation.

> The speaker can also be held to statements to which he has committed himself *implicitly*, so that in principle he is also *obliged to defend* such statements. Whether these statements coincide with what the speaker 'actually' thought or subsequently comes to believe is irrelevant (p.141).

The problem then is to get the requisite notion of commitment required to make some sense of this doctrine without (a) giving the defender of the argument complete autonomy to change his argument by filling in the loopholes any way he decides to, during the course of the argument, or (b) giving the critic the paternalistic power to fill them in whenever he wants and however suits his needs for criticism. Possibly (b) is a worse danger than (a) in many cases. So a sensible and useful theory of enthymemes should avoid acquiescing in (b) too heavily, yet without completely giving in to (a). It is a question of justice in what you can fairly or reasonably assume in an argument. This being the case, the framework of logical dialogue-games could be the best place to turn.

2. The Objectives of Dialogue

According to the account of enthymematic arguments given by van Eemeren and Grootendorst (1983, p.141), there are three conditions that must be met by an explicitized, unexpressed premiss: it must be (1) an informative statement that is (2) a commitment of the speaker, and (3) makes the argument valid when added as a premiss. These three conditions are filled in by the listener, according to van Eemeren and Grootendorst, by the principles of Gricean conversation theory. The preparedness of the listener to fill in a missing premiss is an instance of the Gricean principle of co-operation — by contributing to the resolution of the dispute, the listener is acting in a co-operative manner.

However, from the normative point of view of logical dialogue-games outlined in the previous chapter, a somewhat different approach to supplement the perspective of conversation theory could be suggested. We recall

that according to Hamblin, dialogue is information-oriented in the sense that the purpose of the participants should be to exchange information. Hence both the ideas of 'informative statement' and 'commitment of an arguer' are familiar in Hamblin dialogues.

Hamblin (1970) argued that the best way to study fair and unfair moves of argument is to set up dialectical games (systems) that model discussions or dialogues, the natural environment and context of criticisms and fallacies as they have been traditionally conceived. As he sees it, dialectical systems can be pursued descriptively or formally. The descriptive study looks at rules and conventions of real discussions like parliamentary debates or legal cross-examinations. The formal approach involves the construction of simple but precise systems where moves are regulated by rules that can be clearly stated even if they may not necessarily be realistic. These formal systems will then have formal properties that can presumably be compared to interesting sequences of realistic discussions and thereby throw some light on the latter by modelling them.

Hamblin (1971) defines a dialogue as a set of locutions, L, and participants, P. By a *dialogue of length* n, he means a member of the set $(P \times L)^n$ of sequences of n locution-acts. A *locution-act* is a member of the set P X L of participant-locution pairs. Next, a set of rules is added which defines within a dialogue D a set of *legal dialogues* K. A system is a triple (P, L, K). Hamblin's formal constructions are concerned with possible definitions and properties of K.

A Hamblin game of formal dialectic then must involve a set of "players" and "moves" made by these players. A third key ingredient is the *commitment-store* of each player. Commitments are not beliefs of the players, but operate approximately like the real beliefs of an arguer. However, psychology is not the purpose of constructing Hamblin games, and we are advised to think of a commitment-store, strictly speaking, more along the lines of a set of statements written down by each player on a slate that he possesses. As we have seen, the rules of a Hamblin game add to or subtract from the commitment-stores of the players, and how this modification of the stores takes place is the key to modelling the fallacies.

Hamblin considers the requirement that commitment-stores should always be internally consistent (p.257) but rejects it, at least as a universal requirement on dialectical systems because it is an ideal of 'rational man' not always met with (p.263). He is also inclined to reject deductive closure of commitment-stores as a universal requirement, but (p.264) feels that

"certain very immediate consequences" of a commitment may also be commitments. Both requirements are matters of "regulation in a given system" (p.264).

Hamblin (1970, p.265-8) has designed one particularly basic game we may call (H), with the purposes of realizing a concept of argument and modelling some of the traditional fallacies. There are two participants, White and Black, who take turns making moves. The types of moves allowed involve the asking and answering of questions. Hamblin (p.265) formulates five rules that demarcate permissible locutions. Capital letters S, T, U, ... are variables for statements.

(i) 'Statements S' or, in certain special cases, 'Statements S, T'.
(ii) 'No commitment S, T, ... X', for any number of statements S, T, ... X (one or more).
(iii) 'Question S, T, ... X?', for any number of statements (one or more).
(iv) 'Why S?', for any statement S other than a substitution-instance of an axiom.
(v) 'Resolve S'.

The language of (H) is propositional calculus, or any other "suitable" system with a finite set of atomic statements. Each participant has a commitment-store, a set of commitments that contains the axioms for the language. There are two types of questions that a player can ask, (iii) or (iv). However Hamblin notes that two simpler games could be built by deleting one or the other of these rules and keeping the remaining four.

Following van Eemeren and Grootendorst's suggestion, we could use Hamblin's framework to work towards an account of enthymemes. In (H) you could rule that a proposition is a fair assumption to make as a missing premiss in a player's argument if that proposition is in that player's commitment-set. This does not uniquely define an enthymeme for a given argument, but it seems to narrow them down in the right way. At least it excludes the statements that an arguer has not accepted or is not committed to.

There does remain a problem, however. If I am constructing an argument against your argument, what am I allowed to assume as my "enthymemes," your commitments or mine? Or to be a proper enthymeme, must a proposition be in the intersection of your and my commitment-set? It seems hard to definitively rule on this question because it is not precisely

formulated what counts as a *win* or *loss* of a Hamblin game if it comes down to a contestive dispute.

Hamblin writes (1971, p.137) "that the purpose of the dialogue is the exchange of information among participants." What precisely counts as "exchange of information" is not defined, but Hamblin's general presumption that games of dialogue should be "information-oriented" (his term, p.137), does affect how he designs (H), and that affects how arguments are analyzed in (H). For example, Hamblin suggests that there is no point in asking a question if one is already committed to one of the answers (p.137), and the rules of Hamblin games tend to reflect this information-oriented design of rules for questioning.

The problem here is that a game of dialogue is partly co-operative and partly contestive. In the context of fallacies and criticisms, the objective of dialogue should, to some extent, be treated as adversarial. The objective of each participant is to prove something to the other.

If the structure of formal dialogues are to reflect the practices of realistic dialogue-interchanges of proving and refuting arguments, some notion must be brought in of a participant adopting a strategy — a hypothetical sequences of moves — in order to fulfill his objective in the disputation. The answerer's objective, let us say, is to prove his thesis T_A to the questioner. In a dispute, the questioner's objective is to prove the opposite of T_A. Hence the answerer knows that the questioner is strongly committed to resist commitment to T_A. If the answerer tries to "prove" in one step, by taking a commitment of the questioner as premiss, then one of two things will happen. If there is in fact such an S that is a commitment of the questioner and S implies T_A, then the answerer wins the game if the questioner cannot retract any of his commitments. If the game allows retractions, the questioner is most likely to simply retract his commitment to S, providing he sees that T_A, the thesis of his opponent, is a direct consequence. Of course there may be no such S available in any event. Generally, if the particular game in question is to be of any practical interest, there will be no such S directly available to the answerer. What then is the answerer to do?

The answer is that he must adopt some sort of strategy. Typically in practice, the answerer will not know how strongly his opponent is committed to some of the statements in his commitment-store as opposed to others. But in order to adopt a working strategy to fulfill his objective, it would be useful if he could roughly order the statements he proposes to use as premisses according to how likely he thinks it to be that his opponent will

accept them. He must ask himself "Which one of the two propositions is my opponent more likely to think plausible or at least congenial to his own position?" By asking himself a series of such questions, he may be able to organize all the statements he might eventually find useful as premisses into different levels of acceptability. Putting his proposition to be proved, say T_A, at the lower bound of the order, he should then proceed to construct a line of proof that starts as close to the upper bound of the order as possible and proceeds deductively towards the lower bound. That procedure is the general form of a best strategy for the answerer.

But the problem is that these linkages are loose, and one needs to know how the purpose of a game, its information-orientation, specifically affects the strategy of the players.

The Hintikka games of dialogue do not share this open-ended quality of win-loss determination. Quite to the contrary, the win-loss rule for a Hintikka game of logical dialogue is precisely defined. A player wins if, and only if, he deduces his own thesis by the rules of the game from his opponent's commitments. In this regard, a Hintikka game is precisely regulated. It is quite clear how the objective of each player is set. And therefore, in general outline it is possible for each player to plan a strategy to achieve that outcome within the rules of the game. Consequently, the overall direction and nature of play in a Hintikka game can be clearly understood.

Even so, a Hintikka game, like a Hamblin game, has a creative aspect. Players can ask virtually any questions at some points in the game, and play can therefore be quite wide-ranging. By contrast, in the Lorenzen games, strategy is dictated by the procedures of classical logic so that these rules regiment the discussion.

We recall that in a Hintikka dialogue-game there are two types of moves. A *deductive move* consists of a finite number of rules, e.g. rules for propositional calculus. An *interrogative move* is a question which must be given a full, direct answer by the other player. The presupposition of the question is added to the commitments of the questioner. If a player refuses to answer, the negation of the presupposition of the question is added to his store of commitments. The *win-loss* rule says that a player who deduces his own thesis from his opponent's commitments wins the game.

In this framework, the notion of an enthymeme seems fairly clear. For an attacker, a proposition may be assumed to be a premiss of his opponent's argument only if that proposition is in the opponent's commitment-set. For a defender of an argument, one may assume a proposition as an

enthymeme only if it is in one's own commitment-set.

One problem with this approach is that it does not single out the unique enthymeme. Suppose that the defender enunciates premisses one and two of the argument below. We also know, let's say, that premisses three and four are contained in his commitment-set.

All tall men are mortal.
All short men are mortal.
Socrates is a tall man.
Socrates is a short man.
Therefore, Socrates is mortal.

Which premiss is the enthymeme? Three or four? One answer would be to select the disjunction of three or four (the weakest proposition needed to deduce the conclusion). Another is to note that in a Hintikka dispute, it really doesn't matter. One is as good as the other to prove the conclusion. And that, after all, is the whole point of the game.

This solution to the problem of enthymemes is not bad. But there are three reservations we should register. First, it seems to go too far in the direction of (a) from section 1. It is exclusively up to the proponent of the argument whether or not a proposition is an enthymeme of his argument. This observation leads to another reservation.

Usually an enthymeme is some proposition that the person to whom an argument is directed *would* assume or *may be expected* to assume. It is not a proposition that he definitively or explicitly assumes or accepts. But in Hamblin and Hintikka games, the commitments are public statements. Whether a proposition is a commitment always admits of a clear yes-or-no answer. Simply check that player's commitment-set and see if the proposition in question is there or not. If so, it is a reasonable enthymeme. If not, it is not.

The Hamblin and Hintikka games presume that whether or not a proposition is a commitment of a player is transparently clear. But the doctrine of enthymemes is useful precisely when this presumption is not met, i.e. when all premisses are not *clearly stated*.

Hintikka games are *cumulative* in the sense that they never allow retractions of commitments. But Hamblin games like (H) are non-cumulative, and do allow retractions. Consider again the argument above about Socrates, tall men and short men. In (H) the defending player could retract either premiss three or four. Consequently, which of this pair the attacking

player chooses as his enthymeme may make a difference. For the defender may be less likely to retract one than the other. He may find one "more plausible" or "more central to his position" than the other.

Here then is our third reservation. The notion of 'reasonable enthymeme' is clear in the Hintikka game, but only because retraction is not allowed. In a more realistic setting, where retraction may be possible, the notion of enthymeme remains elusive. It seems to have to do with the yet undefined notion of what an arguer or audience would assume, rather than with what the arguer or audience has in fact assumed or conceded.

3. Veiled Commitment-Sets

The doctrine of enthymemes is strategically useful in argumentation where it may be unnecessary and even an impediment to state all premisses needed for deductive closure of a conclusion. You can always come back and plug the loop-holes later provided they are propositions that your audience would accept, even if they are not explicitly aware of their acceptance. Hamblin required that the commitment-store of each player be a set of public statements, e.g. a number of statements on a slate, in full view of all participants. As a variation on Hamblin's theme, let us suggest a second slate for each participant, not on public view. Let's start with the extreme case where no player can see his own *dark commitment-set*, or that of any other player.

When we say that this "dark" slate is not known to the players, we do not intend some psychological interpretation of it as "lurking in the recesses of the player's mind" or some such thing. We agree fully with Hamblin that there is no place for this sort of psychologism in logical games of dialectic. The dark-side commitment-set is simply a set of statements, no more no less. The only difference between our approach and Hamblin's in this regard is that the "dark-side" set is not on public view to the players. Members of it only become known to the players during play of the game, according to commitment-rules regulating the transfer of statements from the dark side to the light side of a player's set of commitments.

The following game, drawing some of its characteristics from the Hamblin game and some from the Hintikka game, differs from both in several ways. The most immediately notable difference is that of the player's dark-side commitment-stores. Unlike ABV, CBV has why-questions. B is an immediate consequence of A if and only if B follows by a single applica-

tion of one rule of the game from A. This notion is further explained in Hamblin (1971), Mackenzie (1981), and Walton (1984).

The Game CBV

Location Rules

(i) *Statements*: Statement-letters, A, B, C, ..., are permissible locutions, and truth-functional compounds of statement-letters.
(ii) *Withdrawals*: 'No commitment A' is the locution for withdrawal (retraction) of a statement.
(iii) *Questions*: The question 'A?' asks: Is it the case that A is true?
(iv) *Challenges*: The challenge 'Why A?' requests some statement that can serve as a basis in proof for A.

Commitment Rules

(i) After a player makes a statement, A, it is included in his commitment-store.
(ii) After the withdrawal of A, the statement A is deleted from the speaker's commitment-store.
(iii) 'Why A?' places A in the hearer's commitment-store unless it is already there or unless the hearer immediately retracts his commitment to A.
(iv) Every statement that is shown by the speaker to be an immediate consequence of statements that are commitments of the hearer then becomes a commitment of the hearer's and is included in his commitment-store.
(v) No commitment may be withdrawn by the hearer that is shown by the speaker to be an immediate consequence of statements that are previous commitments of the hearer.
(vi) If a player states 'No commitment A' and A is on the dark side of his commitment-store, then A is immediately transferred into the light side of his commitment-store.

Dialogue Rules

(i) Each speaker takes his turn to move by advancing one locution at each turn. A no-commitment locution, however, may accom-

pany a why-locution as one turn.

(ii) A question 'A?' must be followed by (i) a statement 'A', (ii) a statement 'Not-A', or (iii) 'No commitment A'.

(iii) 'Why A?' must be followed by (i) 'No commitment A' or (ii) some statement 'B', where A is a consequence of B.

Strategic Rules

(i) Both players agree in advance that the game will terminate after some finite number of moves.

(ii) The first player to show that his own thesis is an immediate consequence of a set of commitments of the other player wins the game.

(iii) If nobody wins as in (ii) by the agreed termination point, the game is declared a draw.

Clearly the main aspect of CBV that makes it so distinctive as a logical dialogue-game is the addition of a dark-side commitment set for each player. How this innovation will affect play in CBV and enable us to model fallacies and arguments in a more revealing way are matters developed in Walton (1984). Before looking to the special problems posed by enthymemes, let us review the basic idea behind CBV once again.

The commitment-store of each player is divided into two sides. First, there is the usual set of commitments resulting from concessions made during the course of the game and containing also the initial commitments of the player. In addition, the commitment-slate of each player has a "dark-side" — a set of commitments not known to the player or his opponent. As each move is made in the game, a proposition may come over from the dark side to the "light side" of the commitment-store. Prior to such a move, the players might not be completely ignorant of the possible contents of the dark side of their own or other players' dark side. In some cases, a player might have a good idea that a certain proposition or its negation may be in his own or his opponent's dark side commitment-set.

As the game progresses, more and more propositions tend to come over from the dark side to the light side if the game is progressing satisfactorily. It may be that at the end of a game, the dark side is empty, for one or both players, and the light side contains a large stock of commitments. In some cases it may be interesting to start a new game with a new set of dark side commitments, while preserving the light side commitment-sets that

each player has collected in the previous game. A tournament, or series of such games, might build up rich stocks of light side commitments.

4. Strategy and Plausibility

The nature of strategy in CBV and related games can be indicated by the following sort of situation. The two players, Black and White, each have already made certain commitments.

BLACK'S COMMITMENTS	WHITE'S COMMITMENTS
1. $B \supset A$	$A \supset B$
2. $(A \wedge B) \supset C$	$(A \wedge B) \supset C$
3. D	$\neg D$

White's thesis is $\neg B$. Black's thesis to be proven is B. Each looks around for assumptions needed to yield deductive closure of his own thesis from his opponent's commitments by the following rules.

$S \supset T$, S, therefore T: Modus Ponens (MP)
$S \supset T$, therefore $S \supset (S \wedge T)$
$S \supset T$, therefore $S \supset (T \wedge S)$ } Absorption (Abs.)
$S \supset T$, $T \supset U$, therefore $S \supset U$: Hypothetical Syllogism (HS)
$S \supset T$, $\neg T$, therefore $\neg S$: Modus Tollens (MT)
$S \vee T$, $\neg S$, therefore T: Disjunctive Syllogism (DS)

Black would win if he could get White to accept $\neg D \supset B$. White would win if he could get Black to accept $\neg D \supset \neg B$. But these would each be one-step strategies. Neither would accept these respective commitments if they are playing the game with even minimal skill. Strategic considerations suggest looking for a more "distant" premiss that one's opponent is not so likely to immediately reject. For example, Black could select $(A \supset C) \supset (D \vee B)$ as a premiss. Or White could select $D \supset \neg(B \wedge C)$. Then each would have a multi-step win-strategy as given below.

WHITE		BLACK	
1. $B \supset A$	Com	$A \supset B$	Com
2. $(A \wedge B) \supset C$	Com	$(A \wedge B) \supset C$	Com
3. D	Com	$\neg D$	Com
4. $D \supset \neg(B \wedge C)$	Com	$(A \supset C) \supset (D \vee B)$	Com
5. $\neg(B \wedge C)$	4, 3, MP	$A \supset (A \wedge B)$	1, Abs.
6. $B \supset (A \wedge B)$	1, Abs.	$A \supset C$	5, 2, HS

7. $B \supset C$	6, 2, HS	$D \vee B$	6, 4, MP
8. $B \supset (B \wedge C)$	7, Abs.	B	7, 3, DS
9. $\rceil B$	8, 5, MT		

So the strategy of *distancing* involves linking single applications of a rule into longer sequences of applications of rules. Otherwise, a player is strategically set to reject any assumption he sees will *directly* imply his opponent's thesis. For that is the nature of the game.

But distancing is only one form of strategy in CBV. If a player needs a premiss he thinks might be in the dark-side of his opponent, it would be good strategy to ask for it, even if it directly implies one's own thesis. Reason: by Commitment Rule (vi), if that premiss is in your opponent's dark-side store, you will get it into his light-side store immediately, even if he replies, 'No commitment.' For example, suppose $\rceil D \supset B$ were in White's dark-side store. Then it would be good strategy for Black to ask White to accept $\rceil D \supset B$, even though Black's thesis is a direct consequence of $\rceil D \supset B$ and White's previous commitment, $\rceil D$.

Hence some notion clearly emerges in CBV of what should constitute a strategic choice of premiss to leave open as a plausible premiss for one's opponent to accept. The selection is made partly by the attacking player, who wants to construct a deductively closed argument for his own purposes. Yet there are certain strategic constraints on what the defending player will accept as a concession. He will try to withdraw commitment from premisses that seem to him to permit the attacker good win-strategies. But the choice of loop-hole-closing concessions is also controlled by a third factor partly outside the control of both players, namely their dark-side commitment-sets.

5. The Problem Resolved

The game CBV thus permits a refined solution to the problem of saying what should fairly constitute an enthymeme in an argument. An enthymeme is not just a proposition that an arguer happens to be committed to. It is one he is willing to defend and can be prepared to be committed to, relative to his defence of his position in the context of the dialogue. Enthymemes are best considered a question of what our trafficking in argument will bear.

What then is an enthymeme? Suppose I am arguing in order to convince you of a proposition C, my conclusion to be proved in the game of

dialectic. I have a set of premisses P_1, ..., P_i that are all commitments of yours, but there is another premiss P_j that would make the argument 'P_1, ..., P_i, therefore C' valid if added to the premisses. Then P_j is a good enthymeme just to the extent that P_j is a strategically sound loop-hole closer with respect to my strategy in CVB. This means that P_j should be a dark-side commitment of yours, or is a light-side commitment that you will accept and that leads to deductive closure of my thesis by some (preferably not too long or too short) finite applications of the set of rules of the game.

This conception of an enthymeme — put in less dialectical and more rhetorical terms — describes an enthymematic premiss as one that the audience seems plausibly disposed to accept and that the arguer needs to get a valid argument for his conclusion. How can the arguer judge the "plausible disposition" of his target audience? The answer suggested by the context of CBV is that the arguer must look to the commitments of that audience, especially to propositions he thinks likely to be dark-side commitments for that audience. But over and above those factors, he must look to questions of strategy. Any proposition that appears clearly strategically inimicable to the audience's own argument — for they too have a position and a thesis to be proved in any real dialogue — is not a good candidate for an enthymematic premiss.

That is one kind of enthymeme, but there is another kind as well. The second kind of enthymeme occurs where the audience (in dialectical terms, the other player) has constructed an argument for its thesis, but has left out a premiss, or some premisses, needed to make the argument valid. Here the speaker has to look to the audience's position and strategy, just as he did in the first case, and decide what he should reasonably postulate as enthymematic premisses.

In realistic terms, this second kind of case fits a context where a critic has surveyed some written or spoken corpus of argumentation for a conclusion. He works over it, trying to fill in the missing bits needed to make the argument valid. He asks himself — "What was this arguer trying to say?" Here, unlike the previous case, the critic is not trying to convince the other arguer *per se*, but to look over the other participant's argument, and try to see what it really amounts to.

This second case is more complicated. For when the critic tries to reconstruct the other arguer's argument, he has to look at himself as a member of the target audience for that argument, and decide what he should be willing to accept as reasonable enthymemes for that argument.

Here, he has to consider both his adversary's over-all position and strategy, as well as his own. It is not only a question of what the arguer seemed to want to say, or include as premisses, but also what the target audience (himself included) would be likely to accept as strategically reasonable or positionally acceptable. Here, the problem is more complex, because both arguers' positions and strategies may be involved.

In the first case then, I am trying to convince you, let's say, so I look for premisses you will accept and take for granted without the need for me to even state them explicitly as part of my expressed argument to you. In the second case, I am surveying your argument that has been designed to convince me. I am trying to figure out which propositions you have not stated which will make your argument valid. Since your argument was designed to convince me, I need to ask here what I should or might accept as reasonable premisses, in addition to what you have accepted or might accept as reasonable premisses in your argument. This second type of argument reconstruction involves a kind of "double empathy." I need to consider both positions and strategies to fairly reconstruct the argument.

A practically useful doctrine of enthymemes needs to have it that an enthymeme is a tacit premiss that your audience will accept. Certainly this much is guaranteed by defining it as a strategic commitment of CBV. But more than this is involved. An enthymeme is not any proposition your audience will accept, but one that fits into your own needs as rhetor to have as an argument that — when properly filled out — is deductively valid.

However, Aristotle makes a distinction between rhetorical and dialectical enthymemes in *Rhetorica* (1358a 5). Following this cue, we might call our first type of enthymeme the rhetorical enthymeme. The second, more complex type of enthymeme we discussed might be called dialectical. But both need to be analyzed along the dialectical lines set out by the structure of CBV or its extensions.

Our conception of enthymeme fills both bills, nicely meeting both conditions (a) and (b) from section 1 without being over-accommodating to either. Enthymemes can only be both practically and theoretically made useful and understood in the context of strategy in a game like CBV.

The above analysis of enthymemes, I believe, does justice to the requirements of van Eemeren and Grootendorst that the missing premiss be an element of the speaker's commitment that he is obliged to defend. However, it may do less justice to their requirement that the missing premiss must be an informative statement. I think that is for the reason that

CBV defines 'commitment' and 'obligation to defend' precisely and appropriately, but does not serve to define 'exchange of information' very well. To do that, I think we need to explore Hamblin's dialogue-objective of "information-orientation" more fully. That could be a future project.

However, we have gone far enough at least to see how games with veiled commitment-sets can be very useful in working towards a more adequate conception of enthymemes. The problem is by no means entirely solved yet. The next chapter will suggest another factor in filling in missing premisses in extended discourse related to looking at argumentation as a sequence of steps in dialogue.

From a practical point of view then, what does our solution to the problem of enthymemes offer by way of advice to the arguer confronted by an argument that evidently has some missing premisses? Let us look at the two kinds of cases — first the rhetorical case and then the dialectical.

First, suppose an arguer wants to convince his audience that Socrates is mortal, once having advanced the premiss 'All men are mortal' and his audience has accepted that premiss. Should he consider 'Socrates is a man' as the appropriate enthymematic premiss? According to our theory, the problem becomes one of argument strategy. If the audience has acknowledged its commitment to 'Socrates is a man' or that proposition is a dark-side commitment of that audience, then it may be reasonable for the arguer to treat that proposition as an enthymematic premiss. If, however, the audience strongly rejects the conclusion 'Socrates is mortal,' then treating 'Socrates is a man' as an enthymematic premiss is not warranted. The audience, once aware that these two premisses imply the conclusion they strongly reject, will simply reject one of the premisses. This being the case, the arguer should be advised to look around for other propositions more appropriate to play the role of enthymematic premisses. The problem of rhetorical enthymemes is thus shown to be an instance of the general problem of strategy in argument faced by any arguer who wishes to convince a target audience of his conclusion.

Let's now consider the dialectical case of the critic who isn't sure whether or not he can fairly add the premiss 'Socrates is a man' to 'All men are mortal,' given that the argument he wishes to evaluate has as its conclusion 'Socrates is mortal.' His problem may be more complex if the proponent of the argument at issue is not around to accept or reject the proposed enthymeme as representative of what he wished to say. If he postulates as a missing premiss a proposition that the arguer has failed to give reasonable

evidence that he would accept as part of his position, the critic has then committed a straw man fallacy. How is he to avoid this fallacy?

The critic must put himself into the position of the proponent of the enthymeme, and postulate as a premiss to fill the gap some proposition that fairly represents that position, or at least does not run counter to it. But second, he must pick a premiss that, in the view of the proponent, would be strategically appropriate to convince the target audience towards which the enthymeme was directed. Hence the critic must ask: does 'Socrates is a man' fill both these requirements? Only if it meets both conditions should he reasonably propose it as an enthymematic premiss. If not, he may look around for some other proposition that fairly meets both criteria.

Once again then, the general problem in the dialectical case for the critic is just a special case of the strategic problem that confronts any arguer in a logical dialogue-game. How can I select premisses that the other participant will concede and that will allow me to prove my conclusion by the logical rules of the game? Although we have now given a general framework for solving the problem of enthymemes, some particular, practical problems still remain.

Suppose an arguer is confronted by an enthymeme that he could use to convince someone of a conclusion. But suppose this case is complicated by the fact that there are evidently two or more missing premisses needed to fill the gap. As far as the theory of argument is concerned, could the order in which these premisses are filled in make any difference? Or is the order of the premisses in an argument irrelevant to considerations of argument strategy? In the next section, we will prove that the order of premisses is both relevant and important.

6. Order of the Premisses

Consider the following problem posed in Walton (1984, p.214). Suppose I am presenting an argument in a dispute to a respondent. My thesis to be proved is C. Hence the respondent is inclined to reject C. But at the present stage of the argument, he has just accepted]B. The problem is: which premiss should I propose next, $A \supset B$ or $A \vee C$?

$$\begin{array}{l} A \supset B \\ A \vee C \\ \underline{\rceil B \quad\quad} \\ C \end{array}$$

Can the order of presentation of the premisses make a difference to the respondent's play?

Suppose he is inclined to accept ⌉B, and has in fact conceded ⌉B. Now there are two possibilities: to propose A ⊃ B first, or to propose A ∨ C first. Let's take it that A ⊃ B is proposed first. Then the respondent is likely to reject A.[1] This means that when A ∨ C is proposed as the next move, he will be inclined to reject it. Why? Because he already rejects C (the opposite of his own thesis to be proved). So if he rejects both A and C, he will reject A ∨ C.

But now let's see what happens if the premisses are proposed the other way around, i.e. suppose A ∨ C is proposed first. The respondent rejects C, but that does not mean he will necessarily reject A ∨ C. He might think that A by itself is a plausible proposition. If so, he might accept A ∨ C, even though he is set to reject C. What will happen next, when A ⊃ B is posed to him? Well, he rejects B, so he is likely to reject A as well, once he accepts A ⊃ B. But that does not mean he will necessarily reject A ⊃ B. If he accepts the required connection between A and B, he may accept A ⊃ B, even though he rejects B.

It seems then that the order of presentation can make a difference in strategy. If A ⊃ B is presented for acceptance first, then the respondent will likely reject A ∨ C when it is presented next. But if A ∨ C is presented first, then there seems to be a better chance that the respondent might be inclined to accept A ⊃ B.

There is one hitch. Even if A ∨ C is presented first, the respondent is going to reject A, once he accepts the next premiss A ⊃ B. He will do so because he has already rejected B. But having made this move, he may go back to the previous premiss that he just accepted, A ∨ C. Now he rejects both A and C. Hence he is inclined to reject A ∨ C.

The two cases we are considering can be represented by the sequences below.

1. Accept A ⊃ B
2. Reject A ∨ C

According to this sequence of moves, the respondent rejects A, once he accepts A ⊃ B. But then, since he also rejects C, he rejects A ∨ C at the next move. The other case runs as follows.

1. Accept A ∨ C
2. Accept A ⊃ B
3. Reject A ∨ C

The reasoning of the respondent in this case is essentially similar, except that he has already accepted $A \vee C$ at the first move. But then, having accepted $A \supset B$ at the next move, he finds himself to be in an inconsistent position, and moves to restore consistency by rejecting $A \vee C$ at the third move.

Clearly then, there are significant differences between the two cases. The second sequence is one step longer, and involves the retraction of a previous commitment.

However, this difference in play as a result of the order in which the premisses are presented may not be so clear if the respondent plays according to another strategy. Even if $A \vee C$ is presented first, the respondent may find strategic grounds for rejecting $A \supset B$ at his next move.

1. Accept $A \vee C$
2. Reject $A \supset B$

If the respondent reasons out the following strategy, then the play above would be determined. I have already accepted $A \vee C$, and yet I must reject C. This means that, in a fashion, I am committed to A. For my only permissible grounds for accepting $A \vee C$ must reside in an acceptance of A. But if I accept $A \supset B$, then in virtue of my rejection of B, I would be committed to the rejection of A. But I can't both accept A and at the same time reject it. Therefore, if I want to be consistent, I had better not accept $A \supset B$. If the respondent reacts this way, the two cases seem more nearly similar. Hence, even if $A \vee C$ is presented first, the respondent may still reject the other premiss, $A \supset B$.

Despite this evident possibility however, there still remains a crucial difference. The respondent must be more farsighted if he is to reason, in the more oblique manner above, to the rejection of $A \supset B$. Hence the difference between the two cases is still highly significant from a point of view of the strategy of the presenter of the argument.

It is, in general, better to present $A \vee C$ first, for only a more farsighted proponent will recognize that his acceptance of $A \supset B$, all right in itself, may get him in trouble in relation to a proposition he has already previously accepted.

But what does this difference of "farsightedness" in the two cases come down to? In both cases, it is possible for the respondent to see, once he has accepted the one premiss, that he can be shown to be committed to a set of propositions that is collectively inconsistent. Why is it easier for the respon-

dent to see this possibility in the one case, and harder to see in the other?

To uncover the basis of the difference, we need to recognize that, in both cases, the respondent applies the same two rules in the same order.

(R1) $A \supset B$, $\rceil B$; therefore $\rceil A$.
(R2) $\rceil A$, $\rceil C$; therefore $\rceil(A \vee C)$

But to see how these rules are applied, let us review each order of the presentation of the premisses.

(C1)		(C2)	
	$A \supset B$		$A \vee C$
	$A \vee C$		$A \supset B$

In case (C1), the application of the rules is a simple two-step affair. (R1) applies to the first premiss, then (R2) applies to the second premiss, along with previous commitments. In case (C2) however, the sequence of inferences is not so straightforward. No rule applies to the first premiss, $A \vee C$. No rule can apply yet, because we cannot infer $\rceil A$ until we apply the appropriate rule to the next premiss, $A \supset B$. But then, in (C2), once he gets to the question of whether to accept the second premiss, he must apply (R1) to that single premiss. That doesn't yield any problem. To see the problem with accepting $A \supset B$, he must then apply (R2) to what has resulted from applying (R1) along with his previous commitment to $A \vee C$ and $\rceil C$. In effect then, the respondent must take *two steps* at the point in (C2) when he deliberates on whether to accept the second premiss, $A \supset B$.

Now I think we can state what the significant difference is between the two cases. It has to do with the way the rules are applied at any move in the game.

Usually a player will consider whether he should accept a proposition put to him by scanning over each of the rules and applying each rule to the proposition, taken along with the other members of his existing commitment-set. If this process turns up no inconsistencies, he may feel free to accept the proposition queried. If he thinks of it, however, he may make a second pass. He may take the new commitments generated by this first pass, and go on to ask whether they generate still more commitments, when the rules are applied to them along with other commitments. Our case (C2) illustrates that a second pass may turn up new commitments.

It seems then that we need to make a distinction between an *immediate inference* and a *secondary* or *tertiary inference*. An immediate inference is one application of a rule to a set of propositions, at some particular move of the game. But when that inference yields new commitments, a player may

then scan over his newly enlarged commitment-set once again, seeing whether any rule will apply to some members of this set and enlarge the set still further.

Here then is the crucial difference between (C1) and (C2). The case of (C1) represents two immediate inferences. The case of (C2) represents a secondary inference. First the respondent applied (R1) to infer ⌉A. Now having ⌉A as a commitment, he scans over his previous commitments and turns up both ⌉C and A ∨ C. Applying (R2) to ⌉A and ⌉C yields the negation of A ∨ C. It is a secondary inference that turns up the problem.

This difference, I think, yields one reason why in much conversational argumentation, the order in which an arguer presents his premisses is significant. Secondary or tertiary inferences require a more "farsighted" searching of inferences from one's commitments. Hence inconsistencies of position yielded by immediate inferences, even from several lines taken jointly, are more naturally and easily detected.

We can highlight our findings on enthymemes in the form of a cautionary remark that many textbooks have taken questionable liberties in assuming that "missing premisses" may be filled in on the basis of loose conceptions of "charity," or simply a need to make an argument valid. Exactly which propositions are to be filled in, and in what order, are highly sensitive and complex matters of argument strategy, very much relative to the context of dialogue as a contentious process of negotiation.

7. Multiple Premisses in Complex Arguments

We have now developed a theory of enthymemes that may be applied to cases where an arguer's strategy is relatively clear, and where his argument is relatively simple. However, the previous section raised the problem of the order of the premisses. If more than one missing premiss is needed to reconstruct an argument, how should one proceed? If you have a good idea of the strategy of the arguer whose argument you propose to complete by filling in "missing premisses," your decision can be justified by appeal to your reconstruction of that strategy. But in real life, you may not have a very good idea of that arguer's most plausible line of strategy. In that case, your choices of premisses may be hard to justifiably defend as being fair or reasonable interpretations of this person's real line of argument.

The fact is that when one approaches an argument in a newspaper column or some other commonplace source, there may be very little information available concerning the arguer's position. Picking an obvious way to

link the premisses and conclusion by some deductive rule of inference may produce a premiss that the arguer would not accept at all, if confronted with it. Clearly then, the best principle is to proceed only on the basis of the information, given relative to the dialogue, on what the arguer's position really is.

But there is another problem as well. Many arguments in realistic dialogues are highly complex. They are made up of various stages or subarguments linked together into a complex sequence. In the previous section, we have already noted the distinction between an immediate inference and a secondary inference. In real life, as an argument evolves, a critic or listener can get more and more of a sense of its direction, its evolution. Such arguments can be very long, and there could be many constraints on what sorts of premisses its originator would, or could reasonably allow, in filling in possible gaps along the way.

In fact many simple arguments with one conclusion, and one or two premisses, are little more than promissory notes. They could possibly be backed up by all sorts of powerful and relevant additional arguments and premisses. Clearly, in such cases, the danger for the critic of committing a straw man fallacy looms large.

I conclude that the following general policy is appropriate. If a premiss needed to make an argument valid is clearly both (1) plausible to the intended receiver(s) of the argument, and (2) plausible as a commitment of the sender of the argument, as part of his strategy, then adding that premiss to the argument, and marking it as such, may be justified in argument analysis.

However, if there is reasonable doubt on the score of either (1) or (2), then the premiss should not be added in as an acceptable part of the argument. However, even if convincing evidence of (1) and (2) is lacking, a premiss needed to make an argument valid can be added in, and marked as an additional premiss that would make the argument valid, but has not been certified as a premiss to be equated with the other (given) premisses. What should be clearly marked is that the added proposition has been inserted by the critic.

So far so good, but the problem is compounded if there are several ways to fill in the loophole. The problem then becomes: which is the "best" missing premiss? Moreover, there may be several loopholes, and different arrangements or sequences of premisses may possibly be plugged in to firm up the argument.

For this type of case, special techniques to deal with complex sequences of argumentation are needed. We turn to these techniques in the next chapter, and the realistic examples analyzed there will illustrate these practical problems of working with enthymemes. As these examples will indicate, it is not only missing premisses that may need to be filled in when dealing with an extended sequence of real argumentation, there may be several conclusions along the way, and some of these may have to be filled in as well.

NOTE

1. Suppose the respondent accepts the premiss A ⊃ B. He would then be committed to A ⊃ B. But he has previously committed himself to ~B. Hence, by *modus tollens* — which we presume is a rule of inference of the game — the respondent must be committed to ~A. Hence he is likely to reject A. At any rate, he is likely to reject A on the assumption that his play is governed by "logical" defensive strategy.

CHAPTER 6: LONGER SEQUENCES OF ARGUMENTATION

We saw in previous chapters that two moves in a dialogue-game can interlock together and form a circular sequence of argumentation. This observation raises the question of how to keep track of and evaluate the longer sequences of argumentation in dialogue or other forms of argumentation that are often necessary for the proper development of an argument. Sometimes arguments are very long indeed, comprising whole books, or even collections of books.

John Stuart Mill once suggested that even an obviously deductively valid argument like 'All men are mortal, Socrates is a man, therefore Socrates is mortal' had to be circular. Why did Mill think so? He reasoned that we could not possibly be assured that the first premiss is true unless we already know that the conclusion is true. But such a claim is dubious. Could we not know that the first premiss is true because of biological laws, known independently of the mortality of one particular individual, Socrates?

To put it another way, the question is this. Which of the following sequences of argumentation did Mill have in mind?

Socrates is mortal [plus other premisses]
Therefore, all men are mortal.
Socrates is a man.
Therefore, Socrates is mortal.

[Premisses concerning biological laws pertaining to mortality]
Therefore, all men are mortal.
Socrates is a man.
Therefore, Socrates is mortal.

The first argument-sequence is clearly circular. One premiss is in fact identical to the conclusion. The second argument-sequence may not be circular however, provided the first premiss can be argued for without presuming the truth of the conclusion 'Socrates is mortal' as a premiss.

Thus the solution to Mill's puzzle requires a further analysis of the dialectical background, the longer sequence of argumentation in which the original single argument-step is to be embedded.[1]

1. Sequences of Argumentation

Sometimes when we approach a raw slab of argumentation for analysis, we see that it is really several arguments joined together in a long sequence. Some linking statements may be a premiss in one argument, and at the same time, the conclusion of another argument. The pattern may be, for example, that p is a premiss for conclusion q, then q is a premiss for yet another conclusion r. In such a case, q is an *intermediate conclusion* (like a *lemma* in a mathematical proof), and we have in effect an argument for r on the basis of p via q. That is, while it is correct to say that there is an argument from q to r, it is equally correct to say that there is an argument from p to r. Once the two intermediate steps are conceded, the intermediate conclusion can, so to speak, be discarded, like Wittgenstein's ladder.

Hamblin (1970, p.299) calls this idea a "thread" or "development" that involves intermediate statements belonging to neither premisses nor conclusion of one single argument. Hamblin challenges the usual idea of the logic texts that "a complex argument can always be broken down into simple steps in such a way that, in any given step, there are one or more premisses, just one conclusion and no intermediate statements" (p.229). The point is that the word "argument" is properly used to denote the complex of steps as well as the individual steps themselves. Geach (1976, ch.14) reintroduces some useful terminology for this phenomenon by distinguishing between argument *schemata* and *themata*, where the latter are chains of schemata linked together to form a more complex sequence. Various illustrations in Geach (1976) show how the distinction works in the practice of argument analysis, but such procedures have long been utilized by logicians, for example in the use of chains of syllogistic reasoning by the medievals.

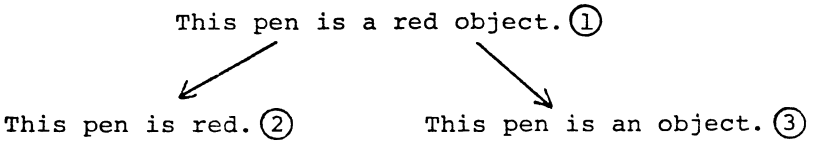
Hamblin (1970, p.229) also points out, suggestively for our purposes in the sequel, that circular arguments may be quite misrepresented if we treat them as one-step events.

A diagrammatic method of tracking the stages in sequences of argumentation in a longer passage of argument was devised by Beardsley (1950). Arguments are sometimes very lengthy and complex — even, in some cases, comprising whole books — and it can be very useful to organize an argument into a pattern of smaller steps in order to gain a grasp of its overall flow and direction.

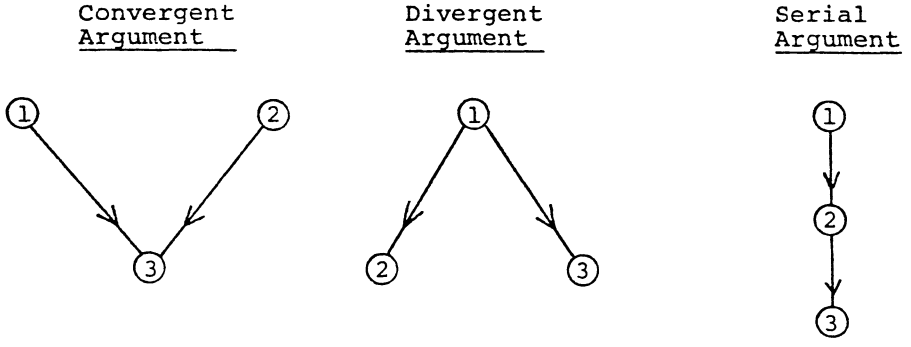
According to Beardsley, (1950, p.19), one form of structure is the *convergent argument*, where several independent premisses support the same

conclusion. An example would be as follows. If his coat is wet he's been in the rain ①. His coat is wet ②. Therefore, he's been in the rain ③. Here, both premisses go together to imply the conclusion.

A second form of structure is the *divergent argument*, where the same premiss supports several conclusions. An example would be as follows.



Using circled numerals to represent the respective propositions of the above two examples, we can contrast the two types of structures above with a third type, called by Beardsley (1950, p.19), the *serial argument*.

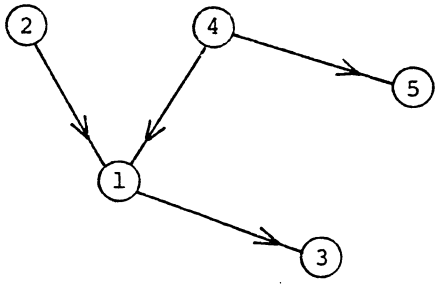


In the serial argument, proposition ② is a conclusion for ①, yet at the same time a premiss for ③.

An example from Beardsley (1950, p.24) should serve to illustrate how more elaborate passages of argumentation can be organized into patterns that involve all three types of structures above.

> Nobody in his right mind (except maybe a few hucksters) can deny that ① radio programs, taken as a whole, are in a very sorry state: ② never have we heard such depressing offerings as the singing commercial and the audience-participation program. Obviously ③ radio broadcasters need a new and better code. ④ Statistics show that most of the daylight time is taken up with soap operas, which bears out my first point, and incidentally shows ⑤ that broadcasters underestimate the average person's intelligence (if that is possible!).

The diagram for this argument given by Beardsley (p.24) looks like this.



However, as Beardsley shows in this case, getting from the raw argument passage to the diagram may take some re-organization.

> Radio broadcasters underestimate the average person's intelligence (if that is possible!). For statistics show that most of the daylight time is taken up with soap operas. Never have we heard such depressing offerings as the singing commercial and the audience-participation program. Clearly, nobody in his right mind (except maybe a few of the hucksters) can deny that radio programs, taken as a whole, are in a very sorry state. Radio broadcasters certainly need a new and better code.

The reorganization proposed above (p.25) by Beardsley does seem to make the original more orderly, at no cost in fairness to the original argument. At any rate, we can certainly see the potential benefits of the process.

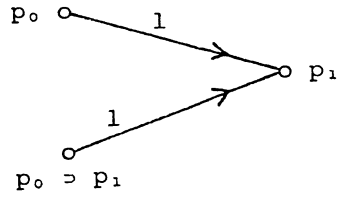
This diagrammatic method has now been successfully utilized by several more recent texts, including Scriven (1976), Geach (1976), Johnson and Blair (1977), Carlone *et al.* (1981), and in the new sixth edition (1982) of Copi's *Introduction to Logic*. However, the general question of precisely what we are doing when we use such graphlike techniques of argument analysis needs to be studied. Let us turn to this question.

2. Graphs of Arguments

One method of constructing a schematic analysis of longer sequences of valid arguments is given by Shoesmith and Smiley (1980). According to them, the validity of an argument must be the product of two requirements. Not only must each individual step be valid, but the steps must be correctly arranged in a sequence. Their use of graphs permits the orderly study of such arrangements by allowing a set of premisses to have more than one conclusion. By their reconstruction of the notion of an argument, there may

be different routes of argument, each being a valid proof, from the same premisses to the same conclusion.

Another method which uses graphs to analyze longer sequences of arguments, although with a different technique and motivation, is that of Walton and Batten (1984). In this method, an *argument* is defined as a set of propositions with one proposition distinguished as the *conclusion*, the others called *premisses*. The system of generating arguments utlizes a set of rules, which might for example be rules of some deductive logic like classical PC. A *digraph* is a set of points (vertices) and a set of ordered pairs of points called arrows (or sometimes, arcs). Then every argument has a digraph corresponding to it, produced as follows. Every initial premiss is represented as a point. Each rule is then systematically applied to each premiss, and if a conclusion follows by the rule, a new point is added and given the name of the new conclusion. Then each arrow is labelled with a number corresponding to that rule. For example, suppose that p_0 and $p_0 \supset p_1$ are initial premisses and *modus ponens* is a rule (R_1). Then part of the graph is:



All the rules and premisses are finite, and of a finitary character, i.e. rules like $p_0 \supset (p_1 \vee p_2 \vee \ldots \vee p_n)$ for non-finite n, are not allowed. Thus at some point, the process must stop and be complete. At that point, the graph displays all possible valid arguments, relative to the rules, from these premisses to all possible conclusions.

To illustrate this process of argument analysis, consider the following example. There are three initial premisses: $p_0 \supset p_1$, p_0, and $p_1 \supset p_2$. The only two rules are the ones given below.

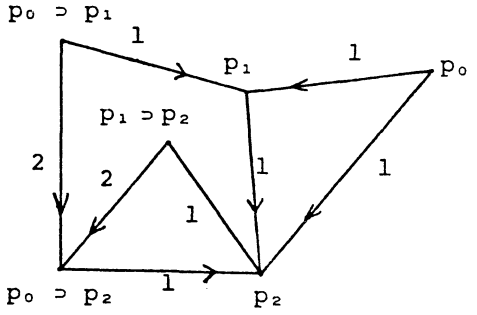
R_1 (*modus ponens*)

$$\frac{p \supset q \qquad p}{q}$$

R_2 (transitivity of $\supset$)

$$\frac{p \supset q \qquad q \supset r}{p \supset r}$$

The graph below shows the argument analysis that results from applying the rules to the initial and subsequent premisses.



This form of argument analysis shows all the different ways a conclusion could be arrived at from a given set of premisses. It is the basis of all models of argument where the "thread of argument" is significant.

Applying this model of argument to realistic case studies of argumentation involves other steps of preparation. Next, we will look at a realistic case study.

3. Case Study: Argument on Sex Education

Consider the following sample argument. I have made this argument up, for purposes of illustration. But it is certainly a realistic type of case that embodies a controversial issue, and some familiar patterns of argument.

> I would like to address the question of whether sex education in the schools is serving the purpose of decreasing out-of-wedlock pregnancies, venereal diseases, and promiscuity. My conclusion is based on the fact that there was a drastic increase in venereal diseases and pregnancies among teenagers since the introduction of sex education courses in schools. This increase could have been caused by the introduction of sex education in the schools or simply by increasingly liberalized attitudes towards sex conveyed to the family through the media and other sources. If the latter however, promiscuity is going to be a result anyway, and consequently sex education in the schools isn't going to do any good. So no matter how you look at it, I conclude that sex education in the schools is not serving its purpose.
>
> Moreover, as sex education is taught in the schools, a factual approach is taken rather than a moral stance. This way of teaching the subject encourages a casual and open attitude towards sex. Consequently, students lose their respect towards sexual matters and are led to engage in promiscuous acts. I conclude then that these courses are not serving their

purpose, because if one does not respect sex, a person will tend to act promiscuously.

In order to analyse this argument, let us first sort out the component propositions that it is made up from.

p_0: Sex education in the schools does not serve the purpose of decreasing out-of-wedlock pregnancies, venereal diseases and promiscuity.

p_1: There was a drastic increase in venereal diseases and pregnancies among teenagers since the introduction of sex education in the schools.

p_2: The increase in pregnancies and venereal diseases was caused by the introduction of sex education in the schools.

p_3: The increase in pregnancies and venereal diseases was caused by increasingly liberalized attitudes towards sex conveyed to the family through the media and other sources.

p_4: There will be an increase in promiscuity among school-age children.

p_5: Sex education is taught in the schools by a factual rather than a moral approach.

p_6: The factual rather than the moral approach of teaching sex in the schools encourages a casual and open attitude towards sex.

p_7: Students lose their respect towards sexual matters.

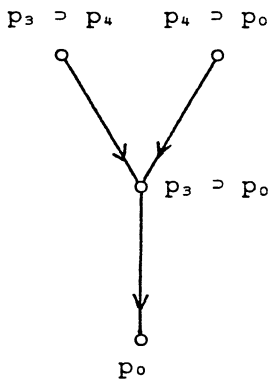
p_8: Students are led to engage in promiscuous acts.

Now let us see if we can engage in an accurate and fair reconstruction of the argument. The ultimate conclusion argued for is p_0. The arguer starts by advancing the claim p_1 as a premiss, and states that his conclusion will be based on p_1. He then makes the claim that the increase in venereal diseases and pregnancies could be due to either of two factors — introduction of sex education in the schools, or liberalized attitudes conveyed by the media. Plausibly, the arguer is putting forward a premiss of the form $p_1 \supset (p_2 \vee p_3)$ here, given that he has already advanced p_1 as a premiss.

Then in his next statement, the arguer claims that if the increased pregnancies and diseases are caused by media attitudes, then promiscuity will result ($p_3 \supset p_4$). And he concludes from this claim that, consequently, sex education in the schools won't do any good (p_0). What is he doing here? He seems to be making a side-argument for p_0. But how is he getting from $p_3 \supset p_4$ to p_0? The most plausible and appropriate enthymematic premiss to put in here is $p_4 \supset p_0$. That is, he is suggesting that if there is an increase in promiscuity (due to media influence), then sex education will not serve its

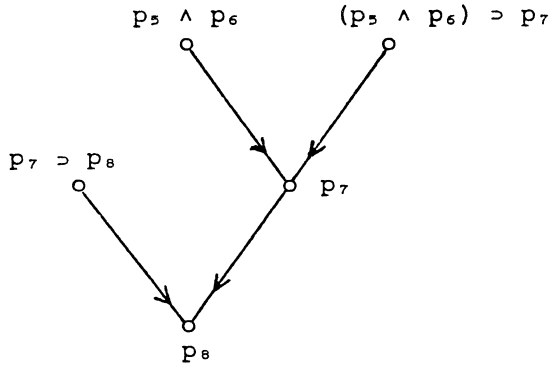
purpose anyway. This suggests a certain chain of reasoning. Having advanced the premisses $p_3 \supset p_4$ and $p_4 \supset p_0$, it suggests that the arguer is moving towards the interim conclusion $p_3 \supset p_0$. He is concluding, in short, that if there are media influences, then sex education will not serve its purpose anyway.

This may not be the only possible interpretation of the line of argument. But it does seem to offer plausible premisses. The problem is that it leaves a gap. So far, the argument looks like this.



So far, the first step is valid, but the second step is not. How can we fill in the needed steps? The way the rest of the argument continues suggests a reconstruction that could extend this analysis to fill in the gaps in a plausible strategy.

The argument continues in the second paragraph. First, it adds two new premisses, p_5 and p_6. Using these premisses, it draws two conclusions, p_7 and p_8. The obvious suggestion for an enthymematic premiss here seems to be the conditional, $(p_5 \wedge p_6) \supset (p_7 \wedge p_8)$. But possibly the argument could be reconstructed even more faithfully by postulating that the arguer is proposing the following premisses: $(p_5 \wedge p_6) \supset p_7$ and $p_7 \supset p_8$. Here, it does not matter too much, as either reconstruction is valid, and will serve to derive the conclusion clearly aimed for by the arguer. The following sequence represents this interpretation.



The ultimate direction of the argument is brought about by the enthymematic connection needed for the arguer's evident strategy, namely, $p_8 \supset p_0$. Hence we can see that the second paragraph strengthens the line of argument offered in the first paragraph by introducing a separate line of reasoning for the same conclusion. More precisely, the argument plausibly proceeds from p_8 to p_4, and from there to p_0.

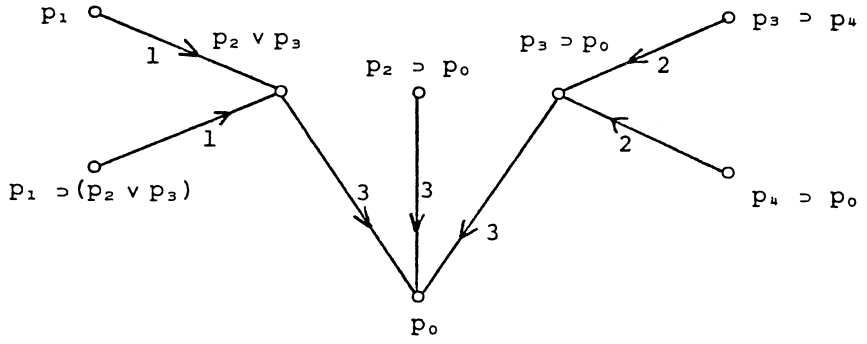
But we still have our problem that the argument of the first paragraph is incomplete. Can it be further filled in to lay out a plausible and yet effective line of strategy?

One way to proceed is to go back through the first paragraph. What is the arguer claiming? He does seem to be suggesting that either of the factors of the introduction of sex education in the schools or increased liberal attitudes in the media would, by itself, be sufficient to result in increased pregnancies and venereal diseases. And in either event, sex education will not serve its purpose. In other words, in addition to claiming $p_3 \supset p_0$ as a premiss, he also seems to be committed to claiming $p_2 \supset p_0$ as part of the argument. If this approach is justified, we can now show how the argument of the first paragraph fits together into a coherent strategy.

Let's presume that in the context of dialogue, we may assume the following classically valid rules.

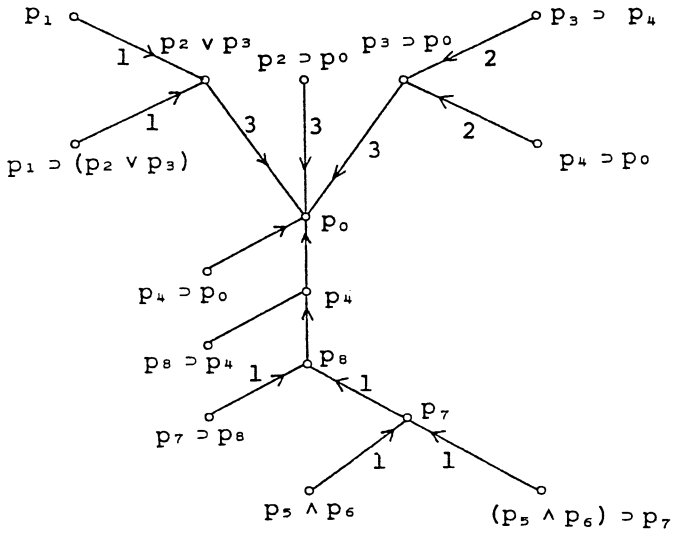
Modus Ponens		*Transitivity of* $\supset$		*Dilemma*	
$p \supset q$		$p \supset q$		$p \vee q$	
p	R_1	$q \supset r$	R_2	$p \supset r$	R_3
q		$p \supset r$		$q \supset r$	
				r	

Applying the rules to the premisses yields the following graph of the argument of the first paragraph.



Each rule needs to be applied once to a subset of premisses in order to deductively yield the conclusion of the argument, p_0.

When we add the supporting argument of the second paragraph, the following reconstruction of the over-all argument strategy is yielded. To derive this reconstruction, we need to add two more enthymematic premisses, $p_8 \supset p_4$ and $p_4 \supset p_0$. They seem to fit into the arguer's position very well. They are plausible. And they are certainly needed to make the argument valid. Hence both these premisses are included in the over-all graph of the argument represented below.



Hence we can see how the Walton-Batten method can be applied to give a plausible reconstruction of a sequence of natural argumentation. The tricky part is that certain enthymematic assumptions have to be filled in that may not be explicitly given as the argument is conversationally presented. We must always remember that such filling-in is based on our own presumptions, and that the ultimate test of the appropriateness of a presumptive commitment of an arguer is whether or not she will agree to it if queried. If this test cannot be applied, we must try our best to reconstruct the arguer's plausible strategy.[2]

4. Case Study: Circular Argumentation

Circular arguments sometimes occur when there is a feedback situation or causal loop among a series of events. A typical example occurs when a citizens committee gets up a petition to improve the bus services to a suburb. They claim that the bus service is poor, that the suburb is well populated by city workers who commute, that many signatories are in favor of improved services, and that therefore City Hall ought to improve the service.

City Hall, almost by reflex, retorts with the usual argument for a conservative and inexpensive policy of fiscal restraint. They claim that not many people currently use the existing bus service, and that therefore putting additional vehicles on that line would mean empty buses, costly services that would not likely be used.

At this point, if nobody tries the experiment to see whether the new buses would in fact be used, the argument appears to be a stalemate.

However, the citizens committee might retort as follows. The reason the service is under-utilized at present is just because it is inadequate. The buses are crowded. Nobody likes to ride on a crowded bus. Moreover, there are too few buses, with the result that stoptimes are too widely spaced and therefore not convenient for many commuters.

The feeling of the citizens committee is that it is a Catch-22 situation. The very reason City Hall gives for not improving the situation is that the situation is poor. But it is precisely the poorness of the situation that needs to be corrected. Where can we go from here? Some of the preceding disputation can be captured in a little more perspicuous form in the following dialogue.

City Hall: Why should the bus services to this suburb be improved?

Citizens Committee: Because the bus service is poor. Also, the suburb

is well populated by city workers who commute, and many signatories are in favor of improved services. Both these things are true, and if they are true, the bus services to this suburb ought to be improved.
City Hall: Why is the bus service to this suburb so poor? Isn't it because not enough people take the bus?
Citizens Committee: Yes, in a way it is because not enough people take the bus. If not enough people take the bus there is no incentive to improve the services. If there is no incentive to improve the services, the service remains poor.
City Hall: Perhaps, but why is it that not enough people take the bus?
Citizens Committee: Because the service is so poor. If the service is so poor, fewer people are inclined to use it. Instead, they take their cars.

As reconstructed by the above dialogue, the argument of the citizens committee is deductively valid. To see why, let the following variables stand for each of the main propositions of the argument.

p_0: The bus services in this suburb should be improved.
p_1: The bus service is poor.
p_2: The suburb is well populated by city workers who commute, and many signatories are in favor of improved services.
p_3: Not enough people take the bus.
p_4: There is no incentive to improve the services.

At its first move in the dialogue, the citizens committee puts forward the propositions p_1 and p_2, and also the conditional $(p_1 \wedge p_2) \supset p_0$. In its second speech, the committee asserts $p_3 \supset p_4$, $p_4 \supset p_1$, and may be taken to assert p_3. At its third move, the citizens committee puts forward the conditional $p_1 \supset p_4$, and may also be taken to put forward the proposition p_1.

The first question to be raised: what do we mean by the phrase "may be taken to be put forward"? The phrase means that the proposition in question should be taken as an enthymematic premiss in the argument. In light of the previous chapter, we can now see that the reconstruction of extended argumentation by the method of graphs can be enhanced by applying the theory of enthymemes to fill in missing links. We need to add premisses where the context of dialogue justifies it. This means applying the criteria of the previous chapter.

The enthymematic presumption that the committee wishes to put forward p_1 as an additional premiss in the third speech is clearly justifiable is clear from that speech, and also from the fact that the committee did previ-

ously assert p_1 in its first speech. We follow the cumulative presumption of CBV here in ruling that commitments are stored once more. And, at any rate, the commitment has not been retracted here.

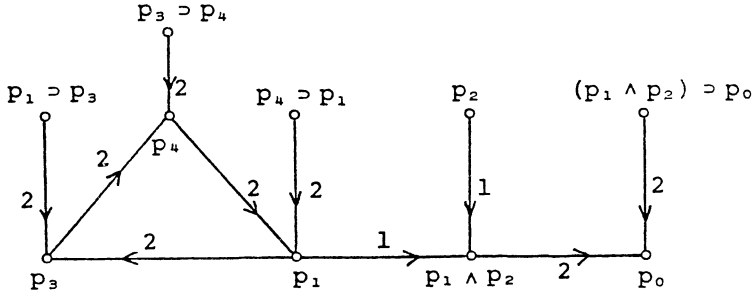
The assumption that the committee may be taken to assert p_3 as an enthymematic premiss in its second speech is less straightforward. It depends on what might be meant by 'because'. Since there is some reasonable room for doubt, let us mark the argument as conditional on the presumption that the committee would answer 'Yes' to the query 'Did you mean to assert p_3 as a premiss?' So construed then, the dialogue can be represented by the following tableau.

	CITY HALL	*CITIZENS COMMITTEE*
(1)	Why p_0?	$p_1, p_2, (p_1 \wedge p_2) \supset p_0$
(2)	Why p_1?	$p_3, p_4 \supset p_1, p_3 \supset p_4$
(3)	Why p_3?	$p_1, p_1 \supset p_3$.

The above replies of the citizens committee can each be shown to be a valid proof of the proposition queried using only two rules of inference.

$$\begin{array}{ll} p \supset q & \textit{Modus} \\ p & \textit{Ponens}\ (R_1) \\ \hline q & \end{array} \qquad \begin{array}{ll} p & \\ q & \textit{Conjunction}\ (R_2) \\ \hline p \wedge q & \end{array}$$

But it might be interesting to look at the flow of the dialogue as a whole. The graph below displays the over-all sequence of argumentation. The graph displays all the propositions in the sequence of argumentation on the right side of the dialogue-tableau (initial premisses), and shows each valid step of reasoning. Each proposition that "stands alone" (that does not have any arrows going into it) is an initial premiss. The graph below is an example of the use of the Walton-Batten method to read off and reconstruct the over-all sequence or direction of an argument from a question-answer dialogue.



Each proposition appears at a point of the graph. Where a proposition is deduced by a rule from another pair of propositions (premisses), the number of the rule, R_1 or R_2, appears on the arrow between the points. So the graph shows how each step is made, and the over-all direction of the flow of argumentation.

In this argument, one aspect of special interest is clearly portrayed on the graph above. There is a cycle in it, (p_1, p_3, p_4). A circle in a sequence of argumentation appears as a cycle in its graph. A *cycle* is a set of points p_0, ..., p_n such that there are arrows from p_0 to p_1, p_1 to p_2, and so forth to p_n, and also an arrow from p_n to p_0.

How then are we to evaluate the argument? Does it commit a *petitio principii* fallacy? If so, who is the perpetrator?

Our evaluation is that although there is a circle in the citizen committee's argument, it is not a fallacious (vicious) circle. True, the argumentation went in a circle, but that is what the citizens committee presumably meant it to do. They were trying to show to City Hall the feedback situation implicit in the position that City Hall's rejoinder forced the argument into. The citizens committee was in effect saying, "Yes admittedly the bus service is poor because few people use it. But that's not the whole story. Look further and you'll see that few people take the service because it is so poor!" The two factors are connected. You can only change one by changing them both together, the committee is urging. Thus the committee, by so arguing, is purposely trying to reveal the inherent circularity of the situation, not speciously trying to use deceptive circle reasoning to refute City Hall's argument on inadequate grounds. Hence there is circularity but not fallaciousness.

The moral of this story is that circularity in argumentation is not always vicious.[3] Thus one must be careful in accusing an opponent in disputation of the *petitio principii* fallacy. Mere circularity of argument is not in itself enough to nail down a charge of having committed ths fallacy.

5. Plausibility Conditions on Arguments

After looking at the previous example of circular argumentation, we may begin to wonder if circular reasoning is ever fallacious. The question is raised: precisely what is wrong with arguing in a circle, if or when it is wrong? The best clue to an answer is in Aristotle's *Prior Analytics* where the philosopher wrote that demonstration proceeds from what is certain and "more prior" as premiss. Aristotle's idea is that in a correct demonstra-

tion, the premisses are prior to the conclusion, in the sense of being more firmly established.[4] Thus in a long sequence of reasoning, at each stage the premisses must stand in a precedence-relation to the conclusion. This precedence-relation is characteristically asymmetrical. That is, if the premisses precede the conclusion, the conclusion never precedes the premisses.

From a point of view of the graph of an argument, this Aristotelian approach amounts to the following requirement: if you pick any two points on the graph p and q, and there is a series of arrows leading from p to q, then the plausibility of p must always be greater than the plausibility of q. That is, the arrows will always take you from the greater to the lower plausibilities, and never the other way around.

One of the logical consequences of this precedence approach is that circles can never appear in a graph meeting the Aristotelian requirement of over-all precedence just stated. The proof of this fact lies in the observation that if the graph went by a sequence of arrows from p to q and thence back to p, it would follow both that p precedes q and that q precedes p. This situation however is impossible! For the precedence-relation is asymmetrical. If one proposition precedes another, then the second can never precede the first. Thus the Aristotelian approach always bans circles.

Sometimes the context of argument indicates that this Aristotelian requirement of precedence is meant to be met by an adequate sequence of argumentation. Consider the following dialogue.

Black: How can you determine that juvenile delinquency is widespread in the U.S.S.R.?

White: Well, we know that there has been loss of social control recently in the U.S.S.R. because of difficult economic problems. And if there's loss of social control, there must be delinquency on a large scale.

Black: Yes, perhaps, but how can you really be sure that there has been the extent of loss of social control you speak of? After all, we don't have much access to data.

White: Well, we know that there has been a breakdown in state and political organization in the cities. If so, there must be loss of social control to a wide degree.

Black: I hate to be so persistent, but how on earth can you be sure that there has been such a breakdown in state and political organization in the cities.

White: Well there is widespread juvenile delinquency, and where

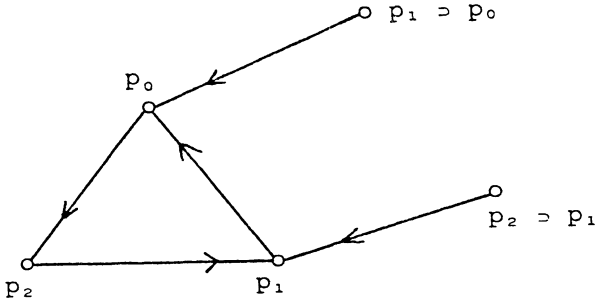
that is present, there is always breakdown of state and political organization in the cities.

Black: Hold on a second! Aren't we going in circles?

Black is certainly right. To see why, first identify the propositions in White's argument.

p_0: Juvenile delinquency is widespread in the U.S.S.R.
p_1: There has been a loss of social control in the U.S.S.R.
p_2: There has been a breakdown of state and political organization in the cities.

Then the over-all sequence of White's argumentation can be represented by this graph.



Reflecting on our previous case study of the citizens committee, we might now ask: what is fallacious about White's argument? Surely delinquency, loss of social control, and breakdown of state and political organization are all connected in a feedback network. Is it fallacious to point this out?

The answer is "No," but the problem is that the nature of Black's questions and White's answers make it pretty clear that White means to base p_0 on p_1 by a relation of evidential precedence. Then White goes on to base p_1 on the prior premiss p_2. However, when he continues his argument to the point where he then bases p_2 on p_0, he violates the Aristotelian requirement of precedence. He has already backed up p_0 by appeal to the premiss p_2 (via p_1). But now he wants to turn around and back up p_2 by appeal to p_0 as a basis. He can't have it both ways!

The example shows us that participants in argument should make it clear whether or not the condition on plausibility of propositions is the Aristotelian one if the criticism of *petitio principii* may arise.

However, we have to ask whether the Aristotelian requirement is the only possible condition on plausibility assignments in sequences of argumentation. The citizens committee case study suggests that it is not. In fact, reflection will show that the requirement is not appropriate for many games of dialogue. Most often in dialogue it would be unfairly restrictive to demand that one's opponent immediately furnish premisses of a higher plausibility that validly imply the proposition to be proved. Most often an arguer needs to be given considerable leeway to find premisses that his opponent will accept as more plausible than the conclusion to be proved to that opponent by the accepted rules of valid argument. If so, an arguer often needs interim premisses that are not now known to be more plausible than the conclusion they imply. Consequently, a weaker condition than the Aristotelian requirement is often appropriate to adopt for games of dialogue. Different possibilities suggest themselves here, but one is especially appropriate.

The emphasis of Rescher (1976) is to select out the least plausible proposition as the weakest link in a plausible inference. This suggests the following sort of condition. Look at each sub-argument individually that has occurred in the over-all network of argumentation in the graph. In each one, pick out the least plausible premiss. Then amongst all these "least plausible premisses" pick the greatest. In other words select the *max* of all the *min*. Then the plausibility of a proposition will be equal to the *max* of the *min* of all the arguments for it.

The interesting thing about this type of condition on plausible inferences in dialogues for our present purposes is that it does allow plausibility values to be consistently assigned to propositions on a cycle of the graph. Perhaps then, this condition or one similar to it is the appropriate requirement on plausible inference for the dialogue of City Hall and the citizens committee, where the circle is not vicious.

But a serious problem remains. What condition for assigning plausibility values could be appropriate to represent the context of dialogue where the circular argument is reasonably judged to be vicious?

The Aristotelian approach we applied in the case pertaining to juvenile delinquency in the U.S.S.R. was thought to represent a kind of circle that is open to criticism because it presupposed the convention that the premisses "preceded" the conclusion. What might this mean? One analysis is that there is a requirement that every proposition in an argument must be such that each proposition that precedes it as a premiss must have a greater

plausibility than the proposition in question. We can model this analysis as follows. Let's say that there can be a set of propositions p, q, r, ..., represented in a graph where there may be an arc (arrow) from one proposition to another. Where there are a whole series of arrows from one proposition, p, leading to another proposition, q, we will say that there is a *directed walk* (diwalk) from p to q. Let $p \rightarrow q$ represent the idea that there is a directed walk from p to q. Then the appropriate condition on the plausibility values of the propositions in the argument to represent the Aristotelian framework is the one below.

(C1) $(\forall p)\,(\forall q)$ (If $p \rightarrow q$ then plaus(p) > plaus(q))

This condition requires that the plausibility values of the vertices on any graph must be so ordered that as we go along any directed walk we go from greater to lesser values.

This condition would effectively ban circles in the sense that you could not, following (C1), consistently assign plausibility values at all on a graph where there is a cycle. If you had $p \rightarrow q$ and $q \rightarrow p$, then $p \rightarrow q$ requires plaus(p) > plaus(q), which contradicts the assignment required by (C1) of plaus(q) > plaus(p) to $q \rightarrow p$.

The theory of Rescher (1976) stipulates that the plausibility of the conclusion should be at least as great as the least plausible premiss. The appropriate condition would then be this one.

(C2) $(\forall p)(\forall q)$(If $p \rightarrow q$ then plaus(q) $\geq$ plaus(p))

Clearly however (C1) is too strong if taken in conjunction with (C2), for these two conditions, as formulated above, are inconsistent with each other!

An underlying problem with (C1) as a general condition for all arguments is that it may not allow a disputant enough latitude in seeking out sequences of argument that might eventually lead to more plausible premisses. In argument, (C1) demands more plausible premisses immediately, rather than giving a participant in argument "room to argue."

However, the basic problem with (C2) is that it is too weak to adequately cover all reasonable contexts of dialogue. For (C2) freely allows circles anywhere in the graph of an argument.

If the context of dialogue indicates that the appropriate rule is (C1) then all circles are forbidden. That approach models the requirement that no circles are allowed, i.e. that all circles are vicious. If the context of dialogue indicates that the appropriate rule is some weaker requirement

like (C2), then circles are freely allowed. This conception could model the context of dialogue appropriate for the bus service argument. Here there is a circle, but it is not vicious.

How we should proceed from here in giving a general analysis of the *petitio principii* fallacy is an open problem. The approach of Walton and Batten (1984) is that certain refined variants of (C2)-type conditions are more generally appropriate. This approach is based on the perception that many circles in argument are non-vicious. However, where a circle is thought to be vicious, variants of (C1) should be required.

One thing we have to keep in mind here is that there can be different games of dialogue in different contexts of argument. That means one should often ask the question: what is the purpose of this dialogue? We saw in the first chapter that one main purpose of argumentative dialogue is for each participant to prove his thesis from the other's commitments (premisses). And it is in this light that the idea of "begging the question" comes to make sense. If I try to prove my conclusion (thesis) using premisses that you would not be plausibly committed to — say, because they are identical with my own conclusion or directly imply it, by the rules — then I have "begged for" the question. But is such a begging fallacious, or somehow a vicious *petitio principii*? The argument of Walton (1984) is that in many cases, it may not be. Instead, it may be simply poor strategy in this type of dialogue. And poor strategy in argument may not necessarily be the same thing as committing a fallacy in argument.

In other words, in many paradigm contexts of argumentative dialogue, arguing in a circle may not represent a sort of argument that should fairly be condemned as fallacious. If we look over the graph of the argument, and see some cycles in it, that may not be a bad thing from the point of view of the critic, or from the point of view of the one to whom the argument is addressed.

To show a circular argument is fallacious, the additional step should be taken of showing that a (C1) type of condition represents a reasonable requirement for that particular game of dialogue. This might occur where a certain set of propositions are set aside by the participants as "established facts" or "evidence" and the conclusion to be proven (which is in doubt) is to be proven from those prior facts, or from premisses equally well established. It is sometimes clear that the context (rules of evidence) does set requirements of this sort in place relative to a certain game of dialogue.

Yet in other contexts, unless some requirements of this sort does con-

stitute part of the objective of dialogue, circularity of argument may be judged more benignly. Someone who repeats premisses too often, or goes around in seemingly pointless circles, may be criticized on various grounds. But they may not be refuted by virtue of having committed a "fallacy" in the strong sense — meaning that their argument is flatly refuted. A good many circles in argument may be of this relatively benign sort.

6. The Missing Links

At any rate, we can now see why some circles in games of dialogue are to be judged vicious (fallacious) and others are not. It all depends on the requirements for plausible inference that the participants agree upon. Of course, in many quarrels and debates, the participants make no such previous agreements or even think about doing so. Small wonder then that they cannot agree whether an argument is to be fairly judged fallacious by reason of circularity or not. Hence if such criticisms are to be fairly dealt with, rules of dialectic must be established.

It is clear however that many an argument in ordinary conversational quarrels and debates may be woefully incomplete in other respects as well. Not only are the rules of inference often left unstated, but sometimes premisses are left out and only hinted at or stated unclearly. Often enough it is even unclear whether some proposition is meant by its proponent to be a premiss or conclusion. Small wonder circularity often rears its head but no decision concerning its fallaciousness can be fairly arrived at!

Thus preparatory to constructing a graph-theoretic analysis from a dialogue, there is much "cleaning up" of the argumentation to be done. If the argument is down in front of you in black and white, you may not be able to approach the arguer and ask him whether such and such a proposition was really meant to be a premiss in the argument. Perhaps the arguer may even have died some time ago! Such are the limitations of being a critic.

Of course, if the arguer is present, you can always ask him. That is why the game of living dialogue is the best possible model of argument and the fairest. However, in the absence of an available participant, some scrutiny of his argument can still be possible if the missing steps are filled in so that one's opponent is always given the benefit of the doubt. In short, the burden of proof is on the critic, not the victim of the criticism or allegation of fallaciousness. Let us therefore review the use of graphs to apply to realistic argumentation.

The first task of evaluating an extended train of raw argumentation is to determine a set of premisses and a conclusion for the argument. The second task is to determine the set of rules that are allowed in order to obtain the desired derivation of the conclusion from the premisses. Once the three elements — premisses, conclusion, rules — are determined, it is determined whether or not there exists a demonstration (derivation, solution). However, to be realistic, this is not all there is to it. The way a train of reasoning is commonly given, various practical problems complicate evaluation.

First, usually an argument includes some intermediate steps between the premisses and the ultimate conclusion of the argument. This sequence of steps is most often not a demonstration, but rather a roughly given outline of how the demonstration is presumably meant to proceed. The given sequence is compatible with some possible demonstrations but not with others, very often. That is, the complicating factor is that most likely more than one correct demonstration is possible. As far as the traditional concerns of logical analysis have been concerned, this multiplicity of solutions does not matter. What matters is the existence of a solution — the choice of one over another is a mere matter of aesthetics. But if we wish to evaluate for argument circularity it might matter, because it may be that one solution is circular, and one not. The intermediate steps, which act as guideposts in determining which solutions are compatible with the arguments, are therefore highly significant in evaluating an argument. For our purposes they cannot be dismissed, as they can be for the traditional, narrower purposes of logic.

Consequently, a number of things need to be filled on a graph other than the designated premisses, conclusions, and rules. The second phase of analysis is the setting out of the intermediate propositions as vertices of the graph that mark out the stages in the train of reasoning from the premisses to the conclusion. Next, we need to put in arcs to show which vertices are linked as presumed steps in the chain of argumentation. When this is done we may have a solution or not. If not we may have a partial solution. The partial solution may be compatible with only one solution or with numerous solutions.

Thus the unregulated nature of common quarrels and debates leaves many a gap, and methods of argumentation analysis may be only partially applicable. That is not the fault of the method or of dialectic however. It is simply a consequence of the rudimentary state of much conversational

argumentation.

Why use graphs in logic? We conclude this chapter with a number of general reasons why the analysis of argumentation is enhanced by the reconstruction method of logical graphs.

1. Picking out the premisses and conclusions of arguments is an important skill in the use of logic. It should be emphasized to students of logic that in logical evaluation of arguments it is necessary to correctly identify the premiss proposition and the conclusion proposition in order that the putative argument can subsequently be evaluated as being valid or invalid. The way classical logic is normally applied to the evaluation of arguments, the premiss propositions and the conclusion proposition are taken as already designated. This way of proceeding leaves open the question of whether these sets have been designated correctly. Using graphs will introduce some new constraints on the selection of these propositions. It will tell us whether there are argumentational redundancies in the premisses in the sense that it may be possible to delete some premisses and still have a valid argument. It will display clearly what the logical alternatives are in this regard. It will also identify argument redundancies by separating out sub-arguments that may be mingled in with premisses but that are not necessary for the conclusion we wish to prove. This process of sorting and clarifying premisses is especially important in connection with the next use of graphic methods. Quite generally however, the use of graphs enables us to organize a lengthy argument and see the overall direction it is taking us in, preparatory to evaluating the various aspects of the argument more finely.

2. In evaluating long trains of reasoning in, say, a book-length argument, or complex chain of reasoning, or any argument, it may be very useful to establish each step in the reasoning and then by means of a graph put all the steps together in the correct order to gain a sequential view of how the argument fits together and where it leads. Conversely, it may be useful to take a complicated web of argumentation, and break it down into individual steps to see what its component inferences are. Logical implication in classical logics is unrestrictedly transitive and does not therefore make the distinction between an argument "step" and an argument composed of a sequence of steps. But the method of natural deduction in effect displays such a distinction by marking off a proof as a sequence of lines each one of which is a direct consequence of its predecessor by application of a single rule of inference. Indeed, arrows are often used in natural deduction to

keep track of the discharging of assumptions, and the result is a graph-like display of the proof. Using graphs makes the step-like character of proofs even more explicit by enabling us to keep track of how we arrived at some step in a proof from its "distant" predecessors. But in addition, the graph allows us to tell by inspection what are the possible alternative routes from one point to another in an argument. This information is particularly critical in establishing whether a long train of reasoning might contain a circular argument.

3. A significant reason for using graphs in the analysis of arguments is that we are enabled to detect "circles" in an argument. The usual approach of classical logic is not much help in this connection without supplementation by methods like those we propose, for the argument, 'P therefore P,' is perfectly valid despite its blatant circularity — but see Woods and Walton (1977) concerning the limits of classical logic generally in the analysis of circularity in arguments. The graph of an argument enables us not only to tell whether there is a circle, but even to tell whether the proponent of the argument can break out of the circle in his argument by choosing a "route" of proof that does not require a circle.

Another advantage of using graphs is that we can not only determine whether an argument is circular, but we can see how to block the circle by dropping appropriate premisses or inferences. Thus we are informed by the graph when a fallacy of *petitio principii* is committed, but even better, we are given indication of how the fallacy may be avoided or circumvented in a specific argument.[5]

What a "circle" really amounts to as an identifiable form of logic error worth studying is a substantive and controversial question. Suffice it to say here that using graph theory enables us to formalize some significant philosophical intuitions about the logic of circular arguments.

4. One problem we are confronted with in determining premisses in the analysis of arguments is that of sorting between the case where (i) P_1 and P_2 may be taken as two premisses that jointly form, by their conjunction, an argument for conclusion C, and (ii) P_1 and P_2 are two possible alternative argument premiss-sets for C, each of which individually constitutes an adequate argument basis for C. If an argument of the first type is given, it is a useful task of analysis to be able to determine whether or not it contains evidentially overdetermined premisses so that it could be broken down into an argument of the second type with two or more independent sets of pre-

misses, each of which would be individually adequate to establish the conclusion. Classical logic by itself is not much help here. If an argument is valid, you can add as many premisses as you like, and it remains valid (If the premisses underdetermine the conclusion, then of course the argument is invalid. So classical logic tells us whether or not the premisses underdetermine the conclusion. But it does not tell us whether or by how much the conclusion of the argument is overdetermined by the premisses). It would be useful in clarifying arguments to be able to break down an overdetermined argument into alternative sub-arguments, if each of the latter constitutes a valid argument independently of its partners. Using graphs allows us to devise a pedagogically useful procedure for accomplishing this task of argument analysis.

7. Conclusions on Circular Arguments

The graph of an argument tracks the sequence of reasoning which represents the evidential backing of a particular conclusion in an argument relative to a given sequence of dialogue. The graph enables us to identify circular patterns of argumentation, and then we can go back to the game of dialogue that provides the context of the argument, and evaluate whether the circle should be judged vicious or benign. This means that in the theory of argument, there must be a mapping between the graph of the argument and the sequence of moves in the corresponding question-answer dialogue.

In fact, however, the pinning down of a given sequence of argumentation as being clearly and incontrovertibly fallacious is, in many cases, not that simple. The general procedure for mounting and replying to a criticism of an argument on the basis of its circularity falls into several distinct stages.

1. The critic must identify the circle in the argument. This means identifying the premisses, conclusions, and so forth, and constructing a graph of the argument justifiably based on the actual sequence of dialogue recorded.

2. The critic must argue that the circle is vicious rather than benign. He must show that the circular sequence of argumentation violates some requirement that can be established as an appropriate rule of dialogue to fit the context of the argument.

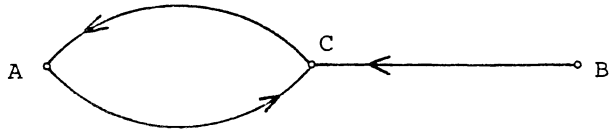
3. Ideally, the critic should confront the arguer who was alleged to have argued in a circle, and confirm points 1. and 2. Once the critic has documented and justified these three stages of mounting his allegation, the burden of proof falls on the arguer criticized to clarify or modify his posi-

tion, if he can, in order to rebut the charge. Such a rebuttal can take various forms.

4. The defender can maintain that his premisses or conclusions have been wrongly or unfairly identified, or that the sequence of his argument was not as portrayed by the critic. Using this rebuttal, he can claim that there is no circle in his argument.

5. The defender can concede that there is a circle, but can maintain that the circle is benign rather than vicious. Such a defence can take two forms, as in 6. or 7. below.

6. The defender can argue that although his conclusion may lie on a circle in his sequence of argumentation, that there is another evidential route by which his conclusion can be established, thereby making the circle non-worrisome. For example, supppose the defender's conclusion is C, and C lies on a circle in relation to another proposition A in the argument. The defender may claim that there is another evidential basis for C, namely B, that is not evidentially linked to A, or any other circle, in his argument.



In such a case, the defender admits there is a circle in his argument, but denies that the circle is vicious. How can he support such a defence? In essence, he argues that the requirement of evidential priority (greater plausibility of premisses required by the (C1) condition) can be met. He concedes that, true, it is logically impossible for A to be more plausible than C and C to be more plausible than A at the same time. But this circle of support does not matter, for it remains quite possible for B to be more plausible than C, provided only that there is no directed walk from C to B. He claims that there is an evidential route to C — from B — and that is enough to make the argument non-vicious even if condition (C1) applies to the dialogue.

7. The defender's other option is to retort that (C1) does not apply to his argument, given the context of the dialogue. If so, even if there is a circle in his argument, the defender has committed no fallacy that his critic can or should complain about. The above sequence of seven stages represents the

best way in which a criticism of *petitio principii* can be rebutted as benign or established as vicious. Even where the criticism does stick, and the circle is serious, however, the defender should always have a chance to modify or extend his argument to try to cope with or overcome the criticism. Hence the best and fairest way to conceive the fallacy of *petitio principii* is as a dialectical criticism that can be brought forward and defended against in reasonable dialogue.

This dialectical account of the criticism of *petitio* fits in with the characterization of the fallacy previously set out in Woods and Walton (1975). There, we sketched out two basic conceptions of the fallacy.

According to the *equivalence conception*, an argument is said to be circular if one premiss, or part of a premiss is either equivalent, or perceived to be so closely equivalent to the conclusion, that there is no advance. Why would there be "no advance" in such a case? In light of the present analysis, there could be no advance if one premiss is identical to the conclusion, for condition (C1) requires that every premiss be more plausible than the conclusion.

According to the *dependency conception*, an argument is said to be circular if some premiss depends on the conclusion, or cannot be established other than by presuming the conclusion as prior evidence for the conclusion. Once again, one might well wonder precisely why such a dependent argument must be fallacious? In our article (1975) Woods and I puzzled about this problem and attempted to explore some explanations. But in light of the analysis of the foregoing chapter, the answer has become much clearer. If an argument is circular and there is no path of argument to the conclusion from any proposition not on a circle also including the conclusion, then the requirement that the premisses be more plausible than the conclusion could never be met. Why not? The answer is that 'A is more plausible than B' is an asymmetrical relation. If A and B are both on the same circle in an argument, then if A is prior to B, B cannot be prior to A. You can have evidential priority one way or the other, but not both ways at the same time. To make A a premiss for B in a plausible argument with condition (C1) in place, you must have some other evidential route to B not including A, if there is a line of argument to A that includes B as a premiss.

The long and the short of our analysis of the *petitio principii* is that you have to be very careful in mounting this criticism that you get the argument right that you intend to criticize. What we have seen is that, in real life,

there may be many gaps and uncertainties in fairly reconstructing another arguer's sequence of argument. A good criticism of *petitio* therefore depends heavily on the resources of argument analysis built up in the foregoing six chapters.

In the fifth section of the last chapter, we will apply these lessons to some realistic case studies of criticisms of *petitio principii* in scientific research. These case studies will bring out very graphically the care needed in approaching real problems of evaluating *petitio* criticisms if practical logic is to be a genuinely useful and helpful discipline in supporting serious research and inquiry in specialized areas.

NOTES

1. For a fuller outline of Mill's puzzle, see John Woods and Douglas Walton, '*Petitio* and Relevant Many-Premissed Arguments,' *Logique et Analyse*, 77-78, 1977, 97-110.

2. See Hamblin (1970) for a further discussion of enthymemes.

3. A more complex example with the same moral is given in Walton and Batten (1984).

4. A fuller exposition of Aristotle's doctrines of circular argument is given in John Woods and Douglas Walton, 'The *Petitio*: Aristotle's Five Ways,' *Canadian Journal of Philosophy*, 12, 1982, 77-100.

5. Additional illustrations of the use of graphs to study circular argumentation are given in Walton and Batten (1984). The concept of a graph and its use to model arguments are developed in a more rigorous way in that article.

CHAPTER 7: FALLACIOUS ARGUMENTS FROM AUTHORITY

One of the most common types of fallacy cited in traditional criticisms of arguments is the so-called *ad verecundiam* fallacy, or fallacious appeal to authority. We are all familiar with famous authorities or celebrities of one sort or another whose prestige is utilized to back up persuasive appeals and pleas for support, often in a highly questionable way. The problem with analyzing this "fallacy" is that despite the notorious shortcomings of many such appeals, sometimes the use of expert advice or testimony appears to be quite a legitimate form of reasoning if you have no better evidence on which to formulate policy or make a decision. So how can we tell when such an appeal is legitimate or when it becomes fallacious?

The first thing to notice is that there are different kinds of authority. Judicial or legislative authority to enact or enforce a policy is quite different from the authority of scientific expertise to give advice on a question in an area of natural science. To make the discussion more manageable, we will concentrate in this chapter on the authority of "factual" expertise in a field of knowledge, and say no more about judicial or other forms of authority.

Such appeals to expert judgement are indeed deserving of the label "fallacy" insofar as they are open to notorious abuses and pitfalls. First, let us look at some of the shortcomings that must be avoided.

1. How Appeals to Authority Can Go Wrong

There are five basic conditions that must be met for an appeal to the authority of an expert to avoid fallacy.[1] Each condition represents one particular way in which such an appeal can fail to be adequate. The first condition stipulates that the source authority must be interpreted correctly. This condition, although it sounds trivial, is nonetheless a requirement that is in practice quite difficult to meet. The problem is that experts often speak in the technical language of a particular discipline, and therefore it is in practice quite difficult for an expert to communicate with someone who is a layman in that field. It is also characteristically very difficult for two experts in different fields to communicate meaningfully. Therefore, in quoting the

sayso of an expert it is quite important that the exact words in which the expert gave testimony be used — or at least as close as possible an approximation be given — so that the expert is not misquoted, and so that subtle changes in wording may be rendered without a misleading effect.

It is also notorious that experts will attach a number of conditions to their pronouncements. In many instances an expert will say, not that such and such will happen unconditionally, but that if certain assumptions are made, some outcome may occur. However, very often in appealing to authorities these conditions are not stated, or even overlooked, and the result can be a disastrous misinterpretation. Omissions of context, for example, preceding or following the quotation from an expert may radically effect the statement.

DeMorgan (1847) noted that there is a common practice of putting the pronouncements of experts together in a fallacious way. For example expert A may pronounce conditionally that if p then q. Then expert B may then come along and claim that in his view p is true. Further, some third party C may come along and draw the logical consequence q which follows deductively from both of these premisses, claiming that that is a reasonable inference to draw from the pronouncements of these two experts collectively. However, in fact it may be the case that neither expert A nor expert B agrees that q because neither agrees with the premiss of the other. Thus as DeMorgan wisely warned, it is a common vice to take one premiss from the individuals of one party, another from others, and to fix the logical conclusion of the two upon the whole party. However, such an inference while deductively correct, may nevertheless be quite fallacious if the conclusion of the inference is denied by both parties because they disagree with each other's premisses. We could call this the *fallacy of collective inference* in multiple appeals to authority.

The second general condition is that the authority should actually have special competence in his area of expertise and not simply some superficial prestige or popularity. It is actually quite difficult to say what constitutes special competence in an area and this depends on the particular field of expertise to which one refers. Obviously these kinds of criteria are not nicely standardized among different fields. Yet perhaps one should take into account factors like previous record of predictions, tests that the purported expert may have undergone, or access to qualifications, degrees or testimony of other colleagues.

The third condition is that the judgement of the expert must actually

be within that special field of competence. Too often what happens in appeals to expertise is that the expert may be an expert in field A and therefore may have considerable general credibility because of the prestige of this particular field. Yet this legitimate expert may make a pronouncement in field B, which is not very closely related to field A. Because of a certain halo effect from area A, added credibility may be given to this person's judgement in field B simply because he or she is an expert in some area.[2] However, it may be quite difficult to decide whether area A is closely enough related to area B for the expert's judgement in the second area to be accorded much credibility over that of a layperson. Therefore we have to be very careful to recognize that any appeals to expertise in particular fields are highly topic-sensitive.

The fourth condition is that direct evidence should be available in principle if the expert is queried. We presume that for any appeal to expertise to be adequate and reasonable, the authority should have based his or her judgement on relevant and objective evidence within the area of expertise. Of course with appeals to expertise we ourselves may not have direct access to this evidence.

In fact generally speaking we only appeal to experts, if in fact, it may be too expensive or otherwise difficult for us to have direct evidence. That is why we may legitimately appeal to experts as a secondary source of subjective knowledge when we have to make a decision. However, despite this subjective aspect of the appeal to expertise, the authority should be able to give some objective evidence to back up his or her judgement if queried. That is, we presume that the expert has based his or her judgement on some objective evidence even though this evidence may not be directly accessible to us.

If there is a panel of experts in a given area who disagree, and the judgement of one panel member on a certain question falls well outside the range of the common consensus, then that expert should be called upon to present evidence for his maverick judgement. This evidence can then be made available for the evaluation of the other experts. Thus the group technology of appeal to expertise suggests that where there is disagreement or cautionary reservation about the testimony of an expert, an independent evaluation of the evidence upon which that expert based his proposition should be made. We conclude then that it is a condition of a successful appeal to expertise that in principle direct evidence must be available.

The first condition is that a consensus technique may be required for

ruling on disagreements amongst qualified experts. It is a commonplace fact that experts do disagree and in order to adjudicate on disagreements it is very useful to have a consensus technique. After mutual inspection of the grounds of disagreement, experts can recast their judgements with the hope of converging towards agreement.

There have been methods developed, including the so-called Delphi Technique, for assisting this process of consensus in a panel of experts as an adjunct to face to face confrontation and panel discussion. The Delphi Technnique is a method for the systematic solicitation and collation of informed judgements on a topic that consists of a set of sequential questionnaires interspersed with summarized information and opinion feedback derived from earlier responses. The intent of the technique is to prevent professional status and high position from forcing judgements in certain psychological directions. The intention then is to ensure that the process of decision-making reflects a true consensus and not simply the psychological influence of an opinion leader or powerful charismatic personality.

In a round of the Delphi, each member of the panel is asked to write responses to questions and then the responses are made available to all the respondents by means of a letter. Any responses that fall outside a range of consensus can then be reviewed by subsequent rounds of responses. After several of these rounds one hopes that there will be a reduction in the spread of opinion. The Delphi then is an attempt to utilize an essentially subjective means of information to arrive at a decision where one does not have direct access to available objective evidence. Reliance upon expertise is not meant to be a substitute for direct experimental evidence, but it is a useful adjunct to it that enables one to make an intelligent guess if faced with a decision that can be based on expert knowledge.

2. Plausible Argument

What type of argument is an appeal to expertise? Hamblin (1970, p.218) suggests that we might at least begin with the deductively valid form of argument, where E_1 is an expert: Everything E_1 says is true, and E_1 says that p, therefore p is true. But if E_1 says that p, and E_2 says that $\neg$p, and E_2 is also an expert in the sense that everything she says is true, where are we landed? At least one of them is not an expert, at least in the sense of being perfectly veracious in what he or she said. Of course we all know that experts are not *always* right. Perhaps then, characterizing an expert as one who, whatever he or she says, always says the truth, is too unrealistic a

definition.

Salmon (1963, p.64) proposes a more realistic inductive model of the argument from expertise: the vast majority of statements made by E_1 are true, and p is a statement made by E_1, therefore p is true. This proposal still seems too restrictive to capture many appeals to exertise however. For suppose E_2, who is also such that the vast majority of her statements are true, makes the statement ⌉p. It must follow that ⌉p is probably true. And consequently, it follows that both p is probably true and ⌉p is probably true. But in the probability calculus the probability of p is always calculated as 1 minus the probability of p. This means that if the probability of p is high, then the probability of ⌉p must be low. Once again, we cannot have our cake and eat it too, and must therefore look to an even weaker model of argument to capture the type of inference characteristic of appeals to expertise. As we will also see with the *ad hominem* argument in chapter 8, deductive and inductive logic does not, all by itself, enable us to deal very effectively with the problem of how to proceed when confronted with inconsistency as a *datum*.

A theory of plausible inference constructed by Rescher (1976) is especially designed to help us carry on an orderly process of reasoning in the face of inconsistent data. The plausibility of a proposition is a weaker notion than either truth or probability, and it has to do with the burden of proof of the proposition in an argument. If I do not know in fact whether or not p is true, or even probably true, yet I have to act on p, I may decide that there is a certain burden of presumption in favour of or against p. One way of judging this might be if p is put forward in the argument by someone else's testimony or conjecture, and I have no reason to question or reject p. Another way would be where p is put forward by some expert witness or source. Now to say that p is plausible does not mean that p should be fully accepted as true, or as a commitment. Rather, p should be provisionally accepted unless some reason for rejecting it comes along. The key idea of plausible inference is that a conclusion cannot be less plausible than the least plausible premiss of a deductively valid argument (least plausible premiss rule).

There are two basic cases where plausibility analysis can be applied. If the given set of propositions making up our plausible data is consistent, we can determine the plausibility of some statement p (contained in the set of all the deductive consequences of the original set) as follows. Look over all the arguments, picking out the least plausible premiss in each case, then of

all these, select out the most plausible of the lot. We have already utilized this rule in chapter 4 in order to evaluate circular sequences of argumentation. When the given set of data is inconsistent, we have to pare it down by rejecting some of the propositions.

Suppose we find that a group of experts on a topic disagree among themselves. For example, on contentious topics like the question of the safety of nuclear energy, genuine experts may have severe disagreements. How can we proceed in the face of such an inconsistency? One method, already mentioned, would be Rescher's method of picking the maximal consistent set of propositions that contains the most plausible of the propositions in the original inconsistent set.

A second method would be the already outlined Delphi technique — a sequence of questionnaires sent out to the experts to try to locate their areas of disagreement. Then several more "rounds" of questionnaires are sent out, to try to get the experts to reach consensus by examining the reasons behind the dissenting opinions. One hopes by a series of Delphi rounds to achieve a convergence of opinion while avoiding the interpersonal psychodynamics of group face-to-face confrontation with its "bandwagon affect" and dominance of opinion leaders with strong personalities. This technique is supposed to be an alternative to more direct dialogue among the experts involved.

But we must ask whether, in the end, there can be any better method than simply allowing the experts themselves to argue the problem out by dialogue and criticism of each other's positions. These other methods may seem more "objective" but could that be because the method of dialogue seems too subjective as a reasoned way of resolving a dispute or working towards the truth? Let us look at some case studies.

3. Where Experts Disagree

The Shroud of Turin is a fourteen foot piece of cloth thought by some to be the burial shroud of Jesus Christ. Stains on the cloth, apparently bloodstains, outline the image of a man with braided hair, a beard, and a haunting, ascetic face. Several researchers have examined the cloth when it has periodically been displayed in a church in Turin, Italy. A laser physicist has suggested that nuclear energy could have scorched the cloth to produce the bodily outline displayed on it. Other techniques of analysis used on the cloth include x-rays, ultraviolet rays, infrared analysis and microscopic techniques. These seem to show the absence of any paint that might have

been used to produce the outline. Research on the cloth fibers show that it dates from the time of Christ. Pollen grains found on it indicate that it could have come from the Holy Land.

Other scientific studies have been done on the anatomical feasibility of the nail wounds being found on the wrist, as indicated by the shroud. All of these studies seem to confirm that the shroud could be genuine. Historians have reasons to be skeptical however. The shroud first surfaced in the fourteenth century in France, a notorious period for forgery of religious relics. Some further details of controversies surrounding the shroud are given in Woods and Walton (1982, p.92).

Some experts believe that the shroud is the genuine imprint of the body of a man around the time of Christ, but question whether it can be said that the imprint is in fact that of Jesus Christ. Others question the shroud's genuine status as a bodily imprint of some natural sort, and are inclined to think it must be a painting or artifice of some sort, possibly constructed during a period later than the era of the crucifixion.

It remains to be seen what inferences can be drawn from this morass of scientific evidence and expert disagreement. Part of the problem is that the various pieces of evidence come from different fields of expertise. Consequently, it is difficult to relate them together in an overall evaluation. Several carefully documented books have now been written about the Shroud of Turin, and so far the evidence is fascinating but inconclusive. No doubt further scientific tests will continue.

What is the best method for evaluating complex controversies among scientific experts on a question like that of the Shroud? What the various techniques may be said to "prove" appears to remain highly disputable. Scientific methods are involved, but could hardly be expected to yield the conclusion that the Shroud is genuine. It seems the best we can do is to refute the various possibilities of the Shroud's not being genuine. As Sir Karl Popper might point out, we cannot conclusively confirm the correctness of the hypothesis that the Shroud is genuine. We can only test this hypothesis by attempting to refute it. Then we can hold the hypothesis provisionally if no attempt to refute it is successful. The best we can say is that the genuineness of the Shroud is consistent with tests of the claim to date.

But these tests are conditional upon the state of the art in the various fields of expertise to which they belong. Since the controversies involved fall into many fields, perhaps it is better to say that the genuineness of the Shroud is a plausible conjecture according to the arguments of some

experts, and a dubious conjecture according to other experts. Where does this leave us? It certainly should not leave us in the position that no conclusion at all can be reasonably drawn on the Shroud of Turin.

But perhaps there is a danger of the *ad ignorantiam* fallacy here. Certainly we cannot conclude that the Shroud is genuine and a representation of Christ. But if there is no conclusive refutation of this hypothesis either, can we not say that the most intelligent conclusion is that the issue is still open to argument? That conclusion is non-vacuous, for it denies the claim that the hypothesis is conclusively refuted or rejected.

But given these uncertainties, how plausible is the claim that the Shroud is genuine? Surely this conclusion depends on the outcome of dialogue among the experts, and cannot be intelligently weighed apart from that dialogue. But why should we have doubted in the first place that the plausibility of a claim in dispute should be weighed by questioning and answering of participants in dialogue. Could it be our worry again that dialogue is too "subjective" a board of arbitration on matters of scientific truth?

4. Expertise and Legal Dialogue

Dissonance about throwing scientific truth into the arena of questioning by non-experts continues to be a strong factor in allowing dialogue as a legitimate method of argument, criticism and refutation. For example, many expert scientists called upon to give "expert testimony" in court are shocked at the way their knowledge is attacked. For one used to the cumulative methods of scientific experiment and inquiry may tend to perceive legal questioning and cross-examination as both illogical and threatening. If science is the objective truth, a feeling the scientist may hold to as an article of faith, how could it be challenged by legal questioning? The problem for the courts is to reach a verdict of "guilty" or "not guilty" by looking at the preponderance of evidence in one direction or the other.

In criminal cases, usually the presumption set is that the defendant is innocent — the prosecution must overcome that presumption by building a case strong enough to show "beyond reasonable doubt" that the accused committed a crime. The method is that of questioning both expert and factual witnesses.

But in law just as in history, as the Shroud issue showed, the facts are sometimes elusive. Once an event is in the past, we have to rely on the testimony of witnesses as our source of information. Such sources are "subjec-

tive." Hence the objective of dialogue is to shift the burden of proof rather than to conclusively verify by observation or experiment. If altering the burden of proof is a worthwhile objective, then why should we deny that dialogue has a place in the logic of argument?

Moreover, sometimes the testimony of expert witnesses can be ruinously misleading. In such cases, the only safeguard against the *ad verecundiam* fallacy is thorough cross-examination by competent and reasonable procedures of dialectic. A famous legal case should suffice to illustrate this point.[1] The "battle of the experts" is notorious in disputes over whether a defendant was "insane" at the time he committed harm. For psychiatry is notoriously open to questioning as a science, especially when it impinges upon issues of morality and responsibility. But even more well-defined areas like ballistics can become caught up in knotty disagreements between experts.

In the famous case of Regina v. Roberts (see *Canadian Criminal Cases* 34 (1977), 177-183 for the appeal), a man was convicted of the murder of a woman who lived in the same apartment building. The basis of the conviction was expert testimony that loose human hair found on the body, bed and nightshirt of the deceased were similar to those of the defendant. In his appeal, the accused man, through the assistance of a concerned attorney who had taken up his case, sought to introduce the evidence of two other experts who used different methods of hair analysis. Eventually the appeal led to a new trial and the man's acquittal.

At the original trial, no expert evidence had been brought forward to dispute the reliability of the expert testimony that led to conviction. However, an attorney took an interest in the case, and felt that new evidence indicated an appeal. He made the appeal successfully, and the case was then re-tried. It came out during this trial that the original expert had relied on scientific techniques of hair analysis that were outdated.

The first expert, a specialist in hair analysis in the forensic sciences, claimed that by looking at patterns and pigments in hair samples, he could judge when two hairs were "similar" to each other when examined visually under a microscope. The accused man was convicted, almost exclusively on the evidence that his hair samples matched those found at the scene of the crime.

The first expert had been a professor of pharmacology and organic chemistry. At the appeal and later at the re-trial, his testimony was challenged by an expert in the field of biochemistry. He agreed that there was a

visual similarity in the hair samples as claimed by the first expert, but claimed that the method used — that of comparative microscopic analysis — is subject to a large margin of error in the case of hair like the accused man's. He also claimed that according to a much more reliable procedure of testing — neutron activation analysis — the hair samples could possibly have come from two different persons.

A third expert also brought in to testify was a professor of nuclear physics and radiochemistry and had done research in radiochemical techniques for many years. This man originally developed the neutron activation technique used by the second expert. The third expert ran these tests on the same hair samples and concluded that it was very unlikely that they came from the defendant's head.

Based on the new evidence, the accused man was eventually found "not guilty" and released. In the meantime however, he had spent several years in prison. Upon release he stated that he was not bitter about his unfortunate experience, but he would be much more careful another time in trying to be of assistance to someone in distress. He had not realized what a compromising situation he had put himself in by trying to render assistance to the murdered woman.

What went wrong here? In the original trial, the defending attorney failed to seek out opinions of other experts, even though the judge clearly attached decisive importance to the testimony of the first expert. Legal decision-making is based on the model of argument embodied in the adversary system of questioning and challenge of opposing views. But it seems that it is easy to be impressed by the weight of scientific evidence presented by an expert authority. The method of dialogue cannot close the argument at that point however. Both sides of the argument must be represented as fully as possible, and reasonable care must be taken to secure relevant evidence. Here then is a lesson in caution concerning the essentially contestive nature of plausible inferences from expert testimony. Examination of both sides of an issue is ultimately the only safeguard against the fallacious *ad verecundiam* argument.

5. Dialogue and Expertise

If the appeal to the authority of expertise is a sometimes reasonable yet often slippery type of argument, how can we manage or evaluate such appeals? We have already noted that the type of argument involved is neither deductive nor inductive. Where can we turn to some model for grasping this

kind of argument?

We all agree that not all of us can be expert in every field of knowledge. Yet we can sometimes concede that somebody else is an expert even if we ourselves are not. But that is part of the problem. In a courtroom, and in many other contexts of argument, the expert must make his case and be judged by non-experts. And these laypersons must try to arrive at a conclusion based partly on the expert's testimony. Yet they do not have access to the scientific evidence presumably used by the expert as a basis for his judgement.

It seems then that each of us has a position in argument, his set of commitments that he is prepared to defend. But the expert has a large and very complex position presumably based on his scientific knowledge and experience. We do not have direct access to this pool of information, and we can only extract it from the expert by a process of question and answer (dialectic). Hence the logic of appeals to expertise reduces to the logic of dialogue. It's just that the expert is a special sort of participant in dialogue, due to his special skill or knowledge in special circumstances. We can reasonably defer to his sayso in some cases unless the dialogue yields a reason to think otherwise.

Here then is where an expert may be challenged in dialogue by another expert in the same field. By dialogue and argument, we must decide how to resolve inconsistencies in the joint testimony of panels of experts. If they disagree, both cannot be right. They may be able to resolve their disagreements amongst themselves. If not, we may have to decide, in dialogue with them, who has the best argument. This task is not an easy one for dialectic, and it is full of pitfalls, as we have seen. But when we have to arrive at some decision, then dialectic can be a more reasonable method than making a random guess.

Mitroff and Mason (1981, p.19) go even further and argue that more importance should be laid on the dialectical examination of an expert's argument than on any initial presumption about his credentials. They cite the example of the recent debate over the Vietnam War in support of their thesis (p.19):

> On every issue of importance, there can be found — or created — two experts, X and Y, who represent opposing views of the issue. It is further assumed that both experts are equally reputable, creditable, etc., and that therefore the choice between them is not to be made upon a surface or superficial examination of either their credentials or their policies.

Mitroff and Mason point out that a Hawk and a Dove on the Vietnam issue could both be using the identical data in their arguments, e.g. the casualty figures, economic figures on the cost of the war, and so forth. Yet using the same data, each supports his opposing view of the war. Thus the view gives meaning to the data, it seems, rather than the other way around. The data only become pointful in the argument when coupled with the antecedent position of the arguer. They conclude that dialectic is essential not only within science itself, but in using scientific evidence to make decisions on issues of great importance.

Law textbooks in court practice outline strategies for the novice advocate to manage evidence and procedure in a trial. A sample dialogue in Cohen (1973, p.535) instructs the lawyer on how to question an expert witness in the following sort of example: a coroner has testified that death was due to strangulation, but his autopsy report indicates no trauma to the neck. The lawyer would like to expose the obvious weakness in this testimony, for normally strangulation would have to mean some trauma to the neck. However, the expert may quite likely be able to resist that line of attack if questioned. How should the lawyer approach the problem? Cohen gives the advice: "Lead him with short, direct questions that generally call for "yes" or "no" answers." (p.535). One can see the advantages here of yes-no questions in strategy in dialogue over other types of questions that permit more freedom to the respondent.

The sample dialogue given by Cohen begins (p.535) with the following sequence of questions.

Q. Doctor Wright, did you file an autopsy report in the County Clerk's Office?
A. Yes, I did.
Q. And did you certify that report?
A. Yes.
Q. That report was based upon your examination and autopsy?
A. Yes.
Q. Isn't it fair to say, doctor, that you included in your certified report all significant data and observations made by you?
A. Yes, that's correct.
Q. And you did not take any testimony from other witnesses under oath?
A. No.

The lawyer then goes on to ask a series of yes-no questions concerning the condition of the victim's neck, larynx, and related areas, determining that there was very little evidence of trauma. Then the questioning continues as follows.

Q. Doctor, isn't it fair to say that you did not find the classic evidence of strangulation?
A. No.
Q. Doctor, as a matter of fact, just from your observations alone, you found no evidence of strangulation?
A. I found ....
Q. Doctor, can you answer my question, yes or no?
A. I found no evidence of strangulation except suggillations in the neck area.

Here we can see that the lawyer has had to do his homework. He has had to become knowledgeable to some extent about the nature of the injury and the relevant physiology, in order to ask the right questions. Even after having asked all the relevant questions, and found that there were no injuries that would be evidence of strangulation, he is still in trouble, however. For the coroner has found "suggillations in the neck area." The jury could be swayed by this possible exception. The lawyer's case would be weakened. How should he proceed from that point? Cohen (p.536) offers the following sample of continued dialogue.

Q. But, Doctor, they were not as a result of trauma?
A. I cannot tell.
Q. Did you not say in your report that there was no evidence of trauma?
A. I said that, yes.

Here, the coroner wavers by answering "I cannot tell," in effect undermining the lawyer's whole strategy for building up his case. But the strategy advocated by the sample dialogue above shows careful advocacy. The lawyer has laid the foundations for his argument by assuring that the coroner is committed to the accuracy and completeness of his own report, at the beginning of the dialogue. If you look back to the initial segment of the dialogue, you recall that the doctor agreed that his certified report included all his significant data and observations. Now when he vacillates on the question of evidence of trauma, the lawyer comes back to those ini-

tial admissions. The doctor, to be consistent, must answer to the last yes-no question by agreeing that in his report there was no evidence of trauma.

So the lawyer has effectively led the coroner to the edge of inconsistency of commitments. When the coroner answers at the later stages of the dialogue that he cannot tell whether the possible evidence of strangulation he claims to have found are the result of trauma, he goes against the report which he is committed in the dialogue to standing by. For at the very end of the dialogue, the lawyer gets the doctor to concede that the report said that there was no evidence of trauma. In terms of the theory of games of dialogue, the doctor's position has been shown to be ambivalent. He is committed to a certain proposition, but at the same time he has claimed that he has no commitment to that proposition.

So the lawyer's strategy has been highly effective. The coroner's move to wriggle out of the conclusion that the lawyer's questions were designed to lead towards has been effectively negated by the lawyer's over-all strategy in dialogue.

What one should especially notice about the strategy in the lawyer's dialogue is the careful way the questions are ordered. At the beginning of the dialogue, the lawyer carefully gets the doctor's commitment to the veracity, accuracy, and completeness of his report. Then later, when the line of questioning leads in a direction towards the conclusion the lawyer wants to establish, the doctor sees that conclusion coming, and finds a way to throw the conclusion into question, whether purposefully or not, it does not matter. However, having laid the foundations of his argument earlier, the lawyer can revert to those earlier premisses to close off the loophole. One key thing to observe here is that in dialogue-strategy, the order of the premisses in a question-answer sequence can be very significant.

This type of cross-examination in trial practice shows that an expert can be successfully questioned in his own area by a layperson if the layperson gets access to the relevant facts and uses them in a strategically well-constructed dialogue. Hence arguments from expertise can be plausible in some cases. But in some cases they can be successfully challenged or criticized by dialectical argument.

The best dialectical method to evaluate or challenge the plausible argument of an expert is to develop a strategy of yes-no questions that may lead towards inconsistency of commitments or ambivalence in the position of the expert. Such dialogue can shift the burden of proof to the other side.

6. Conclusions

Ultimately, the justification of the appeal to the sayso of a qualified expert comes down to certain practical constraints on decision-making in actual circumstances. It does often happen that a person has to arrive at a decision on how to act in a particular situation where it is not possible to opt out of, or delay the decision. For example, if the decision is whether or not to elect to take a certain medical treatment, even the decision not to take it may, in effect, represent a significant course of action. In such a case, the choice betwen treatment and non-treatment must be made, and it could be that for the proposed treatment to be effective, the decision must be made soon.

The first practical constraint obtains when a decision must be made within a definite time. The second practical constraint which may apply is that the decision-maker may not have access to the relevant practical skills or special knowledge to arrive at a reasoned conclusion on how to proceed without relying on the advice of someone else. For example, the decision-maker deliberating upon proposed medical treatment may not have time to acquire the needed medical skills or scientific information relevant to his problem so that he could make the decision on the basis of his own first-hand scientific evidence.

Given these two practical constraints, what should the decision-maker do? Flip a coin? A better method might be to go on the advice of suitably qualified experts or practitioners who do have the relevant knowledge of the type of question at issue. If their advice is carefully solicited and evaluated, it could be a better basis of plausible reasoning that might enable one to arrive at a conclusion, an "educated guess" on the best thing to do. If the decision-maker takes care to avoid the pitfalls we have previously discussed, his conclusion reached through dialogue with qualified experts could provide reasonable grounds for a plausible conclusion. If no better source of knowledge is available within the practical constraints of the problem, reasoning from a position of plausible premisses could be a reasonable way to arrive at a decision under uncertainty.

However, an objection to this form of reasoning under uncertainty can be posed. Are we not justifying arguing from ignorance (*ad ignorantiam*) in arriving at a decision or conclusion on the negative basis that no better knowledge is available? Indeed it seems that our justification of relying on the advice of suitably qualified experts as a form of plausible reasoning does

have the essential form of an *argumentum ad ignorantiam*. Could it be a reasonable form of argument from ignorance, like the case we cited previously of concluding to accept the proposition that a gun is loaded if in fact we do not know whether it is loaded or not?

To make sense of the *ad verecundiam* argument as a reasonable type of argument in some circumstances even if it is a form of *ad ignorantiam* reasoning, we have to revert to the basic distinction we made in chapter one between monolectical and dialectical reasoning. Monolectical reasoning is a relationship on sets of propositions in relation to reproducible evidence. A proposition may be said to have properties like being necessarily true, well-confirmed by evidence, and so forth. All of these properties have to do with our knowledge that the proposition is true. However, in the absence of confirming or falsifying knowledge, we may have to make conjectures on whether a proposition is plausibly true or not. Such conjectures can be reasonable in relation to whether the proposition has been reasonably criticized (refuted) or reasonably defended (criticisms rebutted) in reasonable dialogue. Hence the basis for justifying a proposition as being plausible, or not, is dialectical. Therefore, a proposition can be reasonably justified as plausible on a dialectical basis, even if we lack the knowledge, on a monolectical evidentiary basis, of whether it is true or false. Although plausible argument may be an argument from ignorance — meaning we lack knowledge or a monolectical basis for affirming or denying it — it can, in some instances, be justified as a reasonable form of argument from ignorance.

If an appeal to plausibility on the basis of expert sayso survives dialectical tests and criticisms of the types set out in the foregoing chapter, it may therefore be judged provisionally reasonable to accept as a commitment in dialogue. That does not mean it may not be overturned by subsequent dialogue. All plausible commitments are inherently liable to criticism or refutation. They can be a reasonable guide to action if no better (monolectical) evidence is available, but they should be regarded, in Rescher's words, as "fair-weather friends," subject to questioning and review.

In games of dialogue, the initial plausibility values of the propositions are given. This models the idea that the game modifies these initial values as strategies are played out, according to the rules of the game. In other words, the game is played relative to horizon of certain given "accepted commitments" of the players. This arrangement is very much like realistic argumentation, where each player approaches an argument with antecedent convictions that may be held with firmer or weaker degrees of convic-

tion. The function of dialectial argument is for the other participant in the argument to alter the firmness or weakness of those convictions in order to work towards the proof of his thesis.

When a proposition is brought forward upon the advice of someone thought by a participant in argument to be a suitably qualified expert, that proposition may be accorded a certain degree of plausibility by the participant. But another participant in dialogue can challenge or question the basis of the proposition, by the means we have examined in this chapter, and thereby alter the plausibility of it for the other player. The dialectical study of the *ad verecundiam* takes this questioning as its subject-matter.

NOTE

1. This case is more fully presented and analyzed in Walton (1984).

CHAPTER 8: VARIOUS FALLACIES

We have seen that dialectic can incorporate different logics as standards of correct proof, depending on the nature of the dispute and the conventions adopted by the participants. Classical deductive logic, relatedness logic and plausible inference each represent different standards of proof. What about other concepts of valid argument? Can these too be brought within the scope of games of dialogue?

1. Inductive Fallacies

Two commonly recognized types of fallacies may be called after Salmon (1963) *insufficient statistics and biased statistics*. These fallacies may occur when we argue to a conclusion concerning the distribution of properties amongst a population on the basis of evidence chosen from a sample. For example, suppose we have a bin full of apples, some red and some green, but there are far too many to count in the time we have available. However, we need to know approximately how many of this population of apples are green as opposed to red. There is a way. On the assumption that the apples are mixed up in a bin in such a way that the proportion of green to red is approximately the same throughout, we could choose a random sample. That is we could pick out a basket of apples selected at random, and then count the proportion of red apples to green in the sample.

The problem is that there are a number of ways in which this selection of a sample could go wrong. If we picked only two apples for the sample, our basis for extrapolating the proportion from the sample to the whole population would be meaningless. This would be a case of insufficient statistics. If we picked a sample from a section of the bin we saw to be mainly made up of red apples, our sample would be misleading. This would be a case of biased statistics.

To be reasonable, the sampling procedure must ensure that the sample selected is representative of the whole population in the relevant respect. If the population is homogeneous, a random sample may be taken, i.e. one where each item in the population has an equal chance to be in the sample.

If the population is such that the property in question is found in clusters throughout that population, some form of allowing fairly for the clusters of distribution must be taken into account.

The fallacies of inadequate statistics and biased statistics are related because a sample that is very small is much more likely to be biased than one that is very large in proportion to a total populaton. The important thing is that if the sample is very small, there is a very great risk of error, and if the sample is small enough, any statistical generalization may run such a large risk of error as to be virtually worthless. But a small sample, even though it may be almost meaningless from a point of view of reasonable sampling conditions, might still impress an audience that might have a tendency to exaggerate any suggestion of positive evidence because of lack of critical reflection about the size of the sample.

It is too easy to wrongly infer that what is true of a large sample must be true of a smaller sample. But this inference could be highly fallacious. The example of penny-flipping might help to illustrate two fallacies of this type. Statistical theory tells us that if a penny is a "fair toss," i.e. heads and tails are equally probable on each throw, then given a *large* number of tosses, the chances are reasonably good of getting a proportion of "heads" and "tails" that are roughly equal. But it does not follow that the chances are also reasonably good of getting half heads and half tails in a small number of toses. Second, if it is a "fair toss," we take this to mean that each outcome in a sequence is independent from its predecessors or successors in that sequence. That is, just because I got heads on this toss, it does not follow that it is more likely that I will get tails (or for that matter heads) on the next toss. Each toss is independent of the previous one. But we do tend to regard such sequences as "self-correcting" — for example, given a run of "tails" we expect the next toss to be more likely to be "heads." This is a fallacy however, and a common enough one that it has a name, the *gambler's fallacy*. The fallacy consists at least in part, of confusing a single member of a sequence with the whole sequence. That is, as we suggested above, statistics tells us that a sequence of a large number of "heads," H H H H H H H is a slightly less probable group of outcomes than one that contains a "tail," H H H H H H T. But if, instead of thinking of the whole group of outcomes, we concentrate on just one throw, say the last one in the sequence, then the chances of getting "heads" are just the same as those of getting tails, namely .5. As far as one single toss is concerned, we must disregard what went before, assuming again that the coin represents a "fair toss."

Why is it so easy to commit fallacies of inadequate and biased statistics? According to Amos Tversky and Daniel Kahneman ('Belief in the Law of Small Numbers,' *Psychological Bulletin*, 76, 1971, 105-110) people have a strong intuitive tendency to view samples of a population as being more representative of that population than sampling theory would indicate. They report, for example, that when subjects are instructed to predict the proportion of "heads" in a random sequence of fair tosses, they usually produce sequences that are far closer to .5 than the laws of chance would allow for short sequences. That is, people tend to have unrealistically high expectations about the "fairness" of the coin, especially for short sequences of tosses. Another tendency that people generally have is to think that short sequences of tosses are "self-correcting," e.g. if we have a string of "heads" there should be a trend forthcoming towards "tails." Tversky and Kahneman suggest that this phenomenon is the heart of the gambler's fallacy: "The gambler feels that the fairness of the coin entitles him to expect that any deviation in one direction will soon be cancelled by a corresponding deviation in the other. Even the fairest of coins, however, given the limitations of its memory and moral sense, cannot be as fair as the gambler expects it to be." The fallacy, according to Tversky and Kahneman, consists in the illegitimate inference that what is true of large numbers must also be true of small numbers. Thus intuitions can be misleading.

2. Deductive and Inductive Arguments

We might now conclude that we know at least something about what an argument is. At least we seem to know definitively that there are inductive and deductive arguments and how to identify them. Not quite yet, however. Suppose Sue advances the argument: Most gorillas are vegetarians, Marvin is a gorilla, therefore Marvin is a vegetarian. And suppose Bob counters: this argument is deductively invalid, and therefore a *bad* argument. Sue might well reply: it is inductively strong, and therefore a *good* argument. How are we to determine whether it is really a deductive or inductive argument?

The fact (at least we may presume it is a fact) that it is inductively strong but not deductively valid is no help. We know how it measures up against the standards of each category of evaluation, but that doesn't tell us which category it belongs to. We are back to the problem of determining when something is an argument, even if once we've got one, we can utilize deductive or inductive methodology to tell us whether it is a correct argu-

ment from each perspective or not.

As before, we might suggest that the argument is deductive (inductive) if the person who advances it honestly intends it to be deductive (inductive), but this question cannot itself be settled by deductive or inductive rules. Sometimes people are very confused about what they honestly intend. Thus it is clear that inductive and deductive arguments cannot be located and identified by the purely inductive or deductive models of argument through appeal to the internal structures of these models. And it is clear that an argument can be inductively strong without being deductively valid. Actually, without appeal to dialectic, there is even something of a difficulty with this latter proposal, as it is not clear from the internal mechanisms of deductive and inductive logic whether we want to say of deductively valid arguments that they are (a) as inductively strong as an argument can possibly be, or (b) not inductively strong at all, but rather deductively valid. The safest thing to say, dialectical considerations aside, is that we have two standards against which arguments may be evaluated as good or bad, the deductive and inductive standards.

We can summarize the lessons of the discussion as follows. There are deductive and inductive arguments, but the internal mechanisms of deductive and inductive logic cannot tell us how to distinguish between the two classes. Given any set of statements whatever, these two mechanisms will tell us that certain relations obtain among the statements such that a given relation is an instance of a *good* or *bad* deductive or inductive argument. All this tells us however is that *given an argument*, we can evaluate it from the perspective of the deductive or inductive model, whichever is appropriate. Thus deductive and inductive logic operate within dialectic as components of the larger theory of argument. These logics must always take the argument as given.

3. Post Hoc Arguments

Another fallacy often classified as inductive is the *post hoc, ergo propter hoc* argument (after this, therefore because of this). This fallacy is usually characterized as the argument from correlation to causation, as when one argues, 'I washed my car and then it rained — therefore one thing must have caused the other.' However, we have to be careful here to note that sometimes a correlation between two events is some evidence of the existence of a causal relationship. Thus the fallacy, more properly described, consists in the over-hasty conclusion that one event caused the other simply

because one followed the other. Sometimes correlation is just coincidence, rather than evidence of a causal connection.

The basic problem with giving a full analysis of this fallacy is that, at present, there is no widely accepted or well established account of the structure of causal reasoning. Thus any account of *post hoc* argumentation has to pick its way gingerly around this gap.

The general type of fallacy involved in *post hoc* can be characterized as follows. If two events A and B are approximately spatiotemporally coincident, we may say that A and B are related in the sense that A could possibly be a cause of B. However, if simply on the basis of that premiss, we conclude that A actually causes B, we have committed a *post hoc* fallacy. The error is a modal fallacy of arguing from possibility to actuality.

Until we know more about the analysis of causal inferences however, it is very difficult to say much very firmly about the positive nature of *post hoc*. Instead, the analysis of Woods and Walton (1977) proceeds by postulating several conditions each representing a way in which the *post hoc* fallacy may occur by failure of correct causal inference. Woods and Walton (1977) make no claim that the list is complete. Nevertheless, through it we get some idea of the sort of failures that are involved.

Any correct sequence of argumentation from evidence of correlation to a causal conclusion requires five basic types of premisses, as below. Let Φ, Θ and Ψ be events.

(P1) There is a positive correlation between Φ and Θ.
(P2) It is not the case that Θ causes Φ.
(P3) It is not the case that there is a third factor, Ψ, that causes both Φ and Θ where Φ does not cause Ψ.
(P4) There are no relevant instances of Φ-and-not-Θ.
(P5) Φ is pragmatically relevant to Θ.

Therefore, Φ causes Θ.

With this type of analysis, it is possible to see the variegated nature of *post hoc* fallacies. Different types of errors involve the failures of one or more of the premisses (P1) to P5).

In fact, it turns out to be possible to distinguish several distinct types of fallacies amongst the traditional treatments of the *post hoc*.

1. Concluding that Ψ was followed by Φ just because Ψ temporally followed Φ, or because some instances of Φ were followed by instances of Ψ. The problem with this type of inference is that by overlooking (P2) to

(P5), it leaves too many gaps. The correlation between Φ and Ψ may just be coincidence. According to an example often cited by statistics textbooks, there is a nearly perfect correlation between the death rate in Hyderbad, India, from 1911 to 1919, and variations in the membership of the International Association of Machinists during the same period. However, to claim on that basis that these deaths in India were the cause of the fluctuations in the membership of the machinists association would be a hasty conclusion.

2. Reversing Cause and Effect. Just because there is a correlation between Φ and Θ, it may not be clear whether the correlation is due to the relationship that Φ causes Θ or that Θ causes Φ. For example, there may be a correlation between wealth and participation in mutual funds. But which causes which? In the absence of further information, it may be difficult to arrive at a conclusion. Campbell (1974) relates the following example of a market researcher, asked to find out if spending more money on advertising would increase sales. He selects a random sample of businesses which shows a strong positive correlation between sales in dollars and advertising expenditures. What to conclude? Perhaps the businesses with high sales are also the ones most inclined to spend a lot on advertising. The possibility is that the causal relationship might be going from sales to advertising, rather than the other way around. Thus our market researcher should be careful about rushing to a quick conclusion, at the risk of committing a *post hoc* fallacy.

3. Concluding that Φ causes Θ when both may be the effects of some third event Ψ. A metereologist finds that a drop in the price of corn has a negative relationship with the severity of hay fever cases in the population. Rather than indicating a causal relationship between the price of corn and the incidence of hay fever however, a further common causal factor may be indicated. Perhaps it is the weather. When there is good weather, there tends to be a bumper corn crop, and corn prices fall. At the same time, good weather usually means a good ragweed crop, and thereby leads to hay fever aggravations. Thus it would be misleading to say that the low price of corn causes severity of hay fever. Rather, both conditions are due to a common cause — the weather.

4. Overlooking information that may run counter to the trend of a correlation. Suppose we find that there is a correlation between persons who eat an apple a day and those who visit the doctor less frequently. It would be quite erroneous to conclude that anyone who eats a bushel of apples every day would never visit the doctor. The problem here is that a positive

correlation may hold up to a point, then begin to take on a negative significance. This fallacy consists in not taking (P4) into account in causal inferences.

Perhaps we have seen enough to suggest that *post hoc* fallacies are indeed significant errors in argumentation, and deserve the serious attentions of applied logic practitioners. It is clear that the efforts of philosophers of statistics and social sciences to better understand the nature of causal inferences can be usefully put to work in further research on the structure of the *post hoc* fallacy.

4. Slippery Slope

Another type of fallacy having to do with questionable causal inferences is the so-called *slippery slope* fallacy. A commonly used argument on the topic of euthanasia is the following.

If we allow non-utilization of aggressive therapies in intensive care units, we have to allow other waiving of treatments that might shorten life. For example, we should allow patients to decide not to take chemical treatments for cancer. But if we allow that, it is a short step to allowing patients to take medications that might have the effect of shortening life, even if the treatment is not aggressive or painful. And if we allow that, it is just another short step to allowing patients to alleviate any uncomfortable or undesirable situation by committing suicide. Once we reach that stage, it becomes very easy to recommend euthanasia for mentally retarded persons, or anyone who requires inconvenient or costly treatment or support. Now we all know from the experience of Nazi Germany, it is a short step from there to elimination of any "socially undesirable," i.e. politically dissident persons. So once you start in with euthanasia at all, you are on a slippery slope to disaster.

A slippery slope argument of this sort has the following form. Event A_0 is directly related to A_1, and event A_1 is directly related to A_2, and so on to A_j and through a sequence of steps to some disastrous event A_k. So once you start by engaging in A_0 you must inevitably activate some intermediate sequence $A_i, \ldots, A_k$ with the end result A_k. But the difficulty with an argument of this form is that the "inevitable sequence" is only as strong as its weakest link. Moreover, in practice, many intervening steps of the sequence may be left out, or only roughly sketched in or suggested.

While slippery slope arguments are often partly causal in nature, they sometimes have to do with the vagueness of terms. The slippery slope argu-

ment above may trade for part of its plausibility on the vagueness of the term "euthanasia." The first step is one that need not necessarily be described correctly as "euthanasia." For example if "euthanasia" means "intentional termination of life (for kindly purposes)" then non-utilization of an aggressive therapy by a physician in an intensive care unit would not necessarily be euthanasia, according to many physicians. Presumably, the doctor's intention may not be to kill the patient, but only to spare needless suffering by aggressive treatments that would not cure the patient. So the question is raised: at what point along the sequence of steps does the act in question become "euthanasia?" Perhaps the participants in the dispute cannot unanimously decide. If not, the proposer of the slippery slope argument definitely "euthanasia" as all would agree, and acts that his opponent would not normally be inclined to agree to as being describable as "euthanasia." say "Well, that's the insidiousness of it. You can't really say when it gets started. But once you're into it it's too late to do anything about it in order to decisively stop it. You're on the slippery slope!" Hence the vagueness of terms in natural language makes the slippery slope all the more vicious. Its proponent can claim that there is really no difference between acts that are definitely "euthanasia" as all would agree, and acts that his opponent would not normally be inclined to agree to as being describable as "euthanasia".

The slippery slope is similar in some interesting respects to an ancient type of sophism called the "heap" or the "bald man" argument. The form exemplified by the example below is sometimes called the *sorites* argument.

(P1) Every man who is four feet tall is short.
(P2) If you add one tenth of an inch to a short man's height, he still remains short.
(P3) Every man who is shorter than some short man is short.
Therefore, every man is short.

The third premiss assures us that we include cases of men whose heights are not multiples of one tenth of an inch. The reason why this argument is called a sophism is because (i) it is deductively valid, (ii) the premisses are true, and (iii) the conclusion is false. However, (i), (ii) and (iii) together constitute a contradiction. For as we remember, a deductively valid argument is defined as one where it is impossible for the premisses to be true and the conclusion false. Philosophers do not agree on how to solve the problem, but most attempted solutions either deny the validity of the argument or deny the truth of one of the premisses.

One way to solve this type of problem is to deny the bivalence of classical logic and instead propose that propositions are true (to a certain degree) or false (to a certain degree). According to the *fuzzy logic* of Zadeh (1975), we should say of the proposition that Bob is short that it is true (or false) to a certain degree. In other words, instead of propositions taking on only two values, T or F, they could take on a range of values in a so-called *many-valued logic*.

By this approach, a solution to the *sorites* problem is offered by King (1979). The premiss (P2) is called the *inductive step* of the argument, meaning that it has a conditional form that can be applied over and over, enough times to assure validity of the argument. To see how this works, let's establish a correspondence between the natural numbers and the heights of the men in the argument. Let 0 be the height of a man four feet tall. Then let 1 represent an addition of 1/10", so that 1 represents the height of a man 4 feet 1/10 inches tall. Then 2 represents another gain of 1/10" and so forth to the n-th man in the argument. The *base step* of the argument says that 0 is short. And the inductive step says that for all the men in the argument, if any man i is short, then man i + 1 is also short. Hence if you apply this inductive step over and over again, you will eventually get the conclusion that all men are short. In other words, the *sorites* argument is like an indefinitely long chain of *modus ponens* arguments.

King's solution proceeds as follows. The conditional that makes up the *modus ponens* form of the inductive step is said to be true to a degree. That is, the propositions in a fuzzy logic have accuracy values instead of truth values, and these accuracy values can vary from relatively high to relatively low. Thus the conditional, instead of having an absolute value of "true," rather has only a sort of practical legitimacy which gives it a fairly high value of accuracy. As this conditional is re-applied over and over in each *modus ponens* step, the guaranteed minimum value of the conclusion decreases slightly each time. Thus the premisses of the *sorites* argument do not guarantee the conclusion absolutely, because the inductive premiss is less than absolutely true. In other words, as you keep applying the inductive step over and over, it tends to guarantee to a less extent each time that the next man it applies to will accurately be measured as "short." Hence the *sorites* argument fails to prove that absolutely every man is short.

If fuzzy logic is the right approach to the *sorites* and related sophisms due to vagueness, then it is suggested that the best means for studying the logic of slippery slope arguments may be fuzzy logic.

5. Equivocation

Another fallacy has to do with the meanings of terms in natural language, but instead of being based on vagueness of terms it is based on their ambiguity. A word is said to be ambiguous if it has more than one meaning. For example, the word 'discrimination' is ambiguous. Sometimes it means 'unfair practice' and sometimes it means 'good taste.' Ambiguity may in itself be quite harmless, but sometimes it is the basis of the fallacy of equivocation.

Equivocation occurs where an arguer puts forward an argument that has an ambiguous term in one premiss, the same ambiguous term elsewhere (in another premiss or the conclusion, let's say), and where the ambiguity leaves the recipient of the argument enough scope to go wrong. How can an equivocal argument go wrong? Let's take an example.

(P1) Marcia showed discrimination in acquiring her lovely new dress.
(P2) Discrimination is illegal in this state.
Therefore, Marcia acquired her new dress illegally.

What appears to have gone wrong with this argument is that 'discrimination' is most naturally taken to have one of its meanings in one premiss, and the other in the remaining premiss. But what is wrong with that?

Essentially what is wrong is that the argument is valid and the premisses are true, or so we may presume at any rate, yet the conclusion may be quite false. A contradiction! How is it to be resolved?

The resolution of this sophism turns on the observation that there are really four arguments involved, not just one. Because of the ambiguity of 'discrimination,' each of (P1) and (P2) can be taken in two different ways, one true (or at least highly plausible) and the other false (or at least highly implausible). Where 'discrimination' means good taste, (P1) comes out true, but (P2) is false. Where 'discrimination' means unfair practice, the opposite obtains.

Here is the rub, however. Either way you consistently choose to assign these meanings to (P1) and (P2), the argument comes out with a false or implausible premiss. The only way to make both premisses true is to mean 'discrimination' in one sense in one premiss, yet take it in the other way in the remaining premiss. However, that would make the argument invalid! Consider,

(P1) Marcia showed good taste in acquiring her lovely new dress.
(P2) Unfair practice is illegal in this state.

Therefore, Marcia acquired her new dress illegally.

The result of consistency in assignment of meanings is invalidity of the argument.

The upshot of all this is that we can't get a good argument out of the four available possibilities — all are either invalid or have false premisses. In other words, the equivocator is really inviting you to be inconsistent by taking the premisses in the most plausible way yet also taking the argument as valid. He is really inviting you to accept more than one argument disguised as one. He is saying "Here. Take one valid one, and one with good premisses, then you can have both validity and plausible premisses." But the problem is that it is not the same argument in which these two desirable properties jointly occur. Hence the fallaciousness of equivocation. We have merely the appearance, but not the reality of one valid argument with plausible premisses.

Both equivocation and slippery slope are significant fallacies because much argumentation takes place in natural language, where vagueness and ambiguity of terms is not unusual. These fallacies therefore raise questions about the extent to which dialectic should be formalized. These important questions about the limits of practical logic demand further study. We devote chapter 10 to an extended study of the fallacy of equivocation. The theoretical implications of this particular fallacy have already been made evident by the chapter devoted to equivocation in Hamblin (1970).

6. Amphiboly

Another traditional fallacy called *amphiboly* is said to occur when, like equivocation, an argument is taken two ways. But in amphiboly, the ambiguity is supposed to be connected with the grammar of a sentence or phrase, rather than the meaning of a word as in equivocation.

Often however, supposed examples of amphiboly are merely grammatical ambiguities and not arguments at all. A couple of this type of case are:

ROADHOUSE SIGN:	Clean and decent dancing every night except Sunday.
LAUNDROMAT SIGN:	Customers are required to remove their clothes when the machine stops.

These are not even arguments, and consequently cannot be fallacies.

Such a shortage of serious examples of this alleged fallacy leads Hamblin (1970, p.18) to state that until we get an example of an argument

where the ambiguous verbal construction could be genuinely misleading, it is hard to take amphiboly seriously as a fallacy. Perhaps the following example partially fits Hamblin's requirements: Bob said that the shooting of the hunters is terrible, therefore Bob must be against the killing of game. The grammatical ambiguity of what Bob said is three-fold. He could have meant that (1) what the hunters did was a terrible act, a crime, (2) the hunters are bad shots, or (3) the fact that the hunters were shot is terrible. Of course the conclusion indicates that (1) is meant, and certainly the argument would not be valid if (2) or (3) were meant.

Clearly this is the sort of argument the textbooks have in mind by amphiboly. How serious an example it is in Hamblin's sense remains to be seen. So the question — whether realistic specimens of amphibolous argumentation can justify the status of amphiboly as a serious fallacy — remains open to further discussion in chapter 10.

7. Composition and Division

In modern textbooks, the fallacies of *composition* and *division* have to do with incorrect arguments from parts to wholes or vice versa, usually with physical parts and wholes in mind. To argue that each part of a complex physical object is light in weight, therefore the whole object is light, would be clearly incorrect (fallacy of composition). Conversely, to argue that the whole is heavy, therefore each part is heavy, would be incorrect (fallacy of division).

The medieval accounts, deriving from Aristotle, often had more subtle examples in mind. For example, the illustration Aristotle gives in the *De Sophisticis Elenchis* (166 a 22 - 166 a 37) is an inference of modal logic. Aristotle distinguished between the *divided* sense of 'A man can walk while sitting,' according to which it is true, and the *compounded* sense, according to which it is false. In the divided sense, the sentence says that a sitting man has the power to walk. In the compounded sense, it says that a man has the power to walk-while-sitting (presumably, at the same time). We suggested above that this fallacy is a modal one for it seems to reflect the invalidity of the modal inference, 'p is possible and q is possible, therefore $p \wedge q$ is possible.' For example, it may be possible that this pencil is red, and possible that it is not red, but it hardly follows that the statement 'This pencil is both red and not red' is possible.

Sometimes both modern and medieval examples have to do with the distributive and collective use of terms, a kind of inference different again

from the two kinds of examples of composition and division above. One specimen of composition proposes that it would be fallacious to argue from the premiss that buses (individually, that is, taken distributively) use more fuel than cars, to the conclusion that buses (collectively, that is, as a whole set) use more fuel than cars. However, in our remarks we will comment only on the most common modern interpretation of these fallacies, which is concerned with physical parts and wholes.

The basic problem for composition and division is that some but not all properties are compositionally and divisional hereditary over physical objects in the following sense. A property is *compositionally hereditary* with regard to a collection of parts of an aggregate if, and only if, the whole has that property if every part has it. For example, if all the parts of a machine are metal, then the machine is metal. The converse property, going from the whole to the parts, is that of being divisionally hereditary. The fallacy occurs when a predicate is mistakenly thought to be compositionally or divisionally hereditary.

Clearly the analysis of this sort of fallacy takes us well beyond classical logic, or any of the other well-known deductive non-classical logics. In fact, it requires a theory of collections of physical bodies. There are a number of such theories, but it is argued in Woods and Walton (1976) that the most hopeful for this purpose is a theory of aggregates due to Burge (1977). Aggregates are physical entities in space and time, plural constructions made up of bodies. Not all parts of an aggregate however are parts that make up that aggregate. For example, an iron chain is an aggregate, and its ironness distributes over the parts that make it up, but not over other parts, e.g. the sub-atomic elements that it contains.

Thus although some of the medieval examples of composition and division are amenable to analysis within well-known deductive formal logics like modal logic, the modern examples clearly demand treatment within systematic accounts of inference that go beyond the usual range of deductive logics. While there are resources for this purpose, and future research on composition and division will undoubtedly benefit from their use, a good question to pose is how far practical logic wants to go in the direction of these theories.

CHAPTER 9: ARGUMENTS AGAINST THE PERSON

We have already encountered the notorious *ad hominem* fallacy in chapter one. There, you will recall, we saw that, as traditionally conceived, this fallacy can take two forms.

The first, the abusive *ad hominem*, consists in the ploy of avoiding argument by directing derogatory remarks against the character of one's opponent in argument. A second form, the circumstantial *ad hominem*, involves the allegation that some personal circumstances of one's opponent are inconsistent with the propositions advanced by the opponent as her argument. As we saw, the *ad hominem* argument is often thought incorrect not least because of its irrelevance.

1. Poisoning the Well

The *ad hominem* is such a forceful strategic move in argumentation that it is often quite successful in achieving its purpose of altogether stopping the argument in midstream by undermining the opponent's position. Sometimes in fact, this refutation is so devastating that further argument is made pointless or ineffective.

An interesting example of the circumstantial *ad hominem* argument occurred in a debate on the topic of abortion in the *House of Commons Debates of Canada* (Volume 2, November 30, 1979, p.1920). In the midst of a lengthy argument on abortion, the speaker made the following interjection.

> I wish it were possible for men to get really emotionally involved in this question. It is really impossible for the man, for whom it is impossible to be in this situation, to really see it from the woman's point of view. That is why I am concerned that there are not more women in this House available to speak about this from the woman's point of view.

The speaker is here suggesting that a man can't help being opposed to abortion, or at least taking a particular view on the subject simply because he is a male person and therefore the topic is in certain important respects, inaccessible to his full understanding.

However, it could be pointed out that a counter to this argument is available to an opponent, namely you can't help being in favor of abortion or at least taking a certain point of view on the issue because you, the speaker, are a woman, someone who is in a position to experience unwanted pregnancy and consequently is unable to resist favoring certain positions on the issue. This rejoinder creates a stalemate situation in the dialectic, and in effect stops further discussion, because it implies that neither side can help taking their particular side or position. The conclusion to be inferred is that there is simply no point in continuing the argument.

Indeed, an *ad hominem* move is often so effective in stopping an argument and undermining an opponent's position that it has been sometimes called "poisoning the well." This term was evidently coined by Cardinal Newman who protested an allegation that as a Catholic Priest he did not place the highest value on truth. Cardinal Newman replied that the accusation created a presumption that made it impossible for him, or any other Catholic, to state his case effectively or successfully bring forward further arguments. Cardinal Newman added that such a presumption made it impossible for him to prove that he did have regard for the truth, and if he could not prove that, any argument he might henceforth propound would automatically be open to the same suspicions and doubts. Thus the term "poisoning the well" is indeed appropriate in connection with the *ad hominem* move, because we can see that once the source of the argument is impugned, any argument that might subsequently come from that source, no matter how correct it might be in itself, is condemned by the original rebuttal of the source from which it proceeds. Thus the *ad hominem* argument often has the effect of being a conversation-stopper or blocker of further argument.

One lesson of this is that whenever there is an *ad hominem* accusation, the person accused should always be given fair opportunity to reply to the charge. Very often however, as in the abortion example, the argument is cut off so effectively that it is very difficult to know how to proceed from that point.

It is very natural that textbooks have been inclined to think that one of the failures of the *ad hominem* argument consists in a failure of relevance. In the abortion example, the charge is that the opponent happens to be a man. This fact may be true, and may therefore appear unchallengeable and stop the argument. However, what may be overlooked is that the issue has been changed. The true fact advanced is not directly relevant to establish-

ing the claim that abortion is morally right, or its opposite claim that abortion is morally wrong. In some way the topic or issue has been forcefully changed or re-routed so that the arguer really has no option but to attempt to respond to the *ad hominem* allegation, and thereby at least temporarily drop the main line of argument in order to respond to the opponent's challenge. This disruption of argument is very often a threatening or upsetting challenge for the arguer to encounter, and it seems that he loses either way. If he responds to it, he loses track of his original argument. If he does not respond, he finds himself unable to further advance his argument with much effectiveness.

Characteristically, an *ad hominem* circumstantial attack is mounted on the basis that there seems to be an inconsistency in the position of the arguer criticized. Whether there truly is an inconsistency to be found in that arguer's position then becomes subject to clarification and dispute. Because the alleged inconsistency is characteristically an ostensible one, sometimes it is hard to resist the interpretation that the attacker is advancing the alleged inconsistency more in an attempt to discredit his adversary's position or ethics, rather than trying to clarify that position. Sometimes, that is, one suspects that the *ad hominem* is merely a diversionary skirmish rather than a serious attack of the opponent's position.

In the following dialogue from *Hansard* (*Canada*: *House of Commons Debates*, vol. 24, no. 32, 1983, p. 27379- 27380), Mr. Crosbie, a member of the Conservative Party, attacks the position of the Liberal Party on the subject of the economy. (I would like to thank Nora Nolette for drawing this debate to my attention.)

> *Hon. John C. Crosbie* (*St. John's West*): Madam Speaker, my question is directed to the Minister of State for Economic Development. In his brief to the Macdonald Commission yesterday, the Minister stated this:
>
> *Real interest rates are high, and this seems in part a reflection of worries about a possible resurgence of inflation and the large fiscal deficits in North America.*
>
> He said:
>
> *— economic forecasts project a relatively weak economic performance, and a persistent unemployment problem.*
>
> How does this square with the statement of the Minister of Finance of his Government that "We have a recovery here second to none in the world so far"?

Who is deceiving the Canadian public, or who is correct? Is the Minister correct when he says, as he did in his brief, that we are having a weak economic performance? What will he do specifically to overcome that economic performance because, in all of this flatulent flapdoodle, there is no one suggestion of what should be done to overcome persistent unemployment?

Hon. Donald J. Johnston (*Minister of State for Economic Development and Minister of State for Science and Technology*): Madam Speaker, the document to which the Hon. Member makes reference describes the world environment as expressed by observers. It brings together the conventional wisdom of which he perhaps is unaware. Essentially, it deals with the challenges that lie ahead.

I should add that this submission, which comes from me as Minister of State for Economic Development, is a paper of challenge. It is not supposed to be a paper of policy. The Macdonald Commission invited us to put these issues before them for consideration. I found their reaction to be quite positive, and their questions to be quite intelligent.

Hon. John C. Crosbie (*St. John's West*): Madam Speaker, my supplementary question is for the Minister who presented this submission on behalf of the Government to the Liberal leadership commission meeting in St. John's, Newfoundland, yesterday. I refer the Minister to page 3. The Minister refers to a time of only moderate economic growth momentum. He said that we have a lingering inflation problem, large fiscal deficits, and all of this militates against a major surge in demand. Who is correct about our situation — the Minister of Finance who says we have a recovery second to none in the world, that demand could be moderated; or the Minister in his brief where he says that everything militates against a major surge in demand? How can we have more jobs and economic recovery if there is a major bias against a surge in demand? Who is correct? Who is deceiving the Canadian people, and how can this be overcome?

An Hon. Member: A change in government.

Hon. Donald J. Johnston (*Minister of State for Economic Development and Minister of State for Science and Technology*): I can see no conflict in anything that has been said, Madam Speaker.

Some Hon. Members: Oh, oh!

Mr. Johnston: We all know, those of us who have studied economic conditions in the world, that major structural changes have taken place. There have been changes in demand patterns. There have been changes in world supply patterns.

Mr. Crosbie: Who is telling the truth?

Mr. Johnston: And these have had an impact on our economies. We know that the demands for consumer durable goods will not be as they were in the 1960s and into the early 1970s. These are things that are known. This in no way suggests that we do not have a strong economic recovery under way. In fact, the recovery is surprisingly high. But there are still concerns, as the Hon. Member knows, surely as finance critic for the Opposition, about the level of real interest rates in the United States and also here, although somewhat less, and this has been interpreted as perhaps a fear among the population that inflation may recur because of the very large U.S. deficit. Everybody knows these facts. There is nothing new here.

Mr. Nielsen: Who is telling the truth?

Mr. Johnston: The Minister of Finance has dealt with these issues on many, many occasions, both in speeches and in the House. I see nothing in this paper that I submitted that is in any way in conflict with any of the statements he has made.

Mr. Crosbie: Which one of you is the deceiver?

Mr. Crosbie accuses the Liberal Party of inconsistency. A reported statement of the Minister of State for Economic Development says that there is a possible resurgence of inflation and large fiscal deficits in North America. This statement seems to conflict with another, attributed to the Minister of Finance, that claims that we have a recovery here [Canada?] second to none in the world. Moreover, the first statement adds that weak economic performance and a persistent unemployment problem are predicted. As Mr. Crosbie alleges, these statements seem to run counter to each other.

The pointing out of this apparent conflict is legitimate enough, except that Mr. Crosbie follows it up by posing a question that is unfair: "Who is deceiving the Canadian public, or who is correct?" For even if the two ministers have contradicted each other, it hardly follows that one can be fairly accused of deceiving the public. Moreover, Crosbie goes on to accuse the Liberal policy on the economy of being "flatulent flapdoodle," and adds that it is not doing anything to overcome unemployment. Both of these statements are packed as presuppositions into Crosbie's complex question asking what the opposing party is going to do to overcome the weak economic performance. By posing this series of complex and loaded questions, Crosbie attempts to make it more difficult for his opponents to deal with the *ad hominem* attack he has mounted.

Mr. Johnston replies that the paper quoted by Mr. Crosbie is not a statement of policy, and describes the world environment as expressed by

observers. However, Mr. Crosbie is not satisfied with this answer, and repeats his *ad hominem* allegation and accompanying questions.

Finally, Mr. Johnston replies that there is no contradiction. He points out that even though demand for consumer products has lessened and therefore demand levels will never be as high as in the sixties and seventies, this does not suggest that we do not have a recovery underway. According to Mr. Johnston then, there is no inconsistency. There is a recovery at the moment, but there has been a general decline over the longer period, and there will likely be problems with inflation in the future. Specifying the times of these fluctuations more precisely, then, has resolved the apparent inconsistency.

Mr. Johnston's reply is what one expects, and seems reasonable. Economic indicators are highly relative to particular times and conditions. However, the Conservative critics persist in their aggressive *ad hominem* questions, undaunted. Mr. Nielsen repeats Mr. Crosbie's question, "Who is telling the truth?" and Mr. Crosbie concludes the question period by saying, "Which one of you is the deceiver?" These repetitions suggest that the *ad hominem* criticism was meant more as attack than an attempt at clarification of the Liberal position on the economy.

In many cases, what is especially objectionable about an *ad hominem* attack is not so much that the criticism of inconsistency is in itself unwarranted or unreasonable, but that it has diverted the dialogue away from issues that are more serious and germane to the dispute.

2. The Sportsman's Rejoinder

We remember that the classic specimen of the *ad hominem* argument was the dialogue we called the *sportsman's rejoinder*. In this case, the sportsman accused of barbarity in his sacrifice of game for amusement retorts, "Why do you feed on the flesh of animals?" This argument is an interesting one because it turns out to be fairly complex to unravel precisely what is wrong with it.

In some cases an allegation of circumstantial inconsistency may be in itself a reasonable move in argumentation, or at least not in itself fallacious. What is wrong in this case is that the sportsman has shifted somewhat in the propositions he attributes to his critic in posing the allegation of inconsistency. If the critic himself had been an acknowledged hunter, like the sportsman he criticizes, then there would have been nothing wrong with the hunter's pointing out the circumstantial inconsistency inherent in the critic's

position. It is as if the critic were to say, "Your hunting of game for amusement is brutal and vicious," and then the sportsman were to turn and say, "Aha, but what about you? You are a hunter every bit as much as I am. What applies to me in this regard must therefore apply equally to you. How can you engage in sports of the field and yet condemn me for doing the very same thing. Is that not inconsistent?" Surely the hunter's query concerning the consistency of his critic's position is here quite a justified move in argument.

However, in the original argument we addressed ourselves to (the sportsman's original rejoinder), the propositions which made up the allegation of inconsistency should be carefully examined. What the sportsman was claiming in that case, is that there was a circumstantial inconsistency between the following two propositions.

1. The critic criticizes the killing of game for amusement.
2. The critic himself eats meat.

Is this really an inconsistency? One author, DeMorgan (1847, p.265), pointed out that there is merely the superficial appearance of inconsistency. A celebrated writer on logic (Whately) asserts that no one who eats meat ought to object to the occupation of a sportsman on the ground of cruelty. The parallel will not exist until, for the person who eats meat, we substitute one who turns butcher for amusement, according to DeMorgan.

What DeMorgan is saying is that there is a certain lack of proper parallel here. It might be inconsistent to oppose hunting if one is in fact a hunter, but there is nothing directly parallel in the case of the critic who eats meat yet decries the hunter for killing game for amusement. In short, decrying hunting while eating a juicy steak is not directly circumstantially inconsistent.

DeMorgan made good points in noting that the critic's argument does not express a direct circumstantial inconsistency against the hunter's position and that the hunter would be quite justified in responding by pointing this out. Yet on the other hand, in all dialogical fairness, it must be recognized that there is in fact some connection between the activities of hunting and eating meat. After all, the practice of eating the flesh of animals surely is a main economic factor in making the slaughtering of animals a profitable activity. Therefore meat-eating is certainly a way of contributing to the extent of the practice of the killing of animals by humans. Surely therefore, meat-eating is not entirely unconnected to hunting.

Yet we must observe also that the connection is not by any means a tight one. There are indeed other ways of obtaining meat for human consumption than hunting. Moreover, hunting could still be perceived by its exponents as a pleasurable or desirable activity even if the meat thereby obtained was not used for human consumption. So while there is a connection between the two propositions at issue, the precise nature of that connection is disputable and is in fact, also at issue.

Ultimately, the resolution of an *ad hominem* dispute then must turn around the precise nature of this connection in a particular case. One can see therefore why the use of the sportsman's rejoinder as an example of the circumstantial *ad hominem* fallacy in the traditional textbooks has tended towards a certain superficiality. Whether or not the sportsman does argue fallaciously requires a good deal of further analysis of the specifics of the case by further dialectical questioning of the participants.

However, despite the lack of specifics, given the details of the dispute the way the example stands, can we say that either participant has committed a fallacy? Certainly DeMorgan was right to point out that the sportsman's initial argument was fallacious to the extent that the inconsistency he alleged did not really obtain. In effect therefore, the sportsman simply got his propositions wrong. If he meant to say that the critic was directly inconsistent, he was certainly mistaken in this claim as presented, and the recognition of the slipperiness of this particular move in argument could certainly be labelled an important type of *ad hominem* fallacy. The sportsman's allegation of direct inconsistency could not be justified by the given evidence, and thus the sportsman's attempt to mount a conclusive *ad hominem* refutation was unsuccessful. Thus he committed a form of *ad hominem* fallacy by doing such a clumsy job of mounting his *ad hominem* allegation.

In chapter two, section two, we encountered a kind of reasoning called practical inference. This type of inference takes the following forms, where X is an agent and A and B are things carried out by the agent (events or outcomes).

X intends to do A.
To do A, it is necessary to do B, as X sees it.
Therefore, X sets himself to do B.

X intends to do A.
To do A, it is sufficient to do B, as X sees it.
Therefore, X sets himself to do B.

Both these forms of inference have to do with an agent's intentions or plans in carrying out a sequence of actions.

But there are several other conditions that have to be met for the practical inference to be more complete. If there is more than one way available to carry out A then X need not necessarily choose B as part of a reasonable plan of action. However, the premiss may be added that B is the only way available in the circumstances, or that B is the best way. Additionally, side effects should be taken into account. If carrying out B could have some very bad side effects, an agent might rationally question whether these outweigh the positive value of carrying out A for him. So in some cases, a premiss weighing the value of A against the possible consequences of B should be considered by a rational agent.

Having added these additional premisses, there comes a point when practical reasoning in a particular situation can be complete in the following sense. If an agent accepts the premisses but refuses to act so as to carry out the event described the conclusion, he is open to a challenge of inconsistency in his intentions and actions. For example, suppose that a person intends to eat some food and he considers that a large steak on the table in front of him is a bit of food. Moreover, it is clear to him that this steak in front of him is the most easily available bit of food, and it is the food he thinks best at the moment to satisfy his appetite. Moreover, he has no reason to believe that there will be any harmful or bad side effects of eating the steak, and that it would be in no way illegal, immoral, unhealthy, or whatever, for him to eat the steak. But suppose he does not begin to eat the steak, and instead just sits there filing his fingernails. Is he being inconsistent?

According to the theory advocated in Walton (1985), we could challenge this man's practical reasoning by charging him with being practically inconsistent. We mean by this criticism that there is an ostensible incongruity between the man's intentions and his actions, relative to his perception of the situation he is in. Such a pragmatic inconsistency shifts the burden of proof onto the person criticized to justify his position. Was the situation not really as we thought he perceived it? Or were his intentions different than we thought? Barring a good response to the challenge, the man's actions may plausibly be taken to represent an inconsistency of position.

The vulnerability of a practically inconsistent argument to *ad hominem* criticism is well known to lawyers who are skilled in cross-examination of witnesses or defendants as to their actions. When a witness admits to acting

in a manner inconsistent with his own intentions and perceptions of a situation, exploring and pinning down the inconsistency is a known way to impugn the plausibility of the testimony of that witness.

In the following case, a police officer was a complaining witness against a defendant accused of driving through a red light and not giving the police car the right of way. The police officer's intentions were made clear by his admission that he was attempting to rush to the aid of a fellow officer who was in danger. However, he was impeded by the defendant, who drove into his police car.

A sequence of questions used to cast doubt on the police officer's testimony is outlined by Schwartz (1973, p.2014f.) as a sample dialogue. The attorney opens with a series of questions to establish that the police officer was responding to an emergency and was hastening along a clear, dry street, trying to make every moment count. The attorney's dialogue with the police officer then took the following form (p.2105).

Q. So that you had a clear path open ahead of you as you approached the intersection?
A. Yes.
Q. Your siren was blowing full blast?
A. It was.
Q. Your lights on top were rotating?
A. They were.
Q. You were intent on getting there just as soon as you possibly could?
A. Yes.
Q. Yet, I noted that you testified that your speed was only five miles an hour — was that your testimony?
A. That was at the intersection only.
Q. What had been your speed before you came to the intersection?
A. About 40 miles per hour.
Q. Did you slow down to 5 miles an hour because you suddenly changed your mind about getting there in a hurry?
A. No.
Q. Did you insist that while rushing to the aid of a fellow officer, with the path clear in front of you, your siren on full blast, the lights rotating, and with the traffic light in your favor, you reduced your speed at that intersection from 40 to 5 miles an hour?

A. Yes, I did.
Defense Counsel: That will be all.

The effect of this line of questioning on the deliberations of a jury would be quite pointed. By revealing such a presumptive inconsistency in the position upon which the police officer apparently acted, it would throw grave doubts on the plausibility of his testimony. If his intentions and the circumstances of his actions were as he conceded, then there could be no obvious reason why he should have been driving slowly instead of driving quickly. Short of our being given some such reason or additional fact about the situation, we can scarcely draw any other conclusion than the practical reasoning, taken as a whole sequence, is inconsistent. This, of course, leads us to strongly suspect that it was the police officer, and not the defendant, who went through the red light.

Thus practical reasoning can play an important role in shifting the burden of proof in dialogue. The skilled use of dialogue can bring an *ad hominem* criticism to bear against the position of an agent.

One main problem with nailing down *ad hominem* criticisms — and with defending your position against them, for that matter — is that practical reasoning often comprises a complex sequence of actions. And any sequence of actions can be described in many different ways. Hence there are many openings to check in evaluating any *ad hominem* attack on the basis of circumstantial inconsistency.

3. Evaluating Ad Hominem Disputations

The complexity implicit in the dialectic of the sportsman's rejoinder suggests that in any allegation of circumstantial *ad hominem* there are at least ten check points which should be carefully clarified in evaluating the dispute. First, what are the propositions that are alleged to be inconsistent? Rather than concentrating on the personalities of the arguers it is better to concentrate on the propositions that make up the alleged inconsistency and first of all clearly identify them. Second, who advanced the allegation of inconsistency? We presume here that there is an identifiable game of dialogue in progress and that one participant alleges that another has committed the inconsistency.

Third, we must ask — who was alleged to have committed the inconsistency? We have to be careful here that the perpetrator of the inconsistency could be an individual, a group or part of some group of individuals. We

also have to be careful that this class is clearly specified throughout the argument, because sometimes shifts can be made. For example, supposing "the press" is collectively accused of making untruthful statements and then it is alleged that "the press" has a certain moral obligation to the truth because of its position in society. It could be argued then that there may be a certain circumstantial inconsistency on the part of the press as a collective group but we have to be careful to ask the following question here. Is this some particular group of members of the press that are being alleged to be inconsistent? That is, who in particular, which individual or which groups, were alleged to have made the false statements at issue? Often in longer extended arguments, *ad hominem* allegations fail to clearly and consistently specify the specific group, and therefore the *ad hominem* allegation must be judged to fail for this reason.

Fourth, we have to ask what type of inconsistency may be involved. As we saw in the sportsman's rejoinder, it may not be truly logical inconsistency but rather an action-theoretic inconsistency. Sometimes also the allegation is one of an indirect inconsistency. The critic argues that there is some connection between some action of the opponent and some proposition that the opponent has put forward. However, the connection here may not be so much logical in nature as more causal or action-theoretic, and therefore we must be careful not to confuse different types of allegations of inconsistency.

Fifth, once some inconsistency has been specified, can it be really proven that the propositions are inconsistent? Sixth, if the inconsistency amongst the set of propositions can be proven, has a substitution been made as in the DeMorgan warning about the sportsman's rejoinder? We have to ask whether there is merely a near parallel as opposed to direct inconsistency between two propositions.

Seventh, if there is no direct logical inconsistency between the propositions identified, is there rather some indirect causal linkage between the propositions that make up the set alleged to be inconsistent?

Eighth, if there is no inconsistency at all, then should we say that the accuser himself is guilty of committing an *ad hominem* argument by a clumsy mounting of the *ad hominem* refutation? Ninth, if there is not a logical inconsistency, but only a pragmatic one or causal connection between the propositions, then how serious a flaw is this in the arguer's position? Perhaps only further dialectical moves can resolve this question.

Tenth, does the accused have a chance to respond to the allegation of

inconsistency? We saw earlier that the *ad hominem* attack often has the effect of stopping argument altogether, and that therefore it is always quite important, because of the serious nature of any *ad hominem* accusation, that the accused party have some chance to respond to the allegation and perhaps retrieve the argument.

So to return to our analysis of the sportsman's rejoinder, we should now ask whether there was indeed a pragmatic inconsistency to be found in the hunter's *ad hominem* allegation. We saw previously that there is some connection between hunting and meat-eating. Therefore, perhaps the sportsman could be on strong ground if he were to pursue this interconnection. Perhaps then some legitimate form of argument could be dialectically extracted from what the sportsman says. Of course, as we saw above, there is no tight logical connection between hunting animals and eating meat. Therefore much depends on our reconstruction of the sportsman's argument on what sort of connection he might have had in mind. Did he mean to argue that there was a tight logical connection and thereby conclude that the critic is inconsistent? If so, his argument as first presented would definitely constitute a form of *ad hominem* fallacy.

However, perhaps that is not what the sportsman meant to say. Suppose that in subsequent dialectical interchanges — if we could continue the argument further between the hunter and his critic — the hunter manages to get the critic to agree to the following set of commitments.

1. The action of eating the flesh of animals is a sufficient condition of the proposition that animals are killed.
2. Something I (the critic) did brought it about that animal flesh was eaten.
3. I (the critic) did not bring about the killing of any animals.

Now this set of propositions is demonstrably inconsistent. It is not necessarily logically inconsistent, but it could be shown to be pragmatically inconsistent in the sense that the description of the actions collectively constituted by the set of three propositions demonstrably leads to an impossibility. The first proposition states that one action is a sufficient condition of another action. The second proposition asserts that the first action is attributable to the critic. Therefore, by a form of *modus ponens* we can conclude that it follows that an action of the critic brought about the death of some animals. However, by asserting the third proposition, the critic denies that he brought about the death of some animals. This last proposition is the nega-

tion of the preceding one. Thus we can see how the set of three propositions above does lead by steps of logical reasoning to an inconsistency.

The principle of reasoning by which we derived this contradiction, namely *modus ponens*, is a rule of classical logic. But the type of inconsistency involved is not a directly logical inconsistency. Rather it is one that has to do with the bringing about of certain actions and the question of how some actions are related to other actions. The inconsistency is what we might call a pragmatic inconsistency — one that has to do with relationships amongst collections of actions attributed to some individual. If 1., 2., and 3. above really constitute what the critic is saying, then the hunter is correct to point out that the critic, while he may not be directly logically inconsistent, is nevertheless inconsistent in an action-theoretic way. His set of propositions that he asserts can be reduced, through a description of the actions they constitute, to a direct logical contradiction.

However, from our original description of the argument between the sportsman and the critic can we really fairly say that in fact the critic is asserting precisely these three propositions? The answer is 'no,' we cannot. Only further dialectical interchanges between the two disputants could clarify whether in fact this is really the argument the critic means to put forward. If subsequent dialectical interchanges do detemine that this is in fact the critic's argument however, the sportsman is then in a position to correctly turn the tables on the critic. It is not the sportsman who has committed the *ad hominem* fallacy (although he may have committed an *ad hominem* of a different sort, as we saw above), but it is the critic who has committed himself to a certain action-theoretic inconsistency, and his move in so doing may also be called a form of *ad hominem* argument.

The long and the short of this dispute is that any *ad hominem* allegation must be carefully looked at so that the specific dialectical context can be exactly determined and the precise propositions at issue attributable to a certain disputant can be determined. Only then can we analyze whether in fact there has been a fair allegation of inconsistency made or not.

4. Four Types of Circumstantial Ad Hominem

We have found that there can be different forms of the *ad hominem* argument, that in a dispute one party can accuse another of *ad hominem* and yet depending on how you reconstruct the argument from the dialectical point of view, it could be that either or both parties is guilty of the same

or different forms of the *ad hominem* fallacy. Let us therefore try to sum up how in a dialectical situation like this there can be various different forms of *ad hominem* fallacy committed by one party or another in the dispute.

There are four different types of possible illegitimate moves of argumentation that could be construed as the circumstantial *ad hominem* fallacy. We are proposing that an *ad hominem* type of argument is not necessarily in itself fallacious, and that it can be quite a legitimate move in argument to find an inconsistency, whether logical or pragmatic, in an opponent's argument. However, in making this type of move, the attempted refutation may be carried out badly, and the attacker may then subsequently commit one or the other of four different types of fallacy.

In the first type of fallacy the attacker finds merely the appearance of inconsistency but does not prove there is really an inconsistency either of the pragmatic or the logical sort. This is DeMorgan's point that an attacker may find two propositions that are parallel to an inconsistency, or which may be related to each other in such a way that an inconsistency could possibly be derived from them by further dialogue, but unless the attacker actually determines that there is a logical inconsistency by the rules of the game of dialectic and by particular propositions that are really assented to by the opponent in argument, his rejection of that argument commits an *ad hominem* fallacy. The refutation is over-hasty and unsuccessful. It is all too easy to suggest that there may be an inconsistency, and that in itself is sometimes enough to persuade an audience to reject somebody's position in argument. Nevertheless we must look very closely to see whether, given the rules of the game, there really is a determinable inconsistency according to those rules. So if the attacker or the audience rejects somebody's argument merely because there is the superficial appearance of inconsistency, but not the reality of it, this is the first form of the *ad hominem* fallacy.

In the second form of fallacy, the attacker finds an inconsistency, and then on the basis of this finding, rejects the defender's conclusion *per se*. This form of the fallacy raises the general question of how to handle contradictions in games of dialogue. In some games of dialogue, the object of the game is to trap the opponent in a contradiction. Therefore if one disputant succeeds in doing this, the game is over and that disputant wins by the convention of the game. However, in other games the win-strategy of the game may not be defined as that of trapping the opponent in inconsistency, and there may be means for handling inconsistency in such games. For example, in some games of dialectic, if a disputant finds himself in the posi-

tion of having a demonstrable inconsistency in his commitment-store he may be able to retract one or the other of the commitments in order to eliminate the inconsistency. For example, several of the games designed by Hamblin do permit the retraction of commitments for this very purpose. In such a game then, if a disputant is found to have an inconsistency in his commitment-set, it does not mean that he has thereby automatically lost the game, nor does it mean that his thesis is thereby refuted.

However, we have already previously noted the rhetorical power of a finding of inconsistency in someone's internal position by an opponent in argumentation. There is nothing more ridiculous than being caught in inconsistency and audiences find this most amusing. Sometimes it can even be suggested that inconsistency is a sign of mental instability or insanity. At any rate inconsistency of commitments is often taken to be some sign of a pronounced lack of logical acumen, and as we have seen, the pointing out of it has such a damaging impact as a refutation that it may have the effect of stopping the argument altogether or shifting it off topic. However, it may be quite fallacious to conclude that the opponent's thesis is itself false, simply because some pair of propositions that he has accepted, that may even not be directly related to his conclusion, turn out to be not consistent with each other. In fact if the pair of propositions that are inconsistent are not directly related in any way to the conclusion, the finding of inconsistency may not be seriously damaging to this participant's over-all argument at all. Nevertheless, it is very easy to commit the *ad hominem* fallacy by automatically rejecting this participant's whole position as being illogical, and consequently rejecting the thesis that he is supposed to prove without further consideration. This, then is the second form of *ad hominem* fallacy that may occur.

The third form of the fallacy occurs where the attacker finds a pragmatic inconsistency, but then rejects the defender's argument as logically inconsistent without proving that it is logically inconsistent. We have seen that there is a difference between action-theoretical and pragmatic inconsistency on the one hand, and logical inconsistency on the other, the latter being a stronger type of inconsistency.[1] The former is only reducible to the latter by additional steps of argument. Therefore, one possible fallacious move in argument could be to declare the defender's position as logically inconsistent when really the inconsistency is a matter of what he is committed to by his actions as opposed to the commitments he makes by the propositions that he asserts.

Often a pragmatic inconsistency can be defended. For example, Bertrand Russell was once accused of being sympathetic to the Soviet Union in his comments on international affairs, and then later at some subsequent point, taking a very hard line on international policy towards the Soviet Union. However, Russell defended his actions on the grounds that the obtaining of nuclear weapons by the Soviets had changed the situation and subsequently made a change in policy towards the Soviets a reasonable move.

In a fourth form of *ad hominem* fallacy, the attacker finds some connection between two or more descriptions of actions attributed to the defender, but fails to show the requisite connections between these descriptions of actions in order to demonstrate the existence of a pragmatic inconsistency within them. Therefore, in this fourth form of fallacy, the attacker concludes that the defender is inconsistent without carefully filling in the steps needed to adequately establish the inconsistency.

To sum up, we can see that there are at least four different types of *ad hominen* fallacy[2] and that there are various complications of *ad hominen* attack and defence, depending on the particulars of a given dialectical situation.

5. Rhetorical Context of Ad Hominem Attacks

The fact that the *ad hominem* argument is a dialectical phenomenon means that one always has to be very careful in looking at the dialectical context of the argument to try to see who is making the *ad hominem* allegation, who is being accused of the *ad hominem* allegation, and what are the propositions that make up the basis of this allegation. Finally, one has to carefully look at these propositions to see what sort of logical relationships obtain amongst them. One needs to find out whether these are alleged to be logical relationships or causal or action-theoretic relationships. And then one has to try to ascertain, perhaps by asking further questions to one or both participants, whether enough steps have been filled in by the attacker to justify a sound basis of *ad hominem* refutation. If not, the attacker may have committed an *ad hominem* fallacy. However, if the attacker has done a good enough job of filling in the steps of his argument in order to show that there is a genuine inconsistency, then the defender may be guilty of an *ad hominem* fallacy. So the *ad hominem* fallacy is a difficult one to adjudicate when one looks at some of the examples given in the textbooks. Commonly there is not enough information given about the dialectical context

of the dispute in order to provide adequate evidence to determine which party has truly committed an *ad hominem* fallacy.

Suppose, for example, that a philosophy professor makes strong attacks on physicians' rights to make paternalistic decisions on behalf of their patients. Suppose further that a physician replies that it is entirely natural for a philosopher to feel some degree of resentment and frustration because he is in the relatively powerless position of being a pure theoretician. Suppose then the doctor queries whether there might not be an unconscious wish to strip powerful physicians of their authority. Could this philosopher's criticism really be motivated by his own power-seeking fantasy and his jealousy of the great powers of physicians? The move here in argument by the physician qualifies as an *ad hominem* attack because the personal circumstances of the philosophy professor are brought in as relevant to his claim about paternalistic decision-making on the part of physicians. However, could not the doctor defend his argument as follows.

> My argument never positively affirms that what the philosophy professor says is wrong. I am merely speculating on the psychological basis of the philosopher's reasoning.[3]

The problem with this response, however, is that there may be a good deal of harm done more by way of innuendo than by precisely articulated propositions. An innuendo is not necessarily an argument, a precise set of propositions that one can pin down to attribute specifically to a participant in argument, but it may nevertheless have quite a substantial effect on a particular audience in deciding how they will ultimately act on the basis of the argument. Here we are at the pragmatic edges of the *ad hominem* fallacy and we have some difficulty in nailing it down.

The doctor's argument suggests very strongly that his opponent's argument could be prompted by the resentment of a powerless theoretician. In effect therefore, his opponents are being characterized as unqualified and frustrated meddlers, interfering with doctors because of their resentment of the doctors' powers. The suggestion conveyed by this argument therefore, is an extremely powerful and captivating one from a rhetorical point of view. Many readers would, with justification, be inclined to accept the proposition that arguments concerned with public affairs are very likely to be prompted by the arguer's own professional interests and affiliations. And in fact professional groups notoriously do tend to lobby for their own special interests on such topics. Thus the problem posed by such arguments is that in the marketplace of conversational disputation, it may be quite dif-

ficult to precisely pin down the *ad hominem* allegation[4] and therefore adjudicate fairly upon it.

The problem is that the dialectical circumstances are incomplete. The nature of the argument and the propositions that make it up are unclear. The conclusion that is supposed to be inferred from such quasi-arguments is never made explicit yet they can be phrased in such a way that undoubtedly they will have their intended affect, and the target audience of the argument will be strongly influenced by what is implicitly contained in the premisses. Therefore, we are back to the level of the debate, where it is difficult to regulate or adjudicate upon arguments because of their essentially subjective nature. Here then we arrive at the borderline between dialectic and the rhetorical debate.

In the rhetorical debate, the outcome is decided not so much by the conformity of the participant's requirements, but by the vote or psychological outcome of some target audience. Hence, in the debate, the decision has to be dependent upon purely psychological and rhetorical factors, on the impact of the participant's arguments upon the particular subjective impressions of that audience. Clearly, many audiences would be strongly moved by the physician's *ad hominem* argument, especially if there is some antecedent proclivity on their part to be inclined in the direction of sympathy with the physician's point of view. Here then is the problem of trying to study or analyze the *ad hominem* fallacy at the level of the debate or conversational quarrel. What is or is not fallacious may not be precisely analyzable without going back to the participants themselves to reconstruct more clearly what is the precise argument and what are the precise rules of the game. In many cases it may not even be clear or determinable whether a participant has in fact offered an argument in the sense of a set of propositions. In such a case, even at the outset we are scarcely in a position to adjudicate upon whether this participant has committed a fallacy.

The lesson then is that the analysis of what is fallacious about an *ad hominem* argument can only take place at the dialectical level, where moves and outcomes are determined by objective rules, and where relationships can be precisely determined to obtain amongst a set of propositions by questioning the participants. At this level, the winner or loser of the argument need not be fully determined by the psychologically varying reactions of some particular audience.

At the dialectical level then, we can approach the analysis of a sequence of argumentation and ask a number of questions. First, is it an

argument, or merely a question or some other form of non-statemental move? Second, what are the propositions in the argument? What sort of allegation is made in regard to them? Does the opponent have a chance to reply? Does the sequence of interchange between the participants qualify as being a win-strategy for one or the other participant? Can we query the opponents further to see precisely what is the sequence of argumentation that they have in mind? Can a graph of the argument be constructed so that we can get a precise account of its overall flow and direction and fill in the missing premisses and links of argument? What are the rules of argument, and have these been precisely determined in advance by the participants? Once a number of these dialectical factors have been filled in and clarified, then much that is both objectionable and elusive from a point of view of criticisms — like the one attributed to the physician in this example — can be clarified or at least forced out into the open where it can be processed and eventually confronted and adjudicated upon in a way that is fair to both parties.

6. Positional Defensibility

In many *ad hominem* allegations the cited inconsistency is of a deontic (normative) character. The accusation amounts essentially to the claim that some participant acts in such a manner to bring about some state of affairs, but also claims that state of affairs ought not to be brought about. Thus the inconsistency involved is not a directly logical inconsistency, but is what we might call a *deontic pragmatic inconsistency*,[5] that is, an inconsistency which has to do with norms and actions. In this kind of criticism the attacker is essentially saying this: "You [the person I am criticizing] say that such-and-such ought to be brought about; but you yourself, in your own practice, don't act in such a way as to bring this about at all. Therefore, your position is inconsistent, and you are a hypocrite." Now what we should ask here is whether such a deontic pragmatic inconsistency in one's position should really be a damaging deficiency to one's argument in a game of dialectic.

First of all, we should note that recommendations from a position that is deontic-pragmatically inconsistent are extremely vexing to persons who are themselves forced to act in a manner consistent with the pronouncements of one who fails himself to act in that very manner. We are outraged for example, when politicians tell us we have to do certain things like "tighten our belts" and live in accord with reduced economic resources, and yet themselves fail to do this by their own high spending, or by unrealistic

increases in their own salaries.[6] Such inconsistency can indeed be immoral, and can certainly appear to directly violate fundamental ethical principles of fairness and democratic government. Moreover, such inconsistency in one's actions can be evidence of callousness, moral indifference and stupidity. However, we must ask whether the fault there is a purely ethical error or whether it can also be evidence of the existence of some logical error that should lead us not to accept positions in games of dialectic that contain such an inconsistency.

The first problem is to define what counts as an opponent's position in argument. For example, because one is female it hardly follows that one adopts a "feminist position." What counts as the so-called "Marxist position" may be quite open to disputation even among the Marxists themselves. Therefore we must be extremely careful in presuming that we may confer some "position" on an opponent in argument. We should recall the account of position in argument in the games ABV and CBV.

Let us repeat that a *position* should be defined in a game of dialogue as a set of propositions that are dark or light-side commitments of a participant in the game. Accordingly, in order to precisely define *position*, one needs to specify the game that one has in mind.

A wider way of defining *position* could be as follows. A *position* is a set of propositions that form a basis for acting when one is formulating a plan of action. From this point of view a position could be thought of as a sort of code or body of propositions that represent outcomes one plans to bring about and deliberates to achieve by means of one's actions.

So construed, a position may equally well be the code of a group of agents. For example it may be a statement made by a group of individuals who want to express their resolve to support nuclear disarmament, or it may be a statement of commitment to a professional ethic like the Hyppocratic Oath. One the other hand, a position may be an individual's statement of his own goals, an expression of where he or she stands on an issue.

Given the concept of a position, we can then proceed to elucidate further what is fallacious about the circumstantial *ad hominem* inconsistency of the pragmatic sort. If a proposition is part of some participant's commitment, we may sometimes infer that this proposition forms a basis for an action-plan that this participant has formulated. Let's say then that a participant in dialogue has committed himself to bringing about a particular proposition as part of a plan he has advanced. But if it can be shown that this participant as a matter of fact brings about the negation of this very proposition, there is a sense in which the participant's internal position is inconsis-

tent. If so, the participant's plan of action is incoherent in just precisely this sense. His goal of deliberation is to bring about the truth of a certain proposition p, but in his own conduct he deliberately acts so as to bring about the negation of this very proposition p. Therefore, his plan of action, his collective position as a whole, is inconsistent. The question then can be reformulated as follows.

What is wrong with an inconsistent plan of action? The answer is that an inconsistent plan of action can never be carried out. A set of propositions that are logically inconsistent are globally destructive in the sense that they collectively imply any proposition you like. However, a positional inconsistency results in a non-directive plan. It allows you to follow any course of action that happens to be related to your position. It thereby becomes non-directive by failing to inform you how to make a rational choice between two outcomes. In short, a positional inconsistency makes your position useless as a basis for action. Thus, the participant's position that turns out to be pragmatically inconsistent exposes a deep irrationality in that position, and hence the argument that is based on that position should be questioned, and also perhaps rejected if the inconsistency cannot be remedied.

It follows then that positional inconsistency can be determined as a legitimate basis for the criticism of an argument and that therefore *ad hominem* criticisms that one's internal position is inconsistent are sometimes a correct form of argument.

However, as we have seen, there are many ways in the course of a dialectical disputation that such an accusation can go wrong, and when one of these occurs, we have the *ad hominem* fallacy, in one form or another. However, even a successful refutation of the *ad hominem* sort in argumentation is rarely final. Rather a successful refutation may be defined in relation to its objective of shifting the burden of proof onto the participant who is attacked to remove the inconsistency, and in practice many such allegations need a lot of tightening up before it can be conclusively determined which party is in the wrong or right.

7. Conclusion

We conclude that much of the prevailing Standard Treatment of *ad hominem* arguments rests upon a superficial assumption that *ad hominem* allegations are always *per se* fallacious. By now it is clear that we cannot accept this approach. Instead we have to very carefully distinguish between

an *ad hominem* attack and an *ad hominem* refutation. In an *ad hominem* attack a disputant brings forward a set of propositions alleged to belong to the position of his opponent. These propositions are very often things said to be brought about within the context of an action plan of the attacked participant. An *ad hominem* attack can then become a successul refutation if the set of propositions alluded to can be shown by the attacker to be inconsistent according to the rules of the game of dialogue the participants are engaged in.

Having distinguished between an *ad hominem* attack and an *ad hominem* refutation, we should now review what constitutes the *ad hominem* fallacy. To review, we should recall that a refutation can go badly wrong in a number of characteristic ways we have catalogued. For example, the attacker may determine that two propositions are part of his opponent's position, but then instead of clinching a direct logical inconsistency between these two propositions, he may only find some indirect linkages between the two that need to be filled in by further steps. Or in another way of committing the *ad hominem* fallacy, he may simply mis-describe the propositions in such a way that they are parallel to an inconsistency but not, so described, directly inconsistent. In yet a third form of *ad hominem* fallacy, the attacker may secure a legitimate contradiction in the opponent's position, but then by *non sequitur* reasoning declare that one member of the inconsistent set must be in itself false.

We must be very clear then to keep in mind that an *ad hominem* attack is not always a fallacy. Indeed, we have claimed that under the right conditions an *ad hominem* attack can turn out to be a successful *ad hominem* refutation and therefore essentially a correct form of argument. Yet, if certain conditions fail to be met, the refutation itself can be sophistical and turn out to be an *ad hominem* fallacy. In treating many actual disputations of natural conversation, it is often best to ask not whether the argument is fallacious or not as it stands, but whether it is vulnerable to *ad hominem* criticism. That is, in the case of an attack we should sometimes ask not whether the argument is fallacious or incorrect as it stands, but whether it can be filled in in such a way that it could eventually turn out to be tenable as an allegation and hence constitute a successful *ad hominem* refutation. Such judgements must therefore often be made in the context of the debate and quarrel as conditional upon the further continuation of the dialectical sequence.

NOTES

1. This is not the place to attempt to systematically define action-theoretic inconsistency, but the reader may like to consult some of the literature on the topic. See G.H. von Wright, *An Essay in Deontic Logic and the General Theory of Action*, Amsterdam, North-Holland, 1968.

2. These four forms of *ad hominem* fallacy are identified and more fully analyzed in Walton (1983).

3. An actual example of a disputation from which this account is drawn is fully presented and documented in Walton (1983).

4. Hamblin (1970) refers to the general problem in practice of "nailing down a fallacy."

5. This term originates in John Woods and Douglas Walton, '*Ad Hominem*,' *The Philosophical Forum*, 8, 1977, 1-20.

6. An example of this sort is presented by Trudy Govier, 'Worries about *Tu Quoque* as a Fallacy,' *Informal Logic Newsletter*, 3, no.3, 1981, 2-4, and is further discussed in Walton (1985).

CHAPTER 10: EQUIVOCATION

Among Aristotle's fallacies within language, the fallacy of equivocation is that fallacy that has to do with an ambiguous term in an argument. Where it is a construction of terms in a sentence, and not just one term in the sentence, that may be taken more than one way, then the fallacy is said to be that of amphiboly. As we have seen, it has never been established that amphiboly is truly a serious fallacy, in the sense of being a significant source of mischief or confusion in realistic argumentation. But one example, if it is a case of amphiboly, seems to be a serious and reasonably realistic sort of error. The argument, 'Everything has a cause, therefore there is something that causes everything' could be given the following form in classical first-order logic: $(\forall x)\ (\exists y)$ (y causes x), therefore $(\exists y)\ (\forall x)$ (y causes x). But we will say no more about amphiboly. For most of what we will have to say about equivocation in the sequel applies equally well to amphiboly, in general outline. And there is very little doubt that equivocation is a serious fallacy, well worth detailed investigation.

Equivocation is said to occur where an ambiguous term occurs in an argument that appears to be valid. What is meant by 'appears to be valid,' in the context of equivocation, is that the sentential structure of the "argument" resembles that of a valid form of argument. For example, the following argument appears to be valid, in this sense.

(1) Everything that runs has feet.
Some rivers run.
Therefore, some rivers have feet.

Certainly the sentences of this "argument" have a syntactic structure that is analogous to a valid form of argument in classical logic: $(\forall x)$ (x runs $\supset$ x has feet), $(\exists x)$ (x is a river $\wedge$ x runs), therefore $(\exists x)$ (x is a river $\wedge$ x has feet). But there is more to the fallacy of equivocation. For we can have syntactic structures analogous to valid arguments where the ambiguous term 'runs' also occurs. But these "arguments" would not be ones we would probably want to call fallacies of equivocation.

(2) Animals run.
Rivers run.
Everything that runs moves.
Therefore, animals and rivers move.

(2a) Everything that runs goes north.
Some rivers run.
Therefore, some rivers go north.

But perhaps 'run' is only ambiguous in (1) and not in (2) or (2a). Or if a term is ambiguous, is it ambiguous wherever it occurs? If so, then there are some arguments that contain ambiguous terms and have a syntactic structure that is a valid form, but do not commit the fallacy of equivocation. And if so, then the characterization of fallacies of ambiguity as arguments that appear syntactically valid in form but contain words that, either singly or in combination, can be understood in more than one sense, is somewhat too broad to pin down exactly what is fallacious about equivocation.

What is fallacious as an equivocation about (1) is not just the surface validity and ambiguity in the argument, but a contextual shift. To make the first premiss plausibly true, we are tugged to interpret 'runs' as meaning 'ambulates.' To make the second premiss plausibly true, we are tugged to interpret 'runs' as meaning 'moves along' in a sense that counts flowing as running. That disambiguation clashes with the one needed to make the first premiss true. So equivocation involves contextual shift as well as validity and ambiguity.

1. What is Equivocation?

What then is the fallacy of equivocation? Let's begin with one elementary, yet basically important lesson. It has often been cogently pointed out, for example by Hamblin (1970) that there is a difference between ambiguity and equivocation. Ambiguity need not be fallacious. Indeed, on the assumption that a fallacy is a fallacious argument, ambiguity cannot be fallacious. For ambiguity is a property of sentences rather than arguments. At any rate, the crux of this basic point is that the fallacy of equivocation resides in the fallacious deployment of ambiguity in arguments. But what exactly do we mean by 'deployment,' and how is such fallacious deployment affected in the use of arguments?

A clue is given in Woods and Walton (1979), where a characterization of equivocation is based on Quine's insight that a contextual shift between

sets of sentences or propositions is involved. The traditional example of equivocation is this familiar old favorite of the texts.

(3) The end of a thing is its perfection.
Death is the end of life.
Therefore, death is the perfection of life.

According to the traditional analysis, 'end' can mean 'goal' or 'termination.' Hence the one argument is really four.

(4) The goal of a thing is its perfection.
Death is the goal of life.
Therefore, death is the perfection of life.

(5) The termination of a thing is its perfection.
Death is the termination of life.
Therefore, death is the perfection of life.

(6) The goal of a thing is its perfection.
Death is the termination of life.
Therefore, death is the perfection of life.

(7) The termination of a thing is its perfection.
Death is the goal of life.
Therefore, death is the perfection of life.

Of these four arguments, (4) and (5) are deductively valid, but (6) and (7) are invalid. However, only (6) has true premisses. (4) and (5) each have one premiss that is untrue (or at least implausible). In (7) both premisses are false (or, at any rate, implausible). Hence the person to whom the constellation of argument (3) is directed is given a potentially mischievous choice. He can have an argument that is valid or he can have an argument with true premisses. He can't have both, at least in the same single argument, consistently with the requirements of deductive validity.

The fallaciousness of equivocation in such a case has been explicated by Woods and myself (1979) in terms of the psychological theory of cognitive dissonance: whichever way the subject of the argument chooses he is faced with inconsistency. Here, he must choose between invalidity and unsoundness. He can only have validity at the cost of false premisses. Or, alternatively, he can only have true premisses at the cost of conceding the invalidity of his argument. However, the way (being offered by the sender of the argument) to resolve the dissonance is to amalgamate the two arguments into one pseudo-argument having the appearance of both soundness

and validity. Presumably, then, this move is the one hoped for by the one who proffers the arguments so combined. Hence the justification for thinking of equivocation as a fallacious move to make in argument as a dialogue.

But what makes the fallacy work is the contextual shift between the two premisses. The first premiss is only plausible in one sense of 'end,' the second premiss only plausible in the other sense. It is precisely this duality of context that produces the tug towards invalidity. It seems then that the fallacy is connected to a duality between the need for true (or plausible) premisses, and the need for a valid argument.

This duality becomes significant in the context of games of dialogue because a primary purpose of dialogue is for the one participant to convince or persuade the other that a certain proposition is true. In logical games of dialogue, the object of the game is for the respondent to take as premisses propositions that are commitments of the opponent, and then deduce the proposition at issue, using the rules of inference only, from this set of premisses exclusively. Having done this, the respondent wins the game. But to do this, a player needs two things — both a valid argument, and a set of premisses which his opponent will concede. Hence the duality that sponsors equivocation is indeed present in logical games of dialogue.

From the point of view of the respondent who wishes to deploy equivocation as an argument against his opponent, the problem in our example is as follows. His conclusion to be proven is the (false) proposition 'Death is the perfection of life.' If he disambiguates 'end' consistently as 'goal' in both premisses he gets argument (4). If he disambiguates 'end' consistently as 'perfection' in both premissses he gets argument (5). Both are valid (in classical logic), but each has one untrue premiss. To get both premisses true, he needs to disambiguate one premiss one way, one premiss another way, as in (6). But of course he can't do this, for (6) is invalid. So what he does is to offer (3) to his opponent, hoping or expecting that the opponent will disambiguate (3) as (6). Yet (3) has a form that could appear valid in the sense that (3) could potentially be disambiguated as (4) or (5), both valid arguments. What the opponent is really pushing is the invalid (6), but under the guise that it could be valid as (4) or (5).

Is there some way of stopping this sort of move? One way is for the opponent to require that each term be disambiguated consistently in the way throughout the entire argument. Then we get only valid arguments like (4) and (5). If the opponent can do that successfully, he can always combat the respondent's attempts at equivocating successfully. But it seems to be a

presumption of the workability of the fallacy of equivocation in realistic argumentation that the opponent may often not be able to do that. In superficial equivocations like (3), he can do that. But Hamblin discusses cases of "deep" equivocation where disambiguation may be problematic.

Under these circumstances, is there some other way to combat equivocation? Perhaps there is another way. To make equivocation work, the respondent needs a set of premisses true on some disambiguation — like those of (6) perhaps, which may not be consistently disambiguated. He needs these premisses to seem to imply a conclusion that may be unambiguously false. Is there a set of inference-rules that would never allow such implications? Such a set, could, it seems, stop equivocation.

To see what is needed to stop equivocation, we need to look at the purpose of the equivocation in making his equivocation in a game of dialogue. The potential equivocator as arguer needs to prove a conclusion C. C may be his thesis to be proven as set by the game, or it may be some interim conclusion he needs to prove his ultimate thesis. Suppose he can find no suitable set of premisses his opponent will accept that entail C. As an alternative strategy, he may search for some set of sentences that can be disambiguated in at least two ways so that at least one disambiguation is true and one is false. His initial difficulty was posed by the problem that the true disambiguation does not entail C. But embarking on a strategy of equivocation, it could be enough if the false disambiguation implies C. For if the opponent is unwary, he may accept the unambiguated set of premisses as both true and C-entailing.

How can the opponent stop this? He can disambiguate the premisses. But suppose he can't do this, or at any rate, can't be sure he has done it. Is there some way he can screen out potentially equivocal arguments? There is no need or purpose in screening out and rejecting the true propositions that are disambiguations of any sets of sentences offered by an arguer. What the opponent needs is to screen out the false ones that entail C by valid implications. Normally the opponent is well-advised not to accept false (implausible) propositions anyway, for that is in the nature of his strategy in the game. But he needs to be on his guard to not unwittingly accept false propositions that imply C, his adversary's conclusion to be proved.

2. Vagueness and Criticisms of Equivocality

In an equivocal argument, we have the same term that occurs twice in the argument — once in one proposition and once in another. To make

both propositions come out plausible, we are tugged to interpret the same term in two different ways. It is the plausibility of the proposition that pulls the equivocal interpretation along, so to speak.

But very much the same sort of phenomenon can occur where the terms that occur in the argument are vague rather than ambiguous. In such an argument, we may have the same term that occurs twice in the argument — once in one proposition, once in another. To make both propositions plausible, we are tugged to interpret strictly in the one occurrence, loosely in the other. Yet it may be that if the degrees of strictness and looseness were traded around, one or both propositions would come out as implausible.

A good example of this sort is given by Cederblom and Paulsen (1982, p.59).

1. Getting married involves promising to live with a person for the rest of one's life.
2. No person can safely predict compatibility with another person for life.
3. If two people aren't compatible, then they can't live together.
4. No one should make a promise unless she or he can safely predict that she or he can keep it.

Therefore, no one should get married.

If you look at each of the premisses of this argument, it seems possible to interpret them as being fairly plausible. The terms that occur in these propositions, like 'compatible' and 'safely predict' are, after all, vague enough to allow you to interpret each premiss — each premiss taken individually, that is — as coming out as admissibly true, subject to charitable interpretation of its terms. However, if you put all four premisses together, they imply a conclusion that you may not feel is plausible, or admissibly true. So the person to whom the argument is directed may feel the same kind of dissonance as in an equivocation. The premisses are individually plausible. One wants to accept them. But collectively they imply an implausible conclusion. So can one interpret the premisses as true?

Looking more closely at the premisses, we begin to see some incongruencies. Take the word 'compatible.' We could interpret this term loosely, meaning that two individuals are compatible unless they have severe disagreements and antipathies all the time whenever they are in contact. Under this interpretation, premiss 3. certainly comes out as highly plausible. But

by the same interpretation, premiss 2. seems to come out as much less plausible. For surely it is fairly safe to predict that two individuals will be compatible if genuine incompatibility requires that they have severe disagreements and antipathies all the time, whenever they are together.

On the other hand, we could interpret the term 'compatible' more strictly. We could mean that two individuals are compatible only if they get along very well and smoothly in their relationship with each other. By this strict interpretation, even minor disagreements or antipathies would count as enough to determine a noncompatibility.[1] By this interpretation, fewer couples would count as "compatible."

Now notice what happens to the plausibility of premisses 2. and 3. when 'compatible' is interpreted strictly. By this strict interpretation, even if two people are not compatible, it could still be quite possible that they could get along and live together if they put some effort into the relationship. On this interpretation, lots of couples count as "incompatible," so it might be reasonable to assume that some of them could still live together despite their "incompatibility." On the strict interpretation, premiss 3. becomes not very plausible, even if premiss 2. is much more plausible. Premiss 2. is more plausible on the strict interpretation than on the looser interpretation. For on the strict interpretation, fewer couples count as compatible — even minor disagreements count as non-compatibility. But by this criterion, it is of course much easier to safely predict non-compatibility of two persons over a prolonged period.

In short, vagueness can operate, in an argument, in much the same way that ambiguity operates to sponsor equivocation. The vague term may allow enough latitude for strictness or looseness of interpretation so that two premisses can each seem plausible, each interpreted separately from the other. The error emerges when we try to combine validity with the plausibility of the individual propositions that make up the argument. To make the individual premisses come out true, or at least plausibly true, a heterogeneous interpretation of strictness versus looseness must be imposed on some pair of terms in separate premisses. But to make the argument come out valid, a homogeneous interpretation must be given to the terms of the argument. By trying, impossibly, to have it both ways, we equivocate, or commit the fallacy of vagueness analogous to equivocation which is illustrated by this example.

With reference to this particular example, other criticisms along the same lines can be advanced in connection with some remaining terms.

Cederblom and Paulsen (1982, p.60) add that the expression "safely predict" admits of an ambivalence of interpretation as well. What percentage of accuracy should count as a "safe prediction?" A high standard that would tend to make premiss 2. true would make premiss 4. tend to come out false. For sometimes promises can't be kept for reasons that perhaps could not have been reasonably foreseen by the person who made the promise. But contrarily, a more relaxed standard of what counts as a safe prediction would make premiss 4. begin to seem much more plausible only at the cost of making premiss 2. much less plausible. The same tug-of-war between validity and plausibility of premisses is evident in the variability of "safely predict" as we found in "compatible."

Terms in natural language are virtually always vague to some extent. Therefore this phenomenon of the equivocability of arguments with vague terms in them is a constant danger in evaluating arguments in natural language. What the phenomenon suggests is that there is always a certain potential latitude open to a critic in evaluating and interpreting an argument in natural language. The critic must — if he or she is fair — try to interpret the premisses and conclusion, if there is scope for strictness or looseness of interpretation, to make the propositions in the argument come out as being plausible. However, there are limits in how far a critic can or should go. One such limit is posed by equivocation. The sentences in the argument should charitably be interpreted to make each of them most plausible, but not at the cost of equivocating. That is, the concessions to charity can only go so far when a choice must be made between plausible premisses (or conclusion) and a valid argument. When the critic determines such a clash, he should propose to the arguer that a choice must be made. He should, in other words, advance the criticism of equivocation, requesting that the proponent of the argument make a choice one way or the other.

Cederblom and Paulsen show keen insight in suggesting that this sort of case reveals that the evaluation of the argument is fundamentally a dialogue process. The critic must ask the arguer what he means by certain terms. The arguer must then respond by clarifying his meaning. Hamblin (1970), I feel, has made a kindred deep observation in noting that equivocation as a fallacy is best seen as a "point of order" or procedural clarification in dialogue between two participants in dialogue.

Another important lesson of this case is that there is a fundamental connection between equivocation (including the kind of equivocation associated with vagueness) and enthymemes. Evaluating equivocal argu-

ments, and perhaps even all arguments in natural language, is a matter of making certain fair or charitable presumptions about what the arguer meant to say or include, given the benefit of the doubt. But this is the very same problem posed by cases of enthymemes. If the argument is a written one, or if the arguer is not present to defend or clarify his argument by further dialogue, criticism of the argument can only proceed on the basis of "fair" presumptions about what the arguer would have, or should have, added or further specified. Hence all criticisms by way of equivocation or enthymemes are in an important sense provisional. They are procedural clarifications that invite the arguer's response. They are therefore dialogue-relative, and are better seen as criticisms inviting replies than as conclusive refutations. But then such dialogue-relativity has emerged as characteristic of virtually all the traditional fallacies. Hence a "fallacy" may be better seen more as an objection that can possibly be met than as a refutation that shows, once and for all, that an argument is incorrect.

3. The Problem of Subtle Equivocations

Hamblin (1970) makes a distinction between gross and subtle equivocations. Most cases cited as fallacies of equivocation in the traditional logic texts are either not arguments, and hence are more correctly described as ambiguities rather than equivocations, or are simplistic cases that would be unlikely to be much trouble to a serious reasoner. For example, Hamblin (1970, p.14) notes that at least three of the textbooks he consulted gave the example: "Some dogs have fuzzy ears; my dog has fuzzy ears; therefore my dog is some dog!" This sort of example is not very helpful however, for as Hamblin rightly points out, "... we are hardly capable of being deceived by any serious chain of reasoning exploiting the double-meanings in the statements about them" (p.15). Hence a good case of the fallacy of equivocation, worth our serious study, should be (1) an incorrect (invalid) argument, (2) based on meaning-shift, and (3) the putting forward of which is part of a strategy of deception or significant mischief in argumentation.

Are there such arguments? Hamblin goes on to give an example of a subtle equivocation that might fit the bill.

(8) All acts prescribed by law are obligatory.
Non-performance of an obligatory act is to be disapproved.
Therefore, non-performance of an act prescribed by law is to be disapproved.

This case is an argument, at least so I think, that could indeed be subtle enough to cause a good deal of trouble in real arguments. And there could be little doubt that in fact it has caused a lot of trouble in many an argument on ethics.

But having gotten a realistic example, Hamblin is immediately led to recognize a general problem posed by it. How could it truly be a fallacy, if in fact it is subtle enough to truly deceive an arguer? To see the problem, we have to start with Hamblin's basic assumptions about equivocation as a fallacy.

First, Hamblin requires that in order to be a fallacy of equivocation, an argument must (a) be an invalid argument based on meaning-shift, and (b) "... we must assume that the perpetrators of the argument either deceive themselves, or set out to deceive other people, into thinking the argument valid" (p.292). But if we consider the argument (8) above, we can see that someone could be *deeply* deceived by it. That is, someone who advanced this argument might be so convinced by it that he identifies the class of morally obligatory acts and the class of acts prescribed by law as being perfectly equivalent in meaning. We can, Hamblin suggests, suppose someone to be so deeply deceived by such an argument that it creates for him a special pattern of use of the words involved in it. It could be as if this person is stipulating that, for the purposes of his argument, 'morally obligatory acts' and 'acts prescribed by law' shall mean the same thing. But if we can grant such an assumption then there is a serious problem with equivocation as a fallacy — for the arguer who is deeply "deceived," the argument he advances is no longer meant by him to be equivocal. For him there is no double meaning, and hence no shift of meaning. To any accusation of equivocation, he can or should reply, "According to the meaning of these words that I intend to advance as part of my argument for my position, these phrases mean the same thing. There is no double meaning, and therefore no equivocation." How is the critic to reply? If stipulative meaning is sometimes possible in argument, as surely it should be, then the critic appears to have no foolproof reply. Hence Hamblin's problem — how can you ever make a charge of a fallacy of equivocation stick, if the case at issue may be truly subtle enough to fool somebody?

Part of the problem is unravelling the meaning of 'fallacy.' I think we need to question Hamblin's assumption — as part of the way he formulates the problem — that for there to truly be a fallacy of equivocation, somebody must be deceived. Generally, we have seen that there is a question-

able psychologism implicit in the claim that a fallacy must be an invalid argument that *seems* valid to someone. And in this instance, I would like to resist the idea that we must assume that the perpetrator of a genuine fallacy of equivocation either deceives himself or those to whom his argument is directed. Instead, access to equivocation as a form of fallacy open to reasonable analysis should be sought in the dialectical strategy of the arguer to prove something to another participant in the logical game of dialogue both are engaged in. If equivocation is a fallacy, it is because it is a strategy of dialogue that may enable an arguer to prove his conclusion, by the rules of the game, from his opponent's commitments.

Hamblin's deeper formulation of the problem goes on to recognize and bring out the dialectical nature of the problem of equivocation as a fallacy. The underlying problem is to see how "deception" or "fault" can have a dialectical analysis in the context of equivocation. Here we no longer mean "deception" in a psychological sense, but refer to normative rules or procedures of rational dialogue, and violations thereof.

Hambln recognizes, however, that the basic structure of equivocation as a fallacy has to do with a kind of shift that takes place between the arguer and the one to whom the argument is directed. Controlling this characteristic shift has something to do with procedural rules of dialogue.

First, Hamblin (p.293) notes that equivocation has something to do with the dialectical theory of *truth* and *falsity*. For the proof that an argument is equivocal seems to require that the argument is, in some sense, invalid. To make a charge of equivocation supportable, a critic has to show that the premisses of the argument may be taken to be true while the conclusion may be taken to be false. What I would like to think Hamblin is moving towards, in these observations, is the position that equivocation is essentially tied to shifts in the burden of proof in moves of play in games of dialogue, and also to an arguer's evaluations of the plausibility of the premisses and conclusion of an argument. If for 'truth' we read 'plausibility' and for 'falsity' we read 'implausibility' the character of equivocation as a strategy of proving in logical games of dialogue can emerge. However, such a suggestion arises naturally within the context of the present theory that plausibility is what corresponds in dialectic to truth. The conclusion to be drawn then is that equivocation as a fallacy has to do with shifts of plausibility between moves in a game of dialogue.

Some of the problems posed by Hamblin can be solved within the theory of the fallacy of equivocation as a strategy of plausibility — disso-

nance between players in a logical game of dialogue. Let us go back to the subtle example of equivocation (8) given by Hamblin. Is this argument a fallacy of equivocation? To decide whether it is or not, we do not need to worry whether in general it "seems valid" but is not. Instead, we should look to the question of how it might be deployed in a game of dialogue.

Characteristically, (8) is a fallacy of equivocation if put forward by a participant in dialogue where his opponent is tugged to interpret some term in one proposition in one way, in another proposition another way, in order to make both propositions come out as plausible to that opponent. The other elements of equivocation characteristically are that under such a disambiguation, the argument is invalid, and that under some other admissible disambiguation the argument is valid. In a quite natural context, (8) could easily be portrayed as just this very sort of argument bundle. It is really a multiplicity of arguments rolled up into one package. And as Hamblin rightly proposes, it is subtle enough to deeply deceive participants in a realistic sort of context of argumentation which could be constructed as its dialectical setting. Hence it is reasonable to grant that (8) is quite a useful example of equivocation.

But why is (8) a fallacy of equivocation? It is a fallacy precisely to the extent that a reasonable assignment of plausibility-values to the premisses makes them require different disambiguations of 'obligatory' to be plausible to one to whom the argument is addressed. Moreover, under such a disambiguation, the argument is invalid. Furthermore, the argument has at least one valid disambiguation (with at least one implausible premiss).

So Hamblin is right that invalidity and a meaning-shift are characteristically involved. The shift has to do with the dialectical "truth" or "falsity" of the premisses, because these notions become translated into "plausibility" and "implausibility" in the context of strategies of dialogue.

But one of Hamblin's most profound problems posed by (8) still remains. What if the proponent of (8) is in reality deeply deceived himself, in the sense that for his personal or emerging usage, the two disambiguations of 'obligatory' are in fact equivalent or synonymous? However its recipient takes it, can (8) still qualify as a fallacy if it contains no propositions that are truly ambiguous for its sender?

In other words, what's really fallacious in regard to (8)? Is it the set of three propositions as argument that are fallacious? Is it the proponent of the argument who commits the fallacy? Or is it the recipient of the argument who may commit a fallacy of equivocation, even if the proponent sin-

cerely propounds his own consistent or non-ambiguous usage? The difficulty here is compounded by reasonable doubt on how to define 'argument.' Is the argument a set of sentences, or a set of propositions, or are the arguers included as well? Or are their moves or commitments somehow included as part of the "argument?" These problems challenge our conceptions of fallacy and argument.

The best answer is that to understand (8) as a fallacy of equivocation we have to look at it as a possible move of argument in a game of dialogue. Presumably, the context is that a proponent is advancing (8) with the strategic objective of getting his opponent to accept the conclusion. (8) only makes sense as a fallacy if that opponent finds both premisses plausible only at the cost of interpreting 'obligatory' one way in the one premiss, the other way in the remaining premiss. Whether in fact that proponent finds the premisses ambiguous or not in his own semantical lexicon is not at issue. The question of whether there is a fallacy of equivocation or not should turn on whether that proponent advances (8) and whether the opponent interprets the premisses in the only plausible way as being ambiguous. Whether (8) is fallacious or not is a question of the strategy adopted by the proponent in using (8) as a move as part of the game of dialogue at issue. These considerations partly depend on the recipient, on whether he finds the premisses plausible or not. But they depend greatly on the proponent, who constructs the argument using a strategy based on the assumption that the recipient will disambiguate on the basis of what he takes to be plausible. The fallacy involves aspects of both parties.

In other words, the term 'argument' needs to be construed broadly enough to encompass the propositions that make up the premisses and conclusion, and also the dialectical context. The dialectical context includes the description of the theses to be proven by the participants, the participants themselves as players of the game, the rules of the game including the requirements of validity, and some account of the positions of each player so that there is a basis for evaluating some propositions each will take as initially plausible. Given all this, equivocation can emerge as a fallacy. It is the fallacy of one player putting forth several arguments and therewith implementing the strategy that his opponent will accept the conclusion by incorrectly taking plausible premisses from one disambiguation and a valid argument from another disambiguation. The fallacy is best analyzed as a characteristic type of strategy in a game of dialogue.

These remarks may be helpful in deepening Hamblin's insights, but

they still do not solve all the problems posed in his chapter on equivocation. It could still be possible for a disingenuous equivocator to claim that, by his criteria of meaning, there is truly no ambiguity and therefore no equivocation. As is usual with the fallacies, the problem of really "nailing down" the allegation of fallacy in realistic dialogues is non-trivial.

4. Deep Deception and Equivocal Dialogue

Given our broadening of the concept of argument to include the basic elements of regulated dialogue between two arguers, let us return to Hamblin's central problem with equivocation as a fallacy. Consider the case of an arguer, White, who advances argument (8), but is so deeply deceived by it that it is fair to say of him that he makes no distinction between the class of acts required by law and the class of morally obligatory acts. In White's lexicon, these two classes are semantically equivalent. Let's suppose as well that the other participant in the dialogue, Black, is confronted by White, who advances (8) at some point in the dialogue. Moreover, let's assume that the objective of the game of dialogue is for each player to prove his thesis to the other. What should be said of White's deployment of (8) in these conditions?

Let's suppose that Black, at the next move in the dialogue, replies to White's move as follows: "Your argument is an equivocation. The term 'obligatory act' is ambiguous." And further let's suppose that White replies to Black's criticism in the defensive way Hamblin suggests as being possible: "According to the meaning of the words I intend to advance in my argument, this phrase is not ambiguous. There is no double meaning, and therefore no equivocation." How is Black to proceed? Now if Hamblin is right that White's reply is possible, and could be legitimate, the problem is this — how could Black ever hope to make his charge of equivocation stick?

In the context of dialogue given above, the problem can be ameliorated to some extent by the following observation. Once White concedes that he means both 'legally required' and 'morally required' by the term 'obligatory act' in both of his premisses, Black has no further need to make the charge of equivocation stick. Black should forget the charge of equivocation at this point and reply as follows: "Under that univocal (in your semantics) interpretation of 'obligatory act' your argument is valid, I concede. However, under that same interpretation, neither premiss is plausible. For only a legal positivism of the most rigid and extreme sort will accept the proposition that non-performance of every act prescribed by law

is to be morally disapproved. Most of us justifiably think that when a law is foolish or immoral, there may arguably be exceptions to viewing non-performance of it as subject to moral disapproval. Likewise, only an extreme legal positivist would accept the proposition that all acts prescribed by law are morally obligatory. Hence your argument is valid, but I dismiss it because both of the premisses, as you intend them, are unproven and unacceptable." In short, Black does not need to make his charge of equivocation "stick" once White reacted to it by opting for his univocal interpretation of the premisses. Once White so reacted, the charge has done its work, and Black can proceed to attack the weak premisses. For the charge of equivocation has done its job of exposing that weakness to rebuttal or criticism.

We can see here that plausibility plays an important role in equivocation as a form of argument and reply in dialogue. The argument was only plausible when the premisses were taken ambiguously by Black. Once the ambiguity is perceived, the argument ceases to be plausible for Black. White may have revealed himself as an extreme legal positivist, but one may well assume that as part of a realistic profile of the dispute, Black may not be committed to any like positivistic presumptions. On such a profile, Black's reply should be clear and pressing.

Once Black has mounted the charge of equivocation and White has acknowledged that for him, moral obligation and legal obligation are the same thing, the argument can be re-written as follows.

(9) All acts prescribed by law are both morally and legally obligatory.
Non-performance of an act that is either morally or legally obligatory is to be disapproved.
Therefore, non-performance of an act prescribed by law is to be disapproved.

White's argument, so restated, is non-equivocal for both Black and White. Perhaps White's interpretation of his argument could be made even clearer by re-stating the premisses after the following fashion: all acts prescribed by law are legally obligatory, or, to put it in an equivalent way, morally obligatory. This way of putting the premiss brings out that White has clearly opted for a strong form of legal positivism in advancing (9) the way he does.

To gain a more realistic appreciation of whether any "fallacy" is committed in a case like this one it is necessary to fill in some of the dialectical context of (9). Let us suppose that White has taken up the position of

extreme legal positivism. For White, moral obligation is perfectly equivalent to the requirement of law in some given jurisdiction. In relation to White's position, (9) as advanced by White is — at least for White — non-equivocal. But must it follow that White has committed no fallacy of equivocation in advancing (9) as an argument in dialogue with Black? Let's suppose that Black is not committed to a position of legal positivism. Then for Black, the second premiss is false or implausible. Could White have committed a fallacy of equivocation then, by proposing (9) to Black?

A case could be made out for criticizing White as follows. Suppose that the issue being disputed by White and Black is precisely that of the truth of legal positivism. White defends it and Black rejects it. In such a dialogical context, the conclusion of (9) could be an important thesis for White to establish as part of his argument for legal positivism. Therefore, if the game is a dispute, Black is committed to rejection of the proposition 'Non-performance of [every] act prescribed by law is to be disapproved' where 'disapproved' means 'morally disapproved.' Once White takes the step of advancing (9), Black is immediately committed by the strategic dictates of his position, to driving a wedge between the two meanings of 'obligatory.' For clearly Black should be committed, in virtue of his rejection of legal positivism, to the rejection of the following two propositions.

(10) All acts prescribed by law are morally obligatory.
(11) Non-performance of [every] legally obligatory act is to be [morally] disapproved.

These two propositions, taken together, could in effect define the basic position of strong legal positivism that an act is legally binding if, and only if, it is morally good.

By getting White to concede that in White's pattern of usage there is no ambiguity, Black can make it clear why he, Black, should not be committed to either premiss of (9), as White interprets them. So while it is true, perhaps, that Black may not be able to make his charge of equivocation stick, that is not a serious problem for Black if he follows up the charge of equivocation in the appropriate way.

In short then, once Black recognizes the ambiguity and makes it clear by his charge of equivocation, the dialectical sting is taken out of White's argument. White's insistence that the argument is not an equivocation, from his own point of view, does not make it an acceptable argument from Black's point of view. And in logical games of dialogue where the objective

is to prove your own conclusion from your opponent's concessions, it is Black's point of view that is the more significant in connection with ruling on fallacies of equivocation. The argument may be univocal from White's position. But once seen clearly as a univocal argument by Black, the argument is no threat to Black's position.

It is only when the ambiguity is not recognized by Black, as a significant ambiguity in relation to his position, that the equivocal argument could be a real threat. To make the argument plausible in relation to his position, Black could be tempted to interpret one premiss one way and the other premiss the other way. Yet if, in so doing, he also accepts the validity of the argument, he has been duped by the equivocation. For to accept the plausibility of the premisses and the validity of the argument at the same time is to erroneously accept a bundle of faulty arguments as if it were one valid argument with plausible premisses. And that is precisely the fallacy of equivocation.

So we see that equivocation is a dialogical fallacy. One party, White, advances an argument that may be, for him, non-equivocal. But clearly the "argument" is an equivocation if, in relation to its receiver's position, one premiss is only plausible if taken one way, the other premiss only plausible if taken another way, and neither way yields a valid argument. Such an "argument" is not an argument at all, in relation to the recipient's position. It is many arguments, even if it may be taken in relation to another position as one argument. As one argument, however, it may not have plausible premisses in relation to an arguer's position.

Who commits a fallacy of equivocation then, in the case of (8)? Is it White or Black? I think we should rule that it is White who commits the fallacy. It is White who needs to convince Black to accept the conclusion of (8). Yet the premisses offered by White are most plausibly interpreted equivocally by a non-positivist like Black. However, if Black were to accept the "argument" and its conclusion based on his equivocal interpretation of it, it is fair to rule that he too has participated in the fallacy.

What does "fallacy" mean then, in the context of equivocation? Here, I think, is where we need to question our rule that a fallacy is a fallacious argument. For an equivocation is not an argument, strictly speaking. It is a set of sentences comprising many arguments, masquerading as one argument. Clearly then, argument is involved. But the problem is that there are too many arguments being taken, confusingly, as one argument by the arguer who falls victim to equivocation.

To get an adequate grasp of equivocation as a fallacy, we have to study this kind of multiplicity of move in argument in the context of strategy in a game of dialogue. Each participant in the game has a set of commitments that defines his position at a given point in the dialogue. The position of an arguer may not be fully revealed to his opponent, but usually that opponent has some rough idea of what the other player's commitments are likely to be on the issue of the disputation. He knows that certain propositions are likely to be thought plausible or implausible by that other arguer. Such indications of plausibility may predictably incline an arguer to interpret an ambiguous sentence in one way or another. Where ambiguity is possible then, equivocation becomes a possible short-cut strategem in argument. We can see now clearly enough why it works, and why it is a fallacy.

The dialectical approach we have taken does, to a certain extent, resolve Hamblin's problem of the disingenuous equivocator who claims his own pattern of private or stipulative usage. For although he may be entitled to such usage, as required by his own position in the argument, he may not be entitled to force it on the recipient of his argument, who may have a different position to defend. From the latter viewpoint, the argument may be, if not equivocal, then simply uncompelling in virtue of its unacceptable premisses. At any rate, from this perspective on argument, Hamblin's problem is not quite as bad as it may have initially seemed to be.

Still, no procedural requirement of dialogue we have adopted, so far, rules out the equivocator's move of advancing a bundle of arguments designed to capitalize on ambiguity and plausibility and thereby sophistically gain a recipient's acceptance of the equivocator's conclusion. The equivocator can certainly try this in a logical dialogue-game, and it is then a matter of "the buyer beware." It is up to the recipient to detect the equivocation if he can.

If equivocation is possible in games of dialogue then, how can we stop it? That is, could there be some grid or screen that a defender could use to protect his side of the argument against the equivocator? That would seem to be the next question of interest.

One might reflect here that the problem is posed by the assumption that argumentation takes place in natural language, or at any rate in some language that tolerates ambiguity. If the game of dialogue is conducted exclusively in some formal language like first-order logic, no fallacy of equivocation could ever be mounted. For in this sort of game, every constant is defined univocally, and there can be no ambiguity. That model of argument

is fine as far as it goes. But of course the problem is that if we want to model realistic debates or disputations, we need to study arguments that basically take place in the medium of natural language, even if some "logical" rules of procedure may be enforced, as governing some kinds of moves and inferences. Equivocation then is truly a problem of applied or informal logic. From a point of view of pure logical theory with no pretentions to apply to realistic argumentation, equivocation is no problem. Where there is no ambiguity, there can be no equivocaton.

Woods and Walton (1979) takes an approach of considering languages that are partially regimented so that equivocation can be contended with. However, ultimately that is a piecemeal solution. For as soon as you admit ambiguity of any sort into the language, equivocation is possible. True, the more the semantics of the language is regimented or formalized, the better is the armory of the defender equipped to contend with equivocation attacks. But unless natural language is given up entirely, the possibility of equivocation must remain.

In realistic argumentation then, it seems that it must remain up to the defender to be on his guard against equivocal arguments. We do not know of any foolproof way to screen against it.

There is one sort of approach that could be tried however. Instead of trying to construct an outer defence system in the procedural rules of logical dialogue that would equip the defender to exclude or refute equivocal arguments, could we try to modify the internal logical propositional structure of dialogue to bar equivocal arguments of the potentially harmful sort. That is, could we restructure the logic of 'valid argument' to bar the equivocal argument? Proposals that look to be of this sort have recently been advanced by David Lewis. Let us look to them.

5. Many-Valued Logic for Equivocators

The problem of equivocation in argument is that the equivocator presents more than one argument. In effect, he advances a bundle of arguments at one move. Before the defender against the fallacy of equivocation can cope with this sort of multiple move, he must sort out the different propositions that are contained in the bundle. Once he sorts them out into several distinct arguments, he can then react in the usual way appropriate to logical dialogue. He can evaluate each individual argument on its merits. Classical propositional logic, so we have argued, is an appropriate semantical structure for this evaluation in many contexts of dialogue.

But there is one serious problem. In order to proceed in this way to combat equivocation, the defender needs to recognize the ambiguous sentences as ambiguous, and then sort them into the unambiguous sets of propositions he needs to make up arguments. The worst danger of equivocation however, is that an arguer may not be able to take the first step of recognizing the ambiguity and clearly sorting out into non-ambiguous propositions. Natural language is rife with ambiguity and vagueness that may go undetected.

We could deal with this problem by having a propositional logic for ambiguous sentences. Accordingly, a sentence could be true on some disambiguations (true-osd) or false on some disambiguations (false-osd). Once we allow this way of evaluating sentences, there will also be some mixed sentences. That is, some sentences will be true on some disambiguations and false on others.

According to this way of proceeding, truth and falsity are still the properties of propositions. But of course, one sentence, if it is ambiguous, may express many propositions. Hence a given sentence could be true on some disambiguations and false on others. Hence, at the level of sentences, we should say that a sentence is true-osd or false-osd. These evaluations are the counterparts of the propositional properties of truth and falsity.

What does 'validity' mean at the level of sentences? One thing it could mean is that in a valid argument, if the premisses are true-osd, then the conclusion is also true-osd. In other words, in a valid argument in this sense, you can never go from premisses that are true on some disambiguation to a conclusion that is false on every disambiguation. Another possibility is the following conception of validity: if the premisses are true on all disambiguations, then the conclusion must also be true on all disambiguations.

Adopting one or both of these conceptions of validity at the sentence level would have the decisive advantage of providing a defensive screen for the defender against equivocation. He does not need to disambiguate the potentially ambiguous sentences in which an argument is expressed prior to his evaluation of the argument. Therefore, these new conceptions of validity are worth pursuing in any study of equivocation as a fallacy.

But can either of these conceptions of validity yield a propositional calculus with well-defined properties? David Lewis (1982) has shown how each of them yields a many-valued relevance logic. Let us examine both of these logics.

6. Priest's System LP

Validity of arguments in Priest's system LP means never going from premisses that are true only or mixed[2] to a conclusion that is false only. This criterion of validity is what is stated by Priest's definition of the deducibility relation, $\models$. Let p and q be propositions, and v be an evaluation of the propositional variables (i.e. a function that takes the variables to values T, M, or F). What Priest calls v^+ is the extension of v to the complex sentences of the language, A, B, C, ..., made up from the propositions using the truth tables. Then where Σ is a set of sentences of the language LP, deducibility is defined as follows (Priest, 1979, p.228).

$\Sigma \models A$ iff there is no v such that $v^+(A)$
$= F$ but for all $B \in \Sigma$, $v^+(B) = T$ or M.

What does this mean? It means that a sentence A is deducible from a set of sentences Σ where you never go from Σ that is true only or mixed to A that is false only. In other words, if the premisses have the value T or the value M, then if the conclusion is deducible from those premisses, the conclusion cannot have the value F. To put it yet another way, deductibility in Priest's system LP is defined as the set of implications that preserves the values T and M. A valid argument will never take you from one of these values to the value F.

According to Lewis (1982, p.439), the implications that preserve truth-osd are given by Priest's LP. What Lewis means is that he is interpreting Priest's three values T, F, and M as applying to ambiguous sentences. There are just these three possibilities: a sentence can be true on all its disambiguations (T), false on all its disambiguations (F), or true on some and false on others (M). Hence Priest's system LP has a concept of implication that preserves truth-osd (truth on some disambiguation). This means that if a sentence A implies a sentence B in LP, then if A is true on all its disambiguations or true on some disambiguations and false on others, then so must B have this same property, i.e. B must be true on all its disambiguations or true on some disambiguations and false on others. In other words, truth-osd is preserved by implication. You can never go from premisses that are true on some disambiguations, by valid argument, to a conclusion that is false on all its disambiguations.

There is one qualification yet, however. According to Lewis (1982, p.439), "[t]he implications that preserve truth-osd are those given by the first-degree fragment of Priest's LP." What is the first-degree fragment of a

system? According to Anderson and Belnap (1975, p.151) "degree" refers to the nesting of arrows → (conditionals). A zero-degree formula contains no arrows at all. A first-degree formula is a formula A → B with both A and B zero-degree (purely truth-functional) formulas.[3]

According to Lewis (1982), a sentence can be disambiguated three different ways. It can be true only, on some disambiguation. It can be false only, on some disambiguation. Or it can be true and false, on some disambiguation. Take the sentence 'Scrooge went to the bank,' presuming that it can be disambiguated two ways: (1) Scrooge went to the (savings) bank, and (2) Scrooge went to the (river) bank. Suppose Scrooge went both to the savings bank and the riverbank, for example, if the savings bank were on the river. Then the sentence 'Scrooge went to the bank' is true only, on the given disambiguation. But suppose Scrooge did not go to either the savings bank or the riverbank. Then the sentence 'Scrooge went to the bank' is false only, on the given disambiguation. Finally, suppose Scrooge went to the savings bank, but did not go near the riverbank. Then the sentence 'Scrooge went to the bank' is both true and false, on the given disambiguation.

Following Lewis's interpretation of logic for equivocators, we can see how the connectives should be defined after the tables given by Priest (1979). Let T be the value "true only," F be the value "false only" and M, or "mixed," be the value "true and false." We presume (as usual) that the negation of a sentence is the opposite value. That is, a sentence is true (false) on some disambiguation if and only if its negation is false (true) on some disambiguation. Suppose then that the sentence 'Scrooge went to the bank' is true only on some disambiguation. What shall we say of its negation, 'Scrooge did not go to the bank?' We are presuming here that, in fact, Scrooge did not go to the savings bank and he did not go to the riverbank. Clearly then, the sentence 'Scrooge did not go to the bank' is false only, on the given disambiguation. Whichever way you disambiguate 'bank' the sentence comes out false.

Similarly, if a sentence is false only, its negation must be true only.

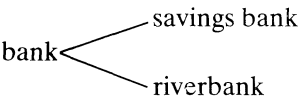
But what if 'Scrooge went to the bank' is both true and false (mixed), on a given disambiguation. Then its negation will have the opposite value. It will be false and true, on the same disambiguation. In other words, the negation of a mixed sentence will also have mixed values.

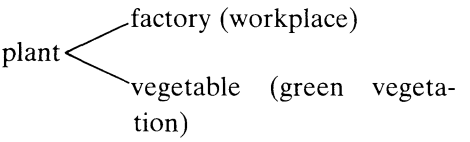
What we have said then can be summed up by the following table for negation.

A	¬A
T	F
M	M
F	T

Table for Negation

Similar reasoning leads to the formulation of a table for conjunction. We need to look at the conjunctive sentence 'Scrooge went to the bank and Don went to the plant' under different conditions of the following disambiguation.





Some of the rows of the table are straightforward. If A is true only and B is true only, then A $\wedge$ B is true only. If A is true only and B is mixed, then A $\wedge$ B is mixed. These straightforward values are given by the eight filled rows of the table below.

A	B	A $\wedge$ B
T	M	M
M	T	M
M	M	M
T	T	T
T	F	
F	T	
F	F	F
M	F	
F	M	

Table for Conjunction

The remaining four rows of the table, left blank above, require more careful consideration. Consider the third blank row from the top above. What if A is mixed but B is false only? What value should A $\wedge$ B have?

Suppose, in our example, that Scrooge truly goes to the savings bank but it is false that he goes to the riverbank. And suppose that it is false that Donald goes to the factory and it is also false that he goes to the vegetation. What are we to say of the value of 'Scrooge went to the bank and Donald went to the plant' on the given disambiguation? Our first thought might be to say that this sentence is mixed, since there is some truth in it as well as falsehood.

But we need to reflect on this interpretation a little more. What do we mean by 'and?' Presumably we mean (as usual) that A ∧ B should only be true if both A and B are true. If either component is false, the whole conjunction A ∧ B must come out false. Reasoning along these lines, if the one conjunction, say B, is false only on the given disambiguation, then the whole conjunction, A ∧ B, should be false only. It doesn't matter that the other conjunct, A, is mixed. Hence we should say that the whole sentence 'Scrooge went to the bank and Donald went to the plant' is false only if 'Donald went to the bank' is false only, never mind whether 'Scrooge went to the bank' is both true and false.

The same reasoning that applies to the bottom pair of blank rows in the table for conjunction can also be applied to the top rows. Even if one conjunct is true only, it is enough to make the whole conjunction 'false only' if the one conjunct is false only. The presumption is again the usual one that a conjunction is true if and only if both conjuncts are true. If one is false, the whole conjunction is false. By analogy, if one is false only, the whole conjunction is false only.

But there are two ways of completing the table for conjunction, each of which could possibly be justified. The one considered above is given on the right. But we could appreciate how the one on the left may be considered as well.

A	B	A ∧ B
T	M	M
M	T	M
M	M	M
T	T	T
T	F	M
F	T	M
F	F	F
M	F	M
F	M	M

A	B	A ∧ B
T	M	M
M	T	M
M	M	M
T	T	T
T	F	F
F	T	F
F	F	F
M	F	F
F	M	F

Suppose one conjunct is false only, on some disambiguation of a conjunctive sentence. Is the whole conjunction mixed, or is it false only? The former alternative is given by the left table, the latter by the right table.

The left table says that 'A and B' is always mixed unless both A and B are true only or false only. Then 'A and B' has the same value as its components. According to this view of conjunction, a mixed value anywhere

always produces a mixed value for the whole conjunction. We could say that according to this view of conjunction, mixture is infectious.

The right table says that whenever either component has the value 'false only' then the whole conjunction has the value 'false only.' Otherwise the conjunction is mixed whenever either component is mixed. According to this view of conjunction, a 'false only' value anywhere always produces a 'false only' value for the whole conjunction. We could say that according to this view, 'false only' is infectious.

The difference between the two tables only concerns the four rows where one conjunct is false only but the other is either true only or mixed. Should we say that the conjunction is false only, in those rows, or should we say that it is mixed?

What should win out here, in the end, is the analogy with the 'and' of classical logic, where a false conjunct is enough to make the whole conjunction false. Similarly here at the level of sentences, if any conjunct is false only, then the whole conjunction should have the value 'false only' even if other parts of it are true on some or all disambiguations. In other words, 'and' at the level of sentences should retain this much of its logic in common with 'and' at the level of propositions.

Following these lines of reasoning, the sentential logic for equivocators is that outlined by Priest (1979, p.228) as follows. Although the class of tautologies in the new logic LP turn out to be the same as those of classical propositional calculus, the deducibility relationship is changed. The following inferences do not hold in LP.

$A \wedge \neg A \models B$ $\quad A \rightarrow B, B \rightarrow C \models A \rightarrow C$

$A, \neg A \vee B \models B$ $\quad A, A \rightarrow B \models B$ $\quad A \rightarrow B, \neg B \models \neg A$

$A \rightarrow B \wedge \neg B \models \neg A$

One can see that LP is a relevance logic insofar as disjunctive syllogism and reasoning from inconsistent premisses to any conclusion both fail. Yet it is a somewhat unusual relevance logic, for *modus ponens* and *modus tollens* both fail as well. However, the following principles of classical logic are preserved in LP.

$A \models A \vee B$	$A, B \models A \wedge B$	$A \rightarrow B \models \neg B \rightarrow \neg A$
$A \rightarrow (B \rightarrow C) \models B \rightarrow (A \rightarrow C)$	$A \models B \rightarrow A$	$\neg A, \neg B \models \neg (A \vee B)$
$\neg A \rightarrow \neg B \models B \rightarrow A$	$\neg (A \vee B) \models \neg A$	$A \models \neg\neg A$
$\neg\neg A \models A$	$\neg A \models \neg (A \wedge B)$	$\neg (A \rightarrow B) \models A$
$A \wedge B \models A$	$A, \neg B \models \neg (A \rightarrow B)$	$A \rightarrow B \models A \wedge C \rightarrow B \wedge C$
$\neg A \models A \rightarrow B$	$A \rightarrow (A \rightarrow B) \models A \rightarrow B$	$A \rightarrow \neg A \models \neg A.$

Hence it seems that we have enough of classical logic left in LP to make it a potentially interesting way of evaluating ambiguous sentences for the canon of validity we have in mind.

To check it out further, let us turn to some examples, both to see how LP works generally, and to see how effectively it could be applied to evaluating charges of the fallacy of equivocation in realistic argumentation.

We conclude this section by summarizing the basic constants as defined by tables for LP. Since ⌉ and ∧ have already been defined, we could define A ∨ B as ⌉(⌉A ∧ ⌉B). And we may define A → B as ⌉A ∨ B.[4] But just to be clear, we give below the tables for ∨, →, and ∧.

A	B	A ∨ B	A → B	A ∧ B
T	M	T	M	M
M	T	T	T	M
M	M	M	M	M
T	T	T	T	T
T	F	T	F	F
F	T	T	T	F
F	F	F	T	F
M	F	M	M	F
F	M	M	T	F

Then all we need to remember is that ⌉A always has the opposite value of A (takes T to F or *vice versa*) except where A has the value M. Then ⌉A also has the value M. Here we can clearly see why *modus ponens* fails in LP. In row 8 above, A and A → B have the value M while B has the value F.

7. Applying LP to the Fallacy of Equivocation

How could restricting validity to validity-osd help us to deal with fallacies of equivocation? To pursue this question, consider the following argument.

(12) If Scrooge goes to the bank on Thursday, he makes a financial transaction on Thursday.
Scrooge goes to the bank on Thursday and does some fishing.

Therefore, Scrooge makes a financial transaction on Thursday.

This argument could, in the right disputational context, turn out to be justi-

fiably called an instance of the fallacy of equivocation. Why? Under the most plausible disambiguations of its terms, the premisses are both true and the conclusion is false. The most plausible context for the first premiss suggests that 'bank' should be disambiguated as 'savings bank.' While the most plausible context for the second premiss suggests that 'bank' should be disambiguated there as 'riverbank'. So disambiguated in both premisses however, the argument comes out invalid in classical logic (and in LP, for that matter). We have the mark of an equivocation then. Under some disambiguations you get a valid argument, but always one with at least one implausible premiss. Under other disambiguations, you have plausible premisses, but the argument is invalid.

What happens if we turn from classical validity to validity-osd (as modelled by LP) as our criterion of valid argument? Clearly the argument is not valid-osd. According to the most plausible interpretation of the premisses — where 'bank' means 'savings bank' in the first premiss, and 'riverbank' in the second premiss — both premisses can be true-osd without the conclusion having to be true on every disambiguation. It could be that Scrooge goes to the riverbank on Thursday, and makes no financial transaction at all.

Reviewing this particular argument, one can see why *modus ponens* is not a valid form of inference in LP. If the premisses are true on *some disambiguation*, it need not follow that the conclusion is true *on some disambiguation*. In this particular case, the conclusion may be unambiguously false.

Now the problem of equivocation arose as a fallacy because an argument bundle containing ambiguous sentences could be valid on some disambiguations (at the cost of having false premisses) and at the same time invalid on other disambiguations (with true premisses, however). Using LP instead of classical logic, this problem no longer arises. For an argument bundle is now either valid-osd or not, no matter how you divide it up into arguments.

Hence the adoption of LP as the logic of sentences in a game of dialogue does show promise of helping us to cope with the problem of equivocation. But we need to consider further cases.

How could Lewis's interpretation of Priest's logic LP be applied to the practical business of evaluating, or at least coping with, charges of the fallacy of equivocation? Lewis's answer is this: ambiguity is, or could be, pervasive in natural language, therefore we can never disambiguate our lan-

guage fully. Hence, according to Lewis (1982, p.439), the best we can do is to weaken our logic so that it tolerates ambiguity.

Classical logic preserves truth in a valid argument even in the face of ambiguity in just the following sense — if each ambiguous term in the premisses and conclusion is disambiguated *in the same way* in every instance, then the conclusion is true *on that disambiguation* if the premisses are. But in practice, that is not much help. Why not? Well in practice, the problem of equivocation may be posed by the fact that one confronted with the problem of evaluating an argument may not be able to fully disambiguate all its terms. Lewis calls such an arguer a "pessimist," meaning I suppose, that he may be able to disambiguate the terms of the argument bundle he faces, to some extent, but he cannot perhaps be sure that he has fully disambiguated every term in the argument bundle. How could such a critic of argument still reason in the face of the potential ambiguities inherent in natural language? Lewis (1982, p.440) offers this answer.

> If things are as bad as he [the pessimist] fears, he must perforce reason from premises accepted merely as true-osd, or at best as true-osd only ... His highest hope for his conclusion is that it will be true-osd only, or at least true-osd.

The fact that classical logic preserves truth if each term is consistently disambiguated the same way throughout the whole argument is, therefore, no help to the pessimist. For he cannot safely make such an assumption of consistency when reasoning in natural language. So he should move to a weaker sentential logic when confronted by the possibility of equivocation.

To see what this proposal amounts to in practice, let's take the case of the pessimist who forgoes classical propositional logic for the weaker sentential logic of LP.[5] According to Lewis, the implications that preserve truth-osd are those of the first-degree fragment of LP. Technically, this means that in a valid argument, you can never go from premisses that are true-osd only or mixed to a conclusion that is false-osd only.

But what does this criterion of validity amount to in practical terms? It seems to amount to this requirement: in a valid argument, if the premisses are true on some disambiguation, then the conclusion will be true on some disambiguation. More precisely, it means this: if the premisses are true-osd only, or true-osd and false-osd, then the conclusion is never false-osd only. In other words, it says that if the premisses are true on some disambiguations — meaning at least one or possibly all disambiguations, including the possibility that they are false on some disambiguations as well — then the

conclusion must be true on some disambiguations (or equivalently: the conclusion can't be false on all disambiguations). To sum up: if the premisses are true-osd, then the conclusion must be true-osd. This would seem to conform to what Lewis writes by saying that the implications preserved by LP are precisely those that preserve truth-osd.

But how exactly does this criterion of validity assist us in guarding against possible fallacies of equivocation? It is still not entirely clear how it does provide such assistance. Some examples can help. Let's consider the case of contraposition.

As Lewis (1982, p.433) points out, contraposition fails for implication in LP. Where B is both true and false and A is true only, A implies $B \vee \neg B$, but $\neg(B \vee \neg B)$ fails to imply $\neg A$. However, contraposition holds for Priest's conditional, $A \rightarrow B$, defined as $\neg A \vee B$. We have then, an interesting question for LP as an applied logic. If a conditional 'If A then B' occurs in a sentence, how do we translate it — as '$A \rightarrow B$' or as 'A implies B.' In general, it would be more appropriate to use $A \rightarrow B$, since that is the general conditional, unless the context makes it clear that logical implication is meant by the 'If ... then.' So that is the policy we adopt. When we come to the next relevance logic to be examined however, we will have to adopt a different policy. For it will have no symbol for 'If ... then' other than implication.

The inference form $A \rightarrow B \models \neg B \rightarrow \neg A$ is valid in LP. Consider an instance where the term 'bank' could mean 'savings bank' or 'riverbank' and the term 'plant' could mean 'factory' or 'bit of vegetation.' What can we say then about the following inference?

(13) If Bob went to the bank then Bill went to the plant.
Therefore, if Bill did not go to the plant then Bob did not go to the bank.

Suppose the premiss is true on some disambiguation. Suppose, for example, that it is true that if Bob went to the savings bank then Bill went to the factory. Does it follow that the conclusion must be true on some disambiguation? Clearly it does not follow that if Bill did not go to the bit of vegetation, Bob did not go to the riverbank. But it does follow that the conclusion must be true on at least one disambiguation, namely this one: if Bill did not go to the factory then Bob did not go to the savings bank. Hence the inference is valid in just the sense required by LP. If the premiss is true-osd, then so is the conclusion. Our problem is this however. How could the LP-validity of the inference above stop a would-be equivocator from using it to

fallaciously get someone to accept its conclusion?

Perhaps it would help us to look as well at an instance of an inference that has a form that is not valid in LP (disjunctive syllogism).

(14) Either Bob went to the bank or Bill went to the plant.
Bob did not go to the bank.
Therefore, Bill went to the plant.

Here truth-osd is not preserved. If the first premiss is true only on one disambiguation of 'bank' and the second premiss true only on the other, the conclusion could be false on both disambiguations of 'plant'. This inference is not valid in LP.

Now why is it that the first inference guards against the equivocator in a way the second one fails to?

Lewis (1982, p.440) suggests that relevance logic has a use in dealing with equivocation when he writes, "... it may serve a purpose to have a partly relevant logic capable of stopping fallacies of equivocation even when equivocation is present." But precisely what is this purpose or use of the relevant logics? How does it stop fallacies of equivocation? Lewis does not attempt to answer these pragmatic questions. Nor does he really attempt to tell us precisely what the "fallacy" of equivocation consists in as a move in argument. Hence what he offers gives no clear guidance on how the requirement of relevance "stops" an equivocally fallacious move in argumentation. Lewis offers a formal mechanism and suggests its possible application to the fallacy in a helpful and constructive way. But he stops short of the pragmatic job of carrying the application through as a project of practical or applied logic to the natural discourse of the usage of equivocal argumentation in realistic refutations and criticisms.

To make progress in addressing this pragmatic question, we need to inquire: why is the first inference equivocation-proof in some way the second one fails to be? In turn, to answer this question, the best thing is to look at how LP might function in being applied to the equivocator's move of presenting a bundle of arguments.

Could adopting the requirement of validity in LP stop an equivocator? Let us go back to (13), an example of an inference that is valid in LP. The possible disambiguations of (13) run as follows.

(15) If Bob went to the savings bank then Bill went to the factory.
Therefore, if Bill did not go to the factory, Bob did not go to the savings bank.

(16) If Bob went to the riverbank then Bill went to the vegetation. Therefore, if Bill did not go to the vegetation, Bob did not go to the riverbank.

(17) If Bob went to the savings bank then Bill went to the vegetation. Therefore, if Bill did not go to the vegetation, Bob did not go to the savings bank.

(18) If Bob went to the riverbank then Bill went to the factory. Therefore, if Bill did not go to the factory, Bob did not go to the riverbank.

(19) If Bob went to the savings bank then Bill went to the factory. Therefore, if Bill did not go to the vegetation, Bob did not go to the riverbank.

(20) If Bob went to the savings bank then Bill went to the factory. Therefore, if Bill did not go to the vegetation, Bob did not go to the savings bank.

(21) If Bob went to the savings bank then Bill went to the factory. Therefore, if Bill did not go to the factory, Bob did not go to the riverbank.

(22) If Bob went to the savings bank then Bill went to the factory. Therefore, if Bill did not go to the vegetation, Bob did not go to the riverbank.

(23) If Bob went to the riverbank then Bill went to the vegetation. Therefore, if Bill did not go to the factory, Bob did not go to the savings bank.

And so forth, for all possible subsequent disambiguations. (15)-(18) are the consistent disambiguations, all valid in classical logic. No remaining disambiguations, including (20)-(23) above, are valid in classical logic.

In light of our analysis of the fallacy of equivocation, how could an equivocator use (13) as a fallacy? To see how, let's suppose that there is a connection between Bob's going to the savings bank and Bill's going to the factory, so that in fact the following conditional is conceded as true: if Bob went to the savings bank then Bill went to the factory. Let's say that once Bob goes to the bank, then Bill always does the payroll. Let's also suppose that there are no other relevant connections, e.g. there is no connection between Bob's going to the savings bank and Bill's going to the vegetation.

Hence all the other disambiguated conditionals are false. In this situation, how could the would-be equivocator equivocate?

The equivocator would choose an argument that would prove the conclusion he needed to prove. Suppose that in the game of dialogue in question, the opponent needs to prove the following conditional: if Bill did not go to the vegetation, Bob did not go to the riverbank. How to "prove" it? Well, he may be aware that (19) has that conclusion and (19) has a true premiss. Here then is a strategy for the equivocator. Put forward the argument (13), full, as it is, with ambiguities. Then hope that the respondent will match up your conclusion to be proven with the premiss he has conceded as true, in effect selecting the invalid argument (19). But also hope that the respondent will perceive the form of argument not as that of (19), but as one of the valid forms (15)-(18), viewing the argument through the valid-looking bundle (13).

Such an interchange of moves between the respondent and the opponent conforms to the pattern of the classical fallacy of equivocation. The respondent is invited to choose both validity and true premisses by rolling up two arguments into what appears to be one.

Now we come to the main question. (13) is valid in LP, meaning that if the premiss is true on some disambiguation, so must the conclusion be true on some disambiguation. Nonetheless, as we saw above, this sort of validity is no obstacle to the equivocator. True, if the premiss is true-osd, so is the conclusion. But all the equivocator needs is an argument where the premiss is true-osd and false-osd, and the false disambiguation implies the conclusion he needs to prove. The fact that truth-osd is guaranteed by the LP-valid equivocal argument is no bar to the strategy of the equivocator.

The problem is that LP allows you to go from premisses that are true on some disambiguation to a conclusion that is false on some disambiguation. Hence LP allows an argument like (19) to be included in a bundle of sentences declared LP-valid. Therefore, LP is no bar to the equivocator.

It seems then that LP is not a particularly useful propositional logic for games of dialogue where equivocation needs to be stopped. Whether there are other uses for LP in regard to equivocation remains an open question. But whatever uses it might have seem limited. If we stick to LP as our conception of validity, we can never go from a set of premisses that is true on some disambiguation to a conclusion that is false on every disambiguation. But that seems a small consolation to the one who has lost the game through swallowing a fallacy of equivocation. If he accepts a set of premis-

ses true on some disambiguation as a basis for accepting a conclusion that is also true on some disambiguation, that is no consolation if the conclusion also turns out to be false on the disambiguation that counts. Such acceptance may lose him the argument even if the implication that was the basis of it is valid in LP. Hence LP, at least by itself, does not seem to be much help in aiding an arguer to contend with the fallacy of equivocation.

8. R-Mingle as a Logic for Equivocators

The second suggestion advanced by Lewis (1982) is that the relevant logic RM (R-Mingle) could be applied to equivocation. According to Lewis (p.439), the implications that preserve both truth-osd and truth-osd only are those given by the first-degree fragment of RM. According to Anderson and Belnap (1975, p.341), the following are the fourteen axioms for RM. $\neg$, $\wedge$, and $\vee$ are defined as in LP.

R1 $A \rightarrow A$
R2 $(A \rightarrow B) \rightarrow [(B \rightarrow C) \rightarrow (A \rightarrow C)]$
R3 $A \rightarrow [(A \rightarrow B) \rightarrow B]$
R4 $[A \rightarrow (A \rightarrow B)] \rightarrow (A \rightarrow B)$
R5 $(A \wedge B) \rightarrow A$
R6 $(A \wedge B) \rightarrow B$
R7 $[(A \rightarrow B) \wedge (A \rightarrow C)] \rightarrow [A \rightarrow (B \wedge C)]$
R8 $A \rightarrow (A \vee B)$
R9 $B \rightarrow (A \vee B)$
R10 $[(A \rightarrow C) \wedge (B \rightarrow C)] \rightarrow [(A \vee B) \rightarrow C]$
R11 $[A \wedge (B \vee C)] \rightarrow [(A \wedge B) \vee C]$
R12 $(A \rightarrow \neg B) \rightarrow (B \rightarrow \neg A)$
R13 $\neg\neg A \rightarrow A$
R14 $A \rightarrow (A \rightarrow A)$

The propositional logic RM consists of the above fourteen axioms, closed under the following two rules of inference.

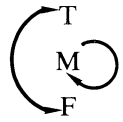
$\rightarrow$E: from $A \rightarrow B$ and A to infer B
&I: from A and B to infer $A \wedge B$

In system RM, the three forms of argument below — respectively *ex falso quodlibet*, disjunctive syllogism, and arguing from any premiss to a tautology — are not valid.

$$\frac{A \wedge \neg A}{B} \qquad \frac{A \vee B \quad \neg A}{B} \qquad \frac{A}{B \vee \neg B}$$

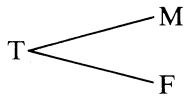
Using the same tables for $\neg$, $\wedge$, and $\vee$ as in LP we can check for invalidity. We can see, for example, why the third form of argument is invalid in RM. Suppose that A is true on all disambiguations and B is true on some disambiguations and false on some disambiguations. Then even though A, the premiss, is true on all disambiguations, the conclusion, $B \vee \neg B$, need not be true on all disambiguations. For if B is mixed then $\neg B$ is also mixed. Hence $B \vee \neg B$ is also mixed. This inference fails to preserve truth-osd only. The first one, *ex falso quodlibet*, fails for a different reason. If A is mixed, then $\neg A$ is mixed, and hence $A \wedge \neg A$ is mixed. But B could be false on all disambiguations. Hence *ex falso quodlibet* fails to preserve truth-osd. In RM, all valid inferences must preserve both truth-osd and truth-osd only.

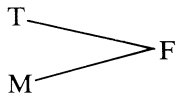
The concept of implication for RM is the same as that of Kalman implication, as outlined by Makinson (1973, p.32ff.). Conjunction, disjunction and negation can be defined using the *three element model* below, adapted from Makinson (p.38).



The curved arrows define negation. If a sentence A has the value M, then $\neg A$ also has the value M. If A has one of the remaining two values, then $\neg A$ has the other one. For example, if A has the value T, then $\neg A$ has the value F. That sums up the table for negation, which is the same as the one we gave for negation in LP. The order of the model serves to define conjunction and disjunction. The value of $A \wedge B$ is always the lower value. For example if A = T and B = M, then $A \wedge B$ = M. Or to take another example, if A = M and B = M, then $A \wedge B$ = M. The value of $A \vee B$ is always the higher value. For example if A = T and B = F, then $A \vee B$ = T. Or, to take another example, if A = F and B = M, then $A \vee B$ = M. Again, the tables for $\wedge$ and $\vee$, so defined, are the same ones we gave earlier for LP.[6] The model above is therefore a convenient way of summing up the logical constants of LP and RM.

The same model can be used to express the idea of implication for RM. As we remarked above, implication in RM preserves truth and truth-only. That is, we can never go validly from premisses that are true-only to a conclusion that is false-only or mixed. And we can never go from premisses that are true-only or mixed to a conclusion that is false-only. We could sum up this concept of implication as below.

Never goes  Preserves truth-only.

Never goes  Preserves truth.

Of course, in the context of equivocation, 'truth-only' means 'true on all disambiguations,' 'false-only' means 'false on all disambiguations,' 'mixed' means 'true on some disambiguations and false on some disambiguations,' and 'truth' means 'true on at least one disambiguation.'

Although RM is a relevant logic, it can be shown that the following argument form is valid in RM.

$$\frac{A \wedge \rceil A}{B \vee \rceil B}$$

We can see why by considering the following table.

A	B	⌉A	⌉B	A ∧ ⌉A	B ∨ ⌉B
T	M	F	M	F	M
M	T	M	F	M	T
M	M	M	M	M	M
T	T	F	F	F	T
T	F	F	T	F	T
F	T	T	F	F	T
F	F	T	T	F	T
M	F	M	T	M	T
F	M	T	M	F	M

Looking under the column for A ∧ ⌉A, we see that it never gives a T value. Hence truth-only will be preserved, in the sense that we can never go from A ∧ ⌉A with the value T to B ∨ ⌉B with the value M or F. Also, truth is

preserved. For we have no row where A $\wedge$ ⌉A has the value M and B $\vee$ ⌉B has the value F.

Now we come to the $\rightarrow$ that occurs in all the axioms of RM. Clearly A $\rightarrow$ B cannot be defined as ⌉A $\vee$ B, the way the conditional, $\rightarrow$, was defined in LP. For by that definition, *modus ponens* would not be valid. Where A is mixed and B is false-only, ⌉A $\vee$ B and A both have the value M, but B has the value F. It seems therefore that the $\rightarrow$ in the Anderson and Belnap axioms for RM should be taken as a metalogical symbol for implication, as we have characterized it above.

Here then is a key difference between LP and RM. When we say, for example, that *modus ponens* fails in LP, we mean that the conditional premiss of the form A $\rightarrow$ B is a conditional, and $\rightarrow$ is a logical constant that can be defined in a table, like any other logical constant. When we say that *modus ponens* is valid in RM, we mean that the premiss A $\rightarrow$ B expresses an implication relationship between A and B.

However, we do not wish to pursue the logical development of RM any further here. Mainly we want to see whether it could be any use, as Lewis suggests, in helping us to deal with equivocation as a fallacy. For this purpose it is enough, at least for the present, to read $\rightarrow$ as 'implies,' meaning that a valid implication preserves truth and truth-only. We should remember that we are working with the first-degree fragments of LP and RM. This means we are excluding from consideration any formula where one arrow occurs within the scope of another. Therefore, transforming an implication concept into a conditional defined by a table that can be generalized to all occurrences of 'if ... then' in the language may be no trivial job. As Makinson (1973, p.40) notes, one of the best ways to carry out this job is to introduce a necessity operator first, and then define the conditional in the modal logic that results. For the present, we will not take this step. Instead, let us turn to the question of the usefulness of RM for studying equivocation.

9. RM and Equivocation

Consider the following variant of the standard example of equivocation.

(24) If death is the end of life then death is the perfection of life.
Death is the end of life.
Therefore, death is the perfection of life.

The form of this inference (*modus ponens*) is not valid in LP, but it is valid in RM.[7] Under what dialectical circumstances could (24) be a fallacy of equivocation?

Suppose White advances (24) in the course of an argument where he needs to get Black to accept the conclusion of (24). Black, let's say, accepts the first premiss as true under its more plausible disambiguation: if the death is the goal of life then death is the perfection of life. Suppose Black also accepts the second premiss under its more plausible disambiguation: death is the termination of life. But suppose that Black does not find either remaining disambiguation of either premiss plausible. Suppose then, given these assumptions about Black's position, White tries to use (24) in the equivocal way as a bundle of arguments to try to get Black to concede the conclusion of (24), an implausible proposition for Black. What White has to do if he is to succeed in pulling off the equivocation is to roll up the valid disambiguations of (24) — all of which have implausible premisses — together with the invalid disambiguation above that has premisses both plausible for Black. This strategy is one that is based on a fallacy, of course. Where both premisses are disambiguated, as above, to come out plausible for Black, the conclusion does not follow by valid argument in classical logic. Hence the equivocator must push for (24) in its non-disambiguated form as a collection of sentences that can be disambiguated in various ways. And (24) in that form, is not really an argument at all, in the sense of being a univocally designated set of propositions. Still, White hopes that (24) looks to Black to be an argument, a valid single argument. His hope is pinned on the surface appearance that (24) looks to have a form that is valid in classical logic (*modus ponens*).

But now let us consider *modus ponens* as a form of argument in RM. What does it mean to say that A implies B ($A \rightarrow B$) in RM? It means two things. First, it means that if A is true on all disambiguations, then so is B. Second, it means that if A is true on some disambiguations, then so is B. So let's assume that A is true on all disambiguations. Then by the first requirement, so is B true on all disambiguations. Let's assume that A is true on some disambiguations. Then by the second requirement, so is B true on some disambiguations. Hence *modus ponens* must be valid as a form of inference in RM, meaning that it preserves truth-osd and truth-osd only, in every instance.

So let's now consider a game of dialogue where the logical rules are given by RM rather than by classical logic. How does the equivocator fare?

At first impression, things look good for the equivocator now. The form of (24) is valid in RM. So it seems he can advance (24) with impunity.

But let's see how White could deploy (24) against Black in an RM-based game of dialogue. First, since (24) is valid, both Black and White have to concede that if the premisses are true on some disambiguations, then so is the conclusion. All White has to do then is to get Black to concede that all the premisses of (24) are true on at least one disambiguation. But let's look at them. Certainly the second premiss is true (plausible to Black) on some disambiguation. That is, Black will accept the proposition that death is the end (termination) of life. However, the first premiss is not true (plausible to Black). For the antecedent of the first premiss is true on some disambiguation and false on others, but the consequent (Death is the perfection of life) is unambiguously false, as far as Black is concerned. Hence the first premiss is unacceptable for Black, according to the requirements for implication given by RM.

But second, since (24) is valid in RM, both Black and White have to concede that if the premisses are true on all disambiguations, then so is the conclusion. But the problem here for White is that the second premiss, 'Death is the end of life' is not true on all disambiguations. It is false if 'end' is disambiguated as 'goal,' so far as Black is concerned.

If RM is the model of validity, (24) is valid. But if RM is the standard of validity, then Black has to reject one premiss or the other as implausible. RM has two requirements guaranteed by a valid argument — it preserves truth-osd and truth-osd only. But using one requirement, one premiss is implausible, and using the other requirement, the remaining premiss is implausible. Hence Black could not accept (24) as a reasonable argument for the conclusion 'Death is the perfection of life' if he cleaves "logically" to the standards of RM and to his prior presumptions of what is plausible.

This example suggests then that RM might be useful as a defensive screen for the arguer who is confronted with an equivocal argument in dialogue.

But does Black do any better with RM than where the model of implication is that of classical logic? In classical logic, the bundle (24) is valid on some disambiguations, but always has an implausible premiss on any valid disambiguation. In classical logic, Black is safe from equivocation if he demands both validity of argument and plausibility of all premisses. So Black is relatively secure, already, with classical logic as a defence against equivocation. Why is he any better off with RM? I think the answer here

has already been suggested by the approach of David Lewis, and it can be brought out in the present case as follows.

When confronted by (24) in a game where classical logic is the model of valid argument, Black has to disambiguate. He has to know that 'end' has a definite, known set of disambiguations, and he has to check all of them out. If there are no disambiguations that yield both plausible premisses and a valid argument, he can securely reject the equivocal argument as a fallacy of equivocation. But in realistic arguments, the potential for disambiguations may be limited by the known lexicon of White or Black. This open-endedness of disambiguations is especially pertinent where vague terms may be part of an argument in natural language. In that case, an arguer can never be entirely secure against a strategy of equivocation.

However, where RM is the model of implication Black does not have to disambiguate. In this context, the argument is no longer composed of a set of propositions that are true or false, as in classical logic. In classical logic, Black is confronted by a bundle of arguments, where the "bundle" in reality may be open-ended, and perhaps not even defined exactly in his given lexicon. Equivocation, then, can be a very real danger.

But where the model of valid argument is RM, the argument is made up of a set of given sentences, each of which is true on all disambiguations, false on all disambiguations, or true on some disambiguations and false on others. Here Black is given a definite fixed set of sentences as the "argument," and his evaluations range over the disambiguations of these sentences in a way that can make them complete and final, even if the set of disambiguations has never been precisely and completely designated by the arguers. Here Black does not need to disambiguate. He can apply the test for validity directly to the sentences themselves, even if they are ambiguous.

Some care is needed in applying RM, however. From the given information that the premisses are separately true on some disambiguations, it need not necessarily follow that the conclusion is true on some disambiguation, according to the standards of RM. That inference could be a fallacy. What we can correctly infer is that if the premisses are true on some disambiguation — that is, jointly true on at least one particular disambiguation, the same one throughout all the premisses — then the conclusion must be true on some disambiguation (not necessarily the same one). However, as (24) illustrates, the premisses could be true on some disambiguations or other — differing from one premiss to another — but that tells us nothing

at all about whether the conclusion is true on some or all disambiguations. To so infer would be a sort of fallacy which could perhaps, with reason, be called a form of equivocation. But if we are careful in applying RM rightly, then this sort of fallacy can be excluded.

So it may be well to repeat the warning. In an RM-based game of dialogue, from the given information that some of the premisses are true on some disambiguations and some of the premisses are false on some disambiguations, the respondent may not necessarily infer the conclusion that the premisses are jointly true on some disambiguations and jointly false on some disambiguations.

Another warning is that validity is not enough, for the purposes of dialectic, to secure an arguer of protection against equivocation in every respect. If he thinks of accepting the conclusion that a sentence is true on all disambiguations, he needs to check — even if the argument is valid in RM — whether the premisses are true on all disambiguations in relation to his position in the argument. If he thinks of accepting the conclusion as true on some disambiguations, he needs to check out the premisses in that regard as well.

In short, RM requires of a respondent that, if this conception of validity is to be used in practice, he should check to see whether some or all disambiguations of the premisses have been considered before he moves to accept the conclusion of a valid argument. If the respondent is careful enough to always demand this requirement be met, he can never be a victim of a fallacy of equivocation within RM in just these senses. Having met the requirements of validity and truth-osd only of the premisses, he can never become committed to a conclusion that is false on any disambiguation. Having met the requirements of validity and truth-osd of the premisses, he can never become committed to a conclusion that is false-osd only. To that extent, RM is equivocation — proof.

Just as classical logic can be used to stop equivocation in one way, RM can be used to stop equivocation in a somewhat different way. Where the rules of the game are those of classical logic, the defender against the equivocal argument can reply: "You want me to take 'end' in one premiss of (24) one way, and in other premisses another way. You can't have it both ways. Be consistent in your disambiguations or I won't accept your argument." If the attacker is consistent, at least one premiss must be false, even if the argument is classically valid. If one premiss is false (implausible), the defender need not accept the premisses. *Ergo*, equivocation as a fallacy can

be defended against in classical logic. But to make the defence work, the logic has to apply to the disambiguated propositions.

Where the rules of the game are the relevance logic RM, the defender against the equivocal argument can reply: "You want me to take 'end' in one premiss of (24) one way, and in the other premiss another way. On those different disambiguations both premisses are true. Moreover, the argument (24) is a valid form of argument according to the rules of the game. But before I accept the conclusion as true-osd, you are going to have to prove to my satisfaction that the premisses are jointly true on some disambiguations. If one premiss is true on one disambiguation, and the other is true on another disambiguation, that may not be good enough. You must cite further disambiguations to make your point. You must show me that the premisses are all true on some disambiguations. Or alternatively, if you want me to accept that the conclusion is true on all disambiguations, you must show me that the premisses are also true, as a joint set, on all disambiguations." This rejoinder can stop equivocation in the case of (24). In this respect then, RM does offer an effective way of stopping equivocation.

We shouldn't overlook the other aspect of RM as a screen against equivocation, namely that it rules invalid some forms of argument that are valid in classical logic. Consider the following argument.

(25) Death is the end of life or life goes on forever.
Death is not the end of life.
Therefore, life goes on forever.

Let's say that White is set to prove the conclusion of (25) above. Black takes the opposite side of the argument, against immortality. However, let's say that Black accepts the first premiss as plausible as disambiguated one way (death = termination) but not the other. And he accepts the second premiss as plausible, disambiguated the other way (death = goal), but not the first way (death = termination). How does RM determine his responses to White's advancement of (25) as an argument?

First, note that in RM, if A is mixed and B is false-only, then $A \vee B$ has to be mixed (disjunction always has the greater value in the three-element model). Therefore, if disjunctive syllogism is valid, then Black has to accept the conclusion of (25), namely the sentence that life goes on forever, as being true on some disambiguations. Why? Well, first of all, Black accepts that death is the termination of life. Hence he must accept that 'Death is the end of life' is true on some disambiguations. Hence he must

accept the first premiss of (25), because if one disjunct is true on some disambiguations, then the whole disjunction must be true on some disambiguations. But Black must also accept that the second premiss of (25) is true on some disambiguations. For if a sentence is true on some disambiguations, then so is its negation true on some disambiguations. Now by the conception of validity in RM, if you accept a set of premisses is jointly true on some disambiguations, as these premisses are accepted by Black, then you have to accept that the conclusion is true on some disambiguations. Therefore Black, if he plays by the logical rules of equivocation games, has to accept that life goes on forever, if disjunctive syllogism is valid in RM.

Luckily for Black however, disjunctive syllogism is not valid in RM, as we can see by the following table.

A	B	¬A	A ∨ B	
T	M	F	T	
M	T	M	T	
M	M	M	M	
T	T	F	T	
T	F	F	T	
F	T	T	T	
F	F	T	F	
M	F	M	M	X
F	M	T	M	

Table for Disjunctive Syllogism

In the second to last row, both premisses A ∨ B and ¬A, have the value M. But the conclusion, B, has the value F. And of course, this combination of values violates the requirement of RM that in a valid argument, truth on some disambiguations is always preserved.

Hence it is that White could use (25) as an equivocal bundle of arguments in classical logic, but he cannot use (25) as a valid argument at all in RM. In certain cases then, RM functions as a screen against the equivocator by rejecting the argument altogether. In RM, Black would be secure against any attempt to use an argument like (25) as an equivocation, merely by playing consistently according to the standards of validity imposed by RM. (25) would not get through the screen at all.

Ultimately, however, RM permits the same kinds of instances of equivocation as LP. For it remains true that in a valid argument in RM, you can still go from premisses that are true on some disambiguations to a conclusion that is false on some disambiguations. Essentially the same sort of

equivocal argument as indicated by (19) can also be mounted in RM. However, RM does have one advantage. You can screen against equivocation entirely by tightening up your standards for the premisses, by requiring that the premisses be true on all disambiguations. On that requirement, the conclusion can never be false, in an RM-valid argument, on any disambiguation. At least in that respect, RM is somewhat more useful than LP as a screen against equivocation.

Both LP and RM have the advantage of telling you that if the premisses are true on some disambiguation, then so is the conclusion. But that assurance is of limited helpfulness in guarding against the equivocator. It does tell you that if the premisses are true on some disambiguation then the argument may not be entirely worthless, in that the conclusion must be true on at least some disambiguation. But it is no proof against equivocation, for it may still be that the conclusion is also false on some other disambiguation. However, at least in RM you can be guaranteed that the conclusion is never false on any disambiguation if the premisses are true on every disambiguation.

Although RM seems the better system for defending against the equivocator, it has some technical problems. Going back to (24), we might have our doubts about translating the conditional as 'implication.' More work is needed here to make RM better applicable to conditional reasoning.

10. Conclusions

Equivocation can arise because a sentence can express more than one proposition. Basically, an argument is a set of propositions. But in argument in natural language, one arguer can present a set of sentences where, because of ambiguity, the person to whom the argument is directed may select out various different sets of propositions (arguments) from the set of sentences advanced by his opponent. Therefore, in dialogue in natural language, equivocation is a constant danger because ambiguity, and its companion vagueness, may always be present in the sentences of the language. This much of the dialectical framework of argument makes equivocation theoretically possible in dialogue, even where the rules of classical logic are observed so that the arguers agree on the rules that define when a conclusion follows validly from a set of premisses.

From a point of view of applied logic, equivocation is more than just a theoretical possibility when a context is present in argument that makes

some sentences more plausible when disambiguated one way and other sentences more plausible when disambiguated another way. The recipient of the argument, whose position makes one disambiguation more plausible than another, may then be tugged two different ways in relation to a set of sentences. This dual tug may produce a realistic fallacy of equivocation where the recipient is pulled one way — towards plausible premisses — and at the same time another way — towards reconstructing an argument that comes out valid. This binary pull is what makes a strategy of equivocation realistically effective in games of dialogue.

The most interesting realistic cases of equivocation occur where abstract words like 'compatible' or 'obligatory' occur — as in the cases cited by Cederblom and Paulsen (1972) and Hamblin (1970) — because such words are susceptible to shades of vagueness, or multiple disambiguations of subtle kinds, that can easily ensnare the most careful and attentive arguer into problems of interpretation. In order to adequately understand problems relating to equivocation in these cases, it is necessary to think of argument as two-person positional dialogue. To begin to understand equivocation as a fallacy, we need to ask how an arguer should appeal to procedural rules of dialogue when confronted by a bundle of arguments advanced by his opponent, where this bundle can or should be criticized as equivocal. The problem then is one of finding rules or procedures to screen out equivocal argumentation.

There are two basic approaches to this problem. The first one is to study equivocation from the outside. This involves reconstructing the dialectical context of an equivocal move in argumentation, and finding dialectical rules or procedures that police equivocation, or at least give an arguer some grounds for criticizing equivocation as a response to an equivocal move. The other strategy is to study equivocation from the inside by modifying the conception of 'valid argument' built into the game. Instead of having a classical logic of propositions to define 'valid argument,' we move to the level of sentences and adopt a relevance logic. The receiver of argument, having made this shift, no longer needs to break down the vague or ambiguous bundle of sentences into well-defined sets of propositions in a separate step of evaluation. He simply applies the appropriate relevance logic directly to the possibly ambiguous set of sentences advanced by his opponent. In our treatment of equivocation, we have combined these approaches, trying to take each of them as far as it can go in helping us to work towards a solution to the basic problem of equivocation.

The first relevance logic we examined, LP, by itself cannot be an effective defensive screen against all equivocations. The problem we found was that LP allows you to go from premisses that are jointly true on some disambiguations to a conclusion that is false on some disambiguations. That still leaves enough room for an equivocator to conduct an effective strategy of equivocation, in some cases. Although it blocks equivocation somewhat better than classical logic in some cases, LP cannot block every equivocation, and seems to leave significant possibilities for equivocal arguments open.

Then we examined RM. The logic RM also lets you go from premisses that are true on some disambiguations to a conclusion that is false on some disambiguations. And contraposition is valid in RM for the $\rightarrow$ that represents implication, the only conditional we have in RM so far as we developed that system of sentential logic.

One potentially useful way to define the conditional in RM could be carried out in terms of Makinson's three-element model as follows. A conditional always comes out false on all disambiguations if it goes from a higher element to a lower element in the model. The conditional comes out true on all disambiguations if the antecedent is false on all disambiguations or if the consequent is true on all disambiguations. These two clauses define all nine rows of the table, excepting only the row where both antecedent and consequent are mixed. There, we say that the conditional is mixed.

A	B	$A \rightarrow B$
T	M	F
M	T	T
M	M	M
T	T	T
T	F	F
F	T	T
F	F	T
M	F	F
F	M	T

This conditional is reflexive, non-symmetrical, and transitive. Among the forms of inference that come out valid for it are MP, conjunction, and contraposition.

With this conditional, a better case can be made out for cases like (24) as ways of enabling an arguer to defend against equivocation. However, it

remains to be seen whether it is formally feasible to define the conditional above as part of RM. I take it from the efforts of relevance logicians to avoid defining a conditional for RM by a three-valued table that there are formal problems in the undertaking. So it remains to be seen whether my suggestion will turn out to be useful.

I conclude that the approach to the outer analysis of equivocation as a fallacy is the more fundamental and, so far, the more promising. The inner approach has the very attractive advantage of removing the need to disambiguate sentences into propositions, but still does not entirely exclude equivocation as a fallacy. Moreover, the inner approach appears to have some technical problems needing further development. At present then, the understanding of both approaches seems to offer the best hope of gaining further insight into the fallacy of equivocation. The basic fact about equivocation is that you can never be sure that you are excluding it as a possibility, as long as you are using a natural language with empirical terms that are not defined tightly for all possible contexts. You can exclude it if your sentence logic is RM. But to use RM in an argument, you must accept that your premisses are true on all disambiguations. And once again, in a natural language, it may be only in the exceptional type of case that you could have such an assurance.

In natural language, it may be that in the broad spectrum of cases we are most likely to encounter in the practice of argumentation, there can be no really effective assurance that the possibility of equivocation is excluded. But perhaps for practical purposes, this level of assurance can be waived.

Even if the potential for equivocation may be omnipresent, we seem to get in trouble with it only where plausibility tugs us to interpret one sentence in an argument one way, and another sentence a different way. It is the factor of this dual contextual tug that leads us to the characteristic problem of equivocation — the urge to fall into the confusion of accepting many arguments as if they were one argument. If so, perhaps the most practical way to guard against equivocation is to check each term that occurs in more than one sentence in an argument, and see if a shift can be detected. To make the argument be valid yet have plausible premisses, are we required to interpret some term or phrase in two different ways at its two separate occurrences in the argument? This seems the most practical test for equivocation.

This test for equivocation turns on the question of how each participant in the argument most plausibly disambiguates the sentences in the

argument. This is a question of the arguer's position in the context of dialogue. Therefore, in the most practical terms, it may be that the outer approach of the pragmatics of dialogue is the most basic and important aspect of the management of equivocation in natural language argumentation.

NOTES

1. One could possibly even take the extreme view that a man and a woman are never compatible. According to Engel (1976, p.64), the following quotation may be attributed to G.K. Chesterton: "If Americans can be divorced for "incompatibility", I cannot conceive why they are not all divorced. I have known many happy marriages, but never a compatible one. For a man and a woman, as such, are incompatible".

2. 'Mixed' here means true on some disambiguations and false on some disambiguations.

3. See also the comments on nested conditionals in Makinson (1973, p.40).

4. In a subsequent article, Priest (1980) is led to question this definition of the conditional, and finds it too limited.

5. Priest gives a quantifier logic for LP as well, but we confine ourselves to the case of propositional logic here.

6. We could define $v(A \vee B) = \max(A,B)$ and $v(A \wedge B) = \min(A,B)$.

7. (24) is valid, at least, if the conditional of the first premiss is translated as the $\rightarrow$ of RM.

CHAPTER 11: INFORMAL LOGIC AS A DISCIPLINE

There are numerous recent indications in North America of a strong emerging need for a pedagogy of applied or informal logic as a coherent discipline. In the field of education, numerous articles expound the need for 'critical thinking' as a potentially useful skill to bettter equip students at all levels with reasoning skills that are often deficient. At post-secondary levels, many new courses are being taught on informal logic or critical thinking. A California state law even requires the teaching of such a type of course at all state universities.[1] The "new wave" textbooks, characterized by an applied and topical study of realistic argumentation, and less formal logic than has been traditional, continue to appear in even greater numbers.[2]

One can easily appreciate the inherent usefulness of a well-developed subject of informal or applied logic study in any democratic society with voting, elections, a court system with legal advocacy, a free media, and an open policy of social decision-making. Optimal social policy in a free society surely requires a rational appraisal of arguments for and against a position. Moreover, rational dialogue is surely the only available means of conducting open argumentation and negotation, preferable alternatives to military force as the means of settling disputes. As a method of conflict resolution, informal logic ultimately represents the only way of conducting reasonable dialogue, perhaps ultimately the only workable alternative to repression, propaganda, or even war, as means of resolving disputes or enforcing a point of view.

Some of the goals of critical thinking include critical empathy, the ability to understand another's — perhaps opposed — point of view on a position. Another goal is the ability to look behind one's own position to see what lines of argument it could be based on, rather than fixing on a dogmatic or uncritical tenure of one's favorite view. A third goal is the ability to make finer discriminations in the statement of a position so that conditions, exceptions and refinements in it can be made as an intelligent response to argumentation. Anyone who has had the experience of marking student

essays, on virtually any topic, will recognize that none of these goals is pedagogically trivial.

All of these goals and aspirations are noble and worthwhile. They do characterize the promise of philosophy as a productive discipline. No doubt the study of philosophy, as it is currently practiced, is one of the most effective ways to pursue these goals. But how far are we towards developing a clear and coherent methodology of practical logic that we aspire to have as the vehicle for meeting or supporting the goals? Although the textbooks designed to teach the skills needed for a discipline of practical logic have both multiplied and improved in recent years, there are reasons to question whether they are based on a well-grounded knowledge of their subject-matter. There remain many fundamental controversies about how we ought to proceed in this area.

The foregoing chapters have conveyed some idea of the state of the art of practical logic, but even the fact that our first chapter was entitled "A New Model" indicates that the field is in a rapid state of change. In fact, my own feeling is that while many of the textbooks are going in good directions, their efforts are not well-coordinated. And indeed, the thrust of this book is to consolidate the foundations of the field to some extent, in order to provide a resource for future textbook authors, among other readers.

My own resume of the current state of this field — especially in regard to the fallacies — has now been made. And the theory of argument developed therefrom has laid out the lines of advance. But since the field is fragmented at present, it may be important to spend another chapter examining some of the main controversies about informal logic currently subject to dispute.

The basic problem, in my view, is that arguments as they occur in "real life" are extremely complex. Any particular argument needs to be approached as a potentially complex phenomenon that can outrun an attempt to impose theoretical order on it, in a number of directions. Practical logic, as an applied undertaking, must never lose sight of the fact that as an applied discipline, it confronts objects of analysis that are inherently vague, unruly, and difficult to pin down.

That problem is not insurmountable, for practical logic any more than any other applied discipline. But it does require a certain care in approaching the subject. We have seen that in very many instances, "fallacies" turn out to be milder forms of criticism than outright refutation. Indeed, they are often criticisms that can be supported, or in other cases defended

against. This approach suggests that practical logic often does not go so far as to tell us that the argument is wholly good or wholly bad. It should have the more limited objective — more soberly construed — of throwing some light on the weak points or the stronger points in a particular argument.

However, it is well to observe that the views stated above are controversial. To see how, let us review some of the recent arguments.

A current controversy is whether the individual subject areas like economics, law, paleontology, and so forth, ought each to have its own critical thinking unit specifically for that topic, or whether there should be a separate critical thinking course for all disciplines. Another big issue is the extent of formal logic in such a discipline. Some practitioners devote little or no space to formal topics like propositional calculus.[3] However most texts concede that mathematical structures of varying sorts — not by any means always classical logic exclusively — should be a supportive element of theory integrated with the study of actual argumentation. What sort of formal logic is also an issue? Obviously, the view favored by the present author is that many nonclassical logics and models of inference are enormously useful. Yet another question is the extent to which such formal models are idealizations that need to be supplemented by pragmatic steps to be filled in before we reach the level of realistic disputation. Yet another question is the role of structured models of argument other than propositional logics, for example, games of dialogue.

1. The Role of Formal Logic

Some see formal logic as inapplicable to serious conversational argumentation. This view often perceives formal logic as trivial or sterile, an artificial, mathematical construction that is only very obliquely related, if at all, to reasoning in natural language.[4] The disanalogies between the classical material conditional and the natural language 'if ... then' are often cited as evidence for this argument.

Many formal logicians have themselves encouraged this perspective. For example, Tarski has suggested that natural languages are inherently contradictory and vague because they lack the proper resources to even formulate their own truth-conditions for the statements made in them. According to Tarski, only a formal language like mathematical logic can avoid the contradictions involved in its own semantic closure.[5] Many formal logicians are inclined to think that coherent conditions of 'correct argument' can only be formulated in an abstract, formal system. How these for-

mal conventions "translate" into natural language, or specific instances of argumentation, is a very chancy business, perhaps the job of linguists, social scientists, or other empirical scientists.

On the other hand, many of those who expound informal logic as a discipline reject the applicability of formal logic to actual argumentation not because of the ineffability of argumentation, but because of the inability of formal logic to adequately model realistic arguments. By these lights, we should forget about formal logic as so much "busy work," and get on with the real job of analysis of real arguments.[6]

Both of these extreme positions have severe problems. The problem with the "informal" approach is that once all formal procedures are cast aside, the issue of whether an alleged fallacy is incorrect or not becomes itself open to argumentative disputation. With no normative guidelines or objective models, we are cast back to the level of the subjective quarrel and adversial debate. Whoever can argue the loudest or strongest carries the day. Hence there is no useful thing to say about whether the original argument is good or bad.

The problem with the "purely formal" approach is — as we have seen — that many of the fallacies defy formalization within classical logic. Thus at least on a narrow or conservative view of what constitutes formal logic, we are bereft of resources applicable to adequate models of correctness/incorrectness for the fallacies. Thus neither the purely formal nor the purely informal approaches are useful or productive.

We think a more salutary approach is exemplified by the treatment of our previous chapters, where our criteria of "formal" are widened to include nonclassical formal models like many-valued logic, relatedness logic, and graphs of arguments. By allowing these different models of argument a place in the theory of dialogue, one's resources for the study of fallacies is encouragingly widened. It becomes clear that at least partially formalized models of argument can be made applicable to the major traditional fallacies in an enlightening way. And the theory of games of dialogue enables us to draw together these formal resources in a general framework.

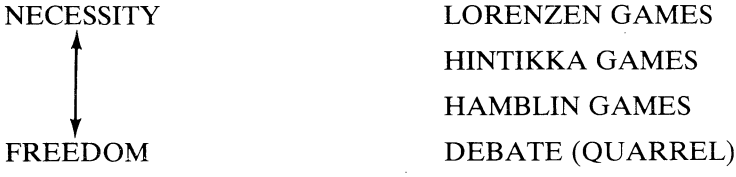
Of course much of the traditional doom and gloom about the fallacies is justified if we do analyze them at the *ad hoc* level of free quarrels or debates. Such adversarial, unregulated, subjective models can never take us very far towards offering objective guidelines to fairly determine whether a given argument is correct or fallacious. But the advent of the dialectical model of argument can overcome the intrinsic shortcomings of

the laissez-faire, survival-of-the-fittest approach to argumentation. Hence the value of pure informality *versus* that of rigorous and pure formalism is, at bottom, a non-issue. A subtler and more serious evaluation of the state of the art should have made it clear by now that the question is how formal or strict the rules of reasonable dialogue should be.

The real problem of the formality or informality of applied logic should be recast as the question of the relative strictness of the rules of dialogue. What is the right balance of freedom and regulation in question-asking and answering in games of dialogue? That is the important question.

We have found that the requirements of a theory of dialogue that can most fairly model realistic interchanges in the context of the fallacies include (a) strictly regulated procedures that (b) leave the participants freedom and latitude in making their moves. Of course, (a) and (b) are inconsistent with each other. But that sort of tension between (a) and (b) is typical of regulated games of strategy. To have an interesting game, you must combine (a) and (b) in the right mixture.

The big theories of dialogue we have appealed to show a scale of relative strictness (tightness) in how they regulate games of dialogue. The Lorenzen games are regulated by a very tight degree of strictness. The atomic (simple) propositions have their truth-values determined by "external facts" and then the complex propositions can be algorithmically determined in their truth-values by strictly finite procedures. The polar opposite of the strict necessity of dialogue is the political debate, where virtually anything goes. The Hamblin and Hintikka games lie somewhere between these two poles.



The Hamblin games are relatively free and unstructured. A player can always answer 'No commitment' to a question with relative freedom. The objective of "information exchange" in the game is not defined in a way that tightly defines the player's win-strategies. The Hintikka games are more strictly regulated. They are cumulative — a player cannot retract commitments — and a player does not have a 'No commitment' option in

answering questions. Moreover, a win-strategy for each player is precisely defined — the player wins who first proves his thesis from the other's commitments. Now the general problem for the analysis of the fallacies is this. What is the right balance of freedom and regulation in question-asking and answering?

The Walton games fit in between the Hamblin and Hintikka games. Like the Hintikka games, the objective of the player is to first prove his thesis from the other player's commitments. Hence win-strategy is precisely defined. However, like the Hamblin games, the players generally have a 'No commitment' option in answering questions. But the use of this option, in a Walton game, is circumscribed by the previous commitments — in particular, the dark-side commitments — of the answerer. So the Walton games are more strict than the Hamblin games, but more open than the Hintikka games.

The issue is not whether to embrace formal logic wholeheartedly or reject it altogether. The issue is to find the right level of strictness or freedom in pragmatic structures to best model the process of rationally conducting and evaluating the give-and-take of realistic argumentative interchange in dialogue. We need to find the right level of theory to fairly rule on criticisms and replies in a reasonably realistic type of situation. The games I have advocated are designed to work towards this level in relation to the informal fallacies.

Future research needs to study the right question-answer mechanisms in games of dialogue for fair and reasonable management of arguments. I hope now, at least, we can see better where to go from here.

2. Dialectic as a Theory of Argument

We have seen, following Hamblin, Hintikka, Rescher, and Lorenzen that games of dialogue can be studied as purely formal as well as realistic processes. Thus formal dialectic offers the most promising vehicle for the future study of argumentation and fallacies.

It is very useful here to make a distinction — now widely familiar in the linguistics of discourse processes — between semantics and pragmatics. Semantics has to do with truth and falsity, logical implication and consistency, and related matters. Pragmatics has to do with conversations and other interpersonal processes that find their medium in the continuity of discourses on issues or topics of dialogue. Surely without contradicting ourselves we can make sense of the idea that pragmatics as a study may be

in some sense "less formal" than semantics. If so, the notion of an "informal logic" can make sense.

But is "informal logic" a misnomer? Would it not be much less misleading to speak of "pragmatic dialogue theory" or perhaps "theory of argument" as the appropriate vehicle for the study of fallacies, criticisms, and other concepts of argument? In linguistics, the term "argumentation" is now often used to indicate the pragmatic nature of the discipline of studying realistic samples of discourse. Unfortunately, the term "informal logic" suggests that the pragmatic study of argument is casual, or has nothing whatever to do with formal logic. Both these views are badly wrong, and harmful for the study of argument as a serious discipline.

Dialectic, like any scientific model of the real world, involves a certain degree of obstruction if it is to be expressed as a theory. Such abstraction need not be in itself a bad thing if it leads to consistency and organization in a theory. The theory of argument should be abstract, but that does not mean that it cannot be or should not be applicable to realistic argumentation on issues of importance. Fortunately for the theory of argument, real-life arguments do benefit from clear procedural conventions of dialogue articulated by the participants as rules of permissible moves in argument. An organized theory of these sets of permissible rules in games of dialogue is therefore applicable to realistic argument in an edifying way.

Dialectic does all the many things that we practical students of argument want, like showing us that there is always another side to the argument on any important issue. But dialectic does these things best if it already includes logic, just as pragmatics is built around semantics.

However, if formal logic is to be included within dialectic, the question remains: which formal logic? Classical logic has a central place in logic, yet nowadays there are many non-classical logics that are equally formal, and also have some claim to being called "formal logic." The multiplicity of logics today makes one wonder whether formal logic is itself the tidy discipline that its informal logic detractors often seem to reject for fear of its rigidity. But we have found it appropriate to use non-classical logics to model dialectical contexts for the various fallacies.

Another objection concerns the pluralism of different models of 'correct argument' embodied in analyses of different fallacies. We utilized classical PC, non-classical propositional logics like relatedness logics and many-valued logics, inductive concepts of argument, and aggregate theory, among other models. We also observed that a problem can arise where an

argument turns out to be valid by analysis of one of these logics, yet invalid by another. Can such a pluralism be contended with by a single, coherent discipline?

The brunt of the answer to this question has to be borne by dialectic. Formal dialectic can incorporate different conditionals, different concepts of proof, within its over-arching structure as a conception of argument. The answer then is that disputants must agree on the game they are playing, the rules of procedure, and the notion of conditional that defines the appropriate concept of correct argument. From the dialectical point of view, an argument is correct insofar as it meets the standards of correctness stipulated by the game. And these standards may vary given the particular context of the question at issue, and the nature of the dispute. Thus the flexibility of formal dialectic to allow different formal games of dialogue allows for the applicability of dialectic to realistic disputations in actual argumentation in natural language.

However, this very flexibility could pose worries of pluralism in games of dialogue we have adopted in studying the fallacies. We basically started with Hamblin's framework and then introduced the idea of win-strategies, thereby moving towards Hintikka's framework of logical dialogue. These games of dialogue have clearly formulated procedural rules, and hence we were able to analyze the fallacies as violations of these rules. Nevertheless, a certain conventionalism was implicit in the project, for the participants in a game of dialogue could agree to different kinds of rules in different contexts. The only necessity is that once rules are adopted, they should be enforced where they apply.

Even so, further study needs to be done on the appropriateness of different kinds of rules for the different fallacies. Moreover, there remain certain key differences in the kinds of games we proposed as models of the fallacies. ABV was a relatively simple game that had only one kind of question permitted, namely the yes-no question. CBV, on the other hand, permitted why-questions as well. Why this difference? Could we not standardize games of dialectic, or at least explain why some are more complex than others?

The dark-side commitment-store was a key feature of all the dialogue-games we constructed as models of the various fallacies. Another key feature was the win-objective that each player must prove his own thesis from his opponent's commitment-set. These two features were optional, and could be varied in some of the contexts we discussed. But on the whole,

they were relatively basic and central to the study of the fallacies. However, the kinds of questions allowed in the games was a matter we found better to leave relatively open. It is now time to see why.

Basically, the reason is that there is some uncertainty about the function of why-questions in games of dialogue. Why-questions were introduced by Hamblin, and for some time I followed the practice, in my research on the fallacies, of incorporating them into games of dialogue. However, I came to realize that following this practice made it much more difficult to define 'presupposition' and 'direct answer' for questions in the games. Also, problems relating to the *petitio principii* fallacy as studied in Walton (1984) evidently traced to some uncertainties concerning the function of why-questions. Hence it is time to re-think the function and role of why-questions in logical games of dialogue as a general problem.

Should why-questions be retained, and what do they really mean? These are key questions for future studies in the theory of argument.

3. Function of Why-Questions

The why-question in a game of dialogue is essentially an imperative that requires, in relation to its answerer: "Prove proposition A! That is, give me some proposition B that can function as a basis of proof for A." This type of question is called a "challenge" by Mackenzie (1981) meaning, I suppose, that the answerer is challenged to supply some proof or justification for his stance. The Hamblin games include why-questions as well as yes-no questions. Allowing generally for both kinds of questions is understandable, given the information-orientation of the Hamblin games. However, once the win-loss rules of the games are tightened up, one begins to question more sharply the function of each type of question in the game of dialogue.

There are various positions one might reasonably take concerning the alleged purpose of why-questions in games of dialogue. The various possibilities are given below. The first two proposals are named for two of my students who suggested these functions in a class discussion.

> SHINFIELD PROPOSAL: The function of the why-question is to get a commitment (or a set of commitments as premisses) of the questioner that implies (imply) the proposition queried.

This proposal represents a view of the why-question that would make it express the question "Why should I be led to accept A?" as the equivalent

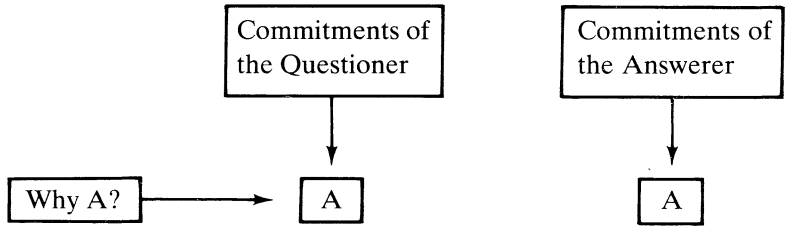
of "Why A?" In other words, "Prove A" means "Give me some proposition B such that A is a consequence of B and B is a proposition I am committed to!" In some contexts of dialogue, this construal of the why-question seems natural. But in other contexts it seems artificial or inappropriate.

In some contexts of argumentation, a why-question 'Why A?' could be more naturally interpreted as meaning 'Why do you accept A?' Hence a second interpretation.

> STRANG PROPOSAL: The function of the why-question is to get a commitment (or a set of commitments as premisses) of the answerer that implies (imply) the proposition queried.

This proposal represents a view of the why-question as a request to the answerer to provide a justification for the answerer's acceptance of A, the proposition queried.

Here then we have two sharply contrasting interpretations, each of which seems plausible in its own right.



It seems then that 'Prove A!' can have two different meanings: (1) 'Prove A to me!' (Show that it follows from something I accept), or (2) 'Prove A from your own position!' (commitments you accept). The second meaning comes out as: show that A follows from something you accept.

A third possibility exists. The why-question could combine the two proposals above in a single request. This approach gives us the Hamblin-rule (R1) of Hamblin (1970, p.271). We refer to the rule Hamblin calls "unnecessarily strong."

> HAMBLIN PROPOSAL: The function of the why-question is to get a commitment (or a set of commitments or premisses) common to both answerer and questioner that implies (imply) the proposition queried.

Which of these proposals is appropriate depends on the purpose of the game of dialogue one has in mind. If the purpose of the game is the friendly objective of exchanging information, or informing each other on the basis

of some core of common agreements, then the Hamblin proposal could be appropriate. The premissary base needed for this purpose is the common commitment-stock of both parties.

However, if the purpose is persuasion of the other party, then the objective of the game is to prove your own thesis from premisses accepted by the other party. Whether you yourself as questioner accept these premisses is beside the point. In that context, the Strang proposal is clearly the most appropriate account of the function of a why-question.

If the objective, or a main objective of the game is to defend one's position against attacks, challenges or refutations of the opposing party, then the Shinfield proposal comes to the fore as the best model of the function of the why-question. Here "Prove it!" means "Defend it against my objections or skeptical queries by showing that it is a part of your position!" Here the answerer is proving in the sense of defending his own position.

While all three of the above possibilities can be shown to make good sense if fleshed out, there are reasons to believe that each of them is somewhat superficial in relation to the realistic functions of dialogue, at least as stated above. Hamblin himself recognizes that his own rule (R1) may be too strong, because in realistic dialogue, a demand for a one-step proof is too harsh. It may be enough to satisfy the demands of a reasonable why-question if the answerer eventually comes up with the right sort of commitment after a longer series of questions and answers. If so, a satisfactory answer to a why-question may be, in many instances, more of a promissory note than an outright delivering of the ultimate premiss that furnishes the proof the proposition queried. This suggestion invites various weaker formulations of the function of a why-question in dialogue.

The weakest possible rule is that the answerer is required to produce any pair of propositions, B, $B \rightarrow A$ in response to the question 'Why A?,' never mind whether B or $B \rightarrow A$ are commitments of either party or not. The philosophy behind this proposed rule is to give the answerer enough freedom to pursue a lengthy chain of proof. This proposal makes sense if the win-loss rule of the game demands that the answerer, if he is to win, must go back up a chain of *modus ponens* inferences until he eventually hits on a set of premisses that are commitments of the questioner. When he does get to these "ultimate premisses" his strategy of winning is assured. Perhaps the roles could be reversed and the questioner would win if he asked questions leading through a series of valid steps of inference in the answers culminating in premisses that are commitments of the answerer. As

with the Strang proposal and the Shinfield proposal, the roles could be considered in reverse in different contexts of dialogue. But the distinguishing feature of this new approach is that the rule for answering is much weaker. It does not require that the propositions immediately furnished as an answer to the why-question be commitments of either party. Instead, the win-loss rules of the game dictate working towards such commitments as the objective of the game. To win the game, the questioner — or perhaps the answerer — should lead towards answers that are commitments of the party he needs to obtain to win the game.

In designing the dialogue-rule for answering why-questions, there are four variants we could have as options, in accord with the proposals above. In answer to a why-question, the answerer should be able to opt out various ways by replying 'No commitment' in some form. But if he opts to respond by offering premisses that ostensibly serve to prove the proposition queried, then there are four possible forms this part of his response could take. That is, if a questioner asks 'Why A?' and the relevant rule of the game for providing proofs is *modus ponens*, the answerer must produce a pair of propositions B, B $\rightarrow$ A at the next move such that (i) there are no restrictions on B and B $\rightarrow$ A at all, or (ii) B and B $\rightarrow$ A must be commitments of the questioner, or (iii) B and B $\rightarrow$ A must be commitments of the answerer, or (iv) B and B $\rightarrow$ A must be commitments of both parties.

The first option (i) may seem too weak. In dialogue, the participants often may not be clear about where a series of questions is leading. But there could be fallacies of irrelevance committed if there is no control over the direction of a series of questions at all. Hence one might want to consider variants weaker than (ii), (iii) or (iv), but stronger than (i). For example, one might require that B should be related to A, even if B and B $\rightarrow$ A may not be commitments of either party. This way of restricting the relevance of answers to why-questions requires only that A and B have some subject-matters in common. By this way of regulating answers, the answerer must not stray off the topic. He must keep his propositions offered in proof at least related to the proposition queried in the question last asked.

Another possibility of strengthening (i) in an interesting way would be to require that the information in B be outside the information in A. That is, B has to tell you "something new" in addition to the information already given in A. For both ideas of relatedness and informational inclusion, models of valid argument other than classical propositional calculus could be

proposed. We have in mind the relatedness logics and dependence logics of Epstein (1981) in these contexts.

Hamblin included the yes-no questions and the why-questions both in the same game of dialogue. But as one begins to formulate the objectives of the Hamblin type of game more sharply the function of the why-question in the game becomes a little hard to fathom. It seems that separating out the why-questions and the yes-no questions in different games could be quite important. Intuitively, one can appreciate the idea that why-questions or requests for justification are important in dialogue where the object is to understand the cut and thrust of defence and refutation that is clearly part of the problem of many of the major informal fallacies. But the precise import of the why-questions seems open to many different interpretations, each with some reasonable claim to legitimacy.

To some extent then, the precise rules of each game remain open to interpretations of the objective of dialogue in a particular context. This means that the job of applying a model of logical dialogue to a particular, realistic case of argumentation has to remain a matter of judgement to some extent. This gap between abstract models and particular cases of realistic disputation is not, in itself, always a bad thing, however. For as we have seen repeatedly, many real disputes take place in a context where there is no prospect of rationally evaluating the arguments unless many factors, e.g. the topic, the conclusions of the disputants, and so forth, are defined or clarified.

As we also saw, with applicability to practical disputes comes also a certain gap. The convérsational quarrel and rhetorical debate are to a goodly extent unmanageable by purely formal or normative rules of procedures because, in the reality of the argument marketplace, their aim is to defeat the adversary, if necessary, at the expense of logic, or even of argument altogether. Thus the actual examples we have analysed, from parliamentary and other debates and instances of argumentation, needed considerable "cleaning up" before dialectical methods of analysis could be effectively brought to bear. This gap between the actual disputation and the normative regulation of how the argument should be, if it is to be correct, is always present. It is a fundamental oversight to ignore it.

Thus it is a basic insight that in the gap between formal models of argument and actual, raw argumentation there is an intermediate pragmatic level of filling in. The nice thing about dialectic as a theory however is that it allows these gaps to be reasonably filled in, and by the right means. If we

come to a chunk of raw argumentation with premisses, deductive links, rules and so forth missing or unstated, how can we fill in the blanks? Too often the Standard Treatment of fallacies has allowed such filling in to be done in an unsystematic way that may in fact be unfair to the original advancer of the argument criticized (usually not around to defend himself). However, in dialectic, the fundamental question must always be: "What would the arguer say on the basis of his position in the game of dialogue or in the sequence of questions and answers in a continuation of the game of dialectic?" Anything other than this sort of dialectic evidence for commitments of the arguer must be presumption of dark-side commitments. Pragmatics comes in to study the giving of justification for such presumptions. Thus the use of actual examples as specimens for analysis, while not in itself the final word on analysis of fallacies, can be highly instructive in teaching us how to fill in these gaps. Thus a pragmatic orientation is a welcome direction for the future development of informal logic as a discipline.

4. Subject-Specific Nature of Arguments

One interesting objection to the possibility of informal logic as a discipline concerns the topic-sensitivity of argumentation to a specific field. This argument works from the premiss that a principle of argument may be correct in one field but incorrect in another. For example, according to McPeck (1981, p.72), a principle of reasoning in business or law might be fallacious in science or ethics. According to McPeck, the notion of informal logic is therefore impaled on a dilemma. Learning to reason in isolation from specific subject areas takes us no further than formal logic, where forms of argument abstract from the specific content of the variables. But learning to reason substantively involves learning about the actual subject areas of the content, and therefore requires the breadth of learning of a Renaissance man. According to McPeck (1981, p.81), the informal logician is inconsistent in wanting to have it both ways.

Some of the sting is taken out of this objection by the elementary observation that not only are there different principles of reasoning within different fields, but there are even different principles of reasoning within the same field. True, a valid principle in law might be fallacious in science. But even more to the point, a valid principle in criminal law may be invalid in civil law. A valid principle in applied mathematics may be invalid in some branch of pure mathematics. Rather then, we would conclude that varia-

tions in principles of correct argument occur within different dialectical contexts, whether in the same field or others.

Even with some of its sting removed however, the objection raises some interesting questions. If a certain amount of pragmatic filling-in is required in the adjudication of an allegation of fallacious argument in a discipline, it may be that this filling-in can only be done by an expert within that discipline.

For example, suppose a medical doctor is accused of committing an equivocation on the word 'death.' The critic alleges that in one premiss it means 'irreversible cessation of cardiopulmonary function' and in another premiss it means 'irreversible cessation of all brain function.' Suppose further that the physician replies, "I didn't equivocate. Irreversible cessation of cardiopulmonary function is one criterion of irreversible cessation of all brain function. That's the way we doctors define death, namely as 'irreversible cessation of all brain function.' The cessation of cardiopulmonary function is just one indicator of death, for if the whole brain ceases functioning, the cardiopulmonary function inevitably ceases in a short period anyway. Thus I didn't equivocate — I used a different criterion for death, but did not use the term 'death' in two distinct meanings." How can the critic — who is, let's suppose not a medical doctor — dispute this rebuttal? The doctor's special knowledge in the field — let's say he is a neurologist who specializes in the determination of death — allows him to decisively reject the allegation of ambiguity.

Of course the critic could reply that the definition of 'death' is not a purely medical matter, but rather a question of ethics. Although this reply shifts the topic from one field to another, perhaps more accessible to the critic, the physician may still reply that he used the term in the medical sense, or that his definition is defensible within ethics as well, and so forth.

This sort of problem is not just newly remarked upon. Sextus Empiricus, in *Outlines of Pyrrhonism* (II, §236) makes this very objection (also quoted in Hamblin, 1970, p.95).

> As regards all the sophisms which dialectic seems peculiarly able to expose, their exposure is useless; whereas in all cases where the exposure is useful, it is not the dialectician who will expose them but the experts in each particular art who grasp the connection of the facts.

This dilemma has already been rebutted in chapter seven, where we saw that, in many cases, the expert's sayso should and can be challenged

through reasonable procedures of questioning in dialectic. The necessity of such dialectical reasoning has been amply demonstrated in the trial practice of cross-examination, where many a confident expert's testimony has rightly had its credibility undermined by skilled dialectical examination.

However, the problem posed by Sextus has, at its roots, several genuine theoretical questions for dialectic. What parts of the resolution of a questionable move in disputation are up to the critic or evaluator, and what parts are up to the disputants themselves to fill in, possibly from the backgrounds of their own expertise in a field, or from other resources? Future studies of argumentation in informal logic should keep this problem in mind in designing different games of dialogue.

Mitroff and Mason (1981) think of dialectic as a process with three participants — two opposed disputants and a referee who evaluates the dialogue. However, the model of dialogue due to Hintikka that we have been adopting has no use for a referee. In a Hintikka game of dialogue, the rules determine the outcome of the game with no need for a third-party evaluator.

But the problem is that as critics or informal logicians who are to rule on fallacies, we do often find ourselves in the role of a third party who is supposed to be "neutral" in taking a position in a given dispute. So the problem is — when does the critic himself become a party to the dispute? Or if he doesn't, what sort of role does he play in the game of dialogue?

We had already seen the same sort of problem begin to emerge in chapter 5 where, in the second type of enthymeme, the critic is in the situation of filling in missing premisses where the arguer is not present to accept or reject the proposed premisses. The "critic" had to look at the enthymeme both from the point of view of its proponent and also from the point of view of the audience it was designed to convince. The problem is that the critic is neither fish nor fowl. How can his function be understood in games of dialogue?

My best suggestion is that the critic is the one equipped to understand the theory of argument and the rules of reasonable dialogue. But how does he apply them to the particular case of a real argument, without taking sides and himself becoming a participant in the argument? I think he can do this, but his evaluation needs to be premissed on the game of dialogue having been fruitful enough to reveal the participant's objectives and commitments in relation to a particular dispute.

5. Case Studies on Circular Reasoning

It does sometimes happen that substantive disputes take place between experts in a particular field of scientific inquiry where the dispute turns on some methodological point or issue pertaining to practical logic. Where this situation develops, it may well transpire that a non-expert third party — perhaps a philosopher, or at any rate a party somewhat removed from the special field in which the dispute arose — may very helpfully serve as an external commentator or analyst of some critical general contours or points of contention in the dispute. Such a third party, perhaps partly by virtue of his neutrality or non-involvement — can adopt a broader perspective, and thereby sometimes succeed in throwing some light on key moves of argument crucial in obtaining a better understanding of the real nature of the dispute or controversy. In effect, this third party may play the role of an "argument analyst" or practitioner of what we have been calling practical or informal logic.

The most likely reason that this sort of helpful relationship has not been too evident in the past is that informal logic lacks a well-established methodology, or even a general theory of argument and criticism studied as an academic subject in its own right. I hope, of course, that this monograph will help to support an effort in this very direction.

Even despite the infancy of the needed methodology, some case studies can be cited where a third-party non-expert perspective would be, or has been helpful in yielding some insight into certain methodological problems in research in special fields. Some excellent examples relate to controversies about certain arguments in fields of scientific research that have been criticized as viciously circular. The problem is whether these allegations of fallacious argument can be sustained, or whether the circles are of a non-vicious sort.

Our first case study of an allegation of *petitio principii* pertains to the geologist's practice of using rocks to date fossils and also using fossils to date rocks. The branch of paleontology called stratigraphy plots the layers of fossil remains embedded in vertical rock strata and arrives at conclusions about the relative ages of these fossils on the basis of their spatial findings. Some laypersons, and even some geologists, have suspected a vicious circle in this process of reasoning. For example, Rastall (1956, p.168) states this criticism as follows.

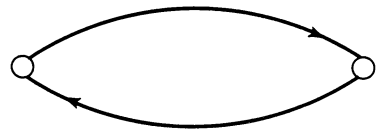
> It cannot be denied that from a strictly philosophical standpoint geologists are here (in using fossils to determine relative ages of strata) arguing in a circle. The succession of organisms has been determined by a study of their remains buried in the rocks, and the relative ages of the rocks are determined by the ages of the organisms they contain.

The allegation stated here voices the criticism that the circle inherent in the stratigrapher's process is a vicious one that destroys the reliability of his conclusions.

Responding to these charges, Harper (1980) has argued that if we pay close attention to the way paleontologists actually do use the evidence of spatial findings to arrive at temporal conclusions, there is no vicious circularity. Harper's reconstruction of the actual process of inference used by the stratigrapher breaks that process down into two steps. First, the superposition of strata is used, at the individual local section, to infer the relative age of fossils. This first step, according to Harper (1980, p.246) is a relative and local judgement: "... fossils are not dated apart from the strata that contain them; when we infer a relative age for a particular local fossil or fossil assemblage, we simultaneously infer the same age for the local strata which contain it, and vice versa."

The second step takes place when the stratigraphic paleontologist looks for orderly succession of fossils over a whole region. That is, his investigation here may be horizontal as well as vertical, one supposes Harper to be suggesting. Then at this second stage of investigation, if regular non-random patterns are found, the paleontologist uses these patterns to infer relative ages for both the fossils and also the strata that contain them.

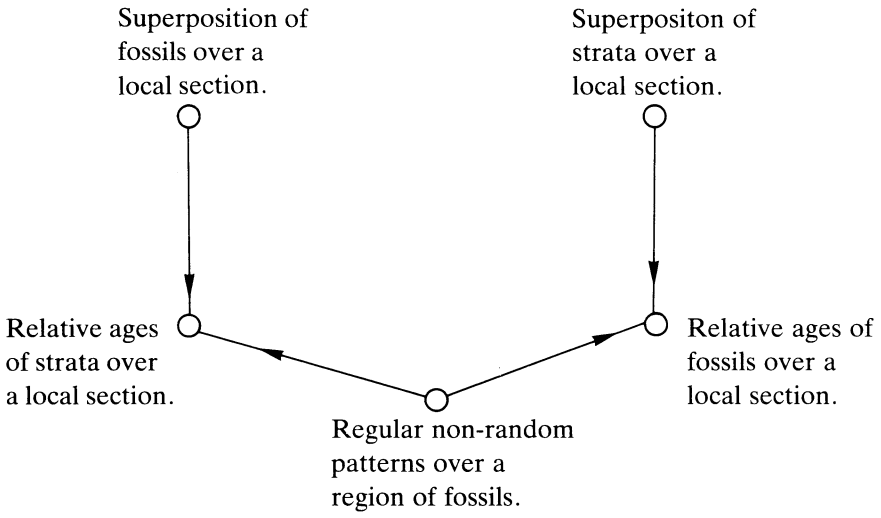
It is helpful to construct a graph of the process of the paleontologist's argument as reconstructed by each of the disputants in this controversy. First, Rastall's statement suggests the following reconstruction of the process.



Why is this circular process vicious or fallacious? It is not clear, but perhaps the charge of circularity is by itself suspicious enough to throw the burden of proof onto the stratigraphic paleontologist to defend his methodology.

Harper's defence reconstructs the process in a different way, by distinguishing between two findings, namely local succession of fossils and fossil

assemblages over a region. His view of the argument could be graphically represented as follows.



Certainly the above graph of Harper's reconstruction of the sequence of the paleontologist's argument shows no circle.

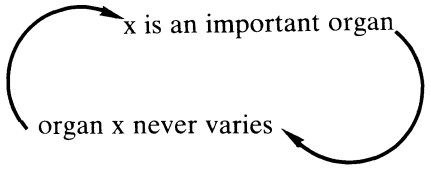
Harper's defence is the fourth step that a defender can take in response to a criticism of *petitio principii*, if you remember the seven steps in our analysis of *petitio* criticisms and rebuttals given in chapter six, section seven. Harper is reconstructing the paleontologist's argument in a different way than Rastall has. The premisses and conclusions are different, and there is no circle at all in Harper's more sophisticated version of the paleontologist's line of reasoning. But Harper, in so rebutting, is also introducing a defence somewhat similar to our sixth stage of evaluation. For he argues that both the relative ages of the strata and fossils are evidentially based on an external premiss providing independent evidence for both of these findings, namely the evidence of non-random patterns over a whole region of fossils.

Clearly the dispute between the arguments of Rastall and Harper is a specialized controversy within the science of paleontology. It is for the stratigraphic paleontologists to settle. Does the practical logician have any light to throw on it? Does he have any place butting in at all? It is my contention that the informal theorist of argument not only can, but has actually been, of some help here.

Gratifyingly for the present author, Professor Harper cited Woods and Walton's analysis of the *petitio* (1975), and deployed that analysis as his vehicle for his defence against the charges of *petitio* levelled against paleontology in this instance. It is quite clear that the informal logician will not and should not have the last word in this type of case, but it is encouraging that his analysis can be some help.

Further evidence of the legitimacy of argument analysis as a field of research in its own right, apart from the specialized fields of inquiry or controversy that it may be applied to, is furnished by the fact that disputes on *petitio* essentially similar in form occur in other specialized fields of science. This suggests a recurrent pattern in many separate fields of inquiry. This in turn suggests that a certain distance from the particular subject-matter by a third-party referee or evaluator of the arguments may have a genuine and useful place. Another case study, this time from the field of evolutionary biology, may help to bear out my claim.

The origin of this case study is a charge of vicious circularity levelled by Charles Darwin (1859) against his predecessors in the study of taxonomy. Darwin proposed that his predecessors had argued in a circle when they claimed that important organs never vary, but decided which organs were important on the basis that they did not vary. According to Darwin's criticism, the conclusion of his predecessors to be proven is the proposition 'Important organs never vary.' Presumably then, the evidence needed to prove this conclusion consists of a set of propositions put into the form of the following inference: organ x is important, therefore organ x does not vary. However, Darwin's criticism continues, the actual evidence marshalled by his predecessors was a set of propositions of this form: organ x does not vary, therefore organ x is important. In effect then, Darwin accused his predecessors of arguing in the circle below.



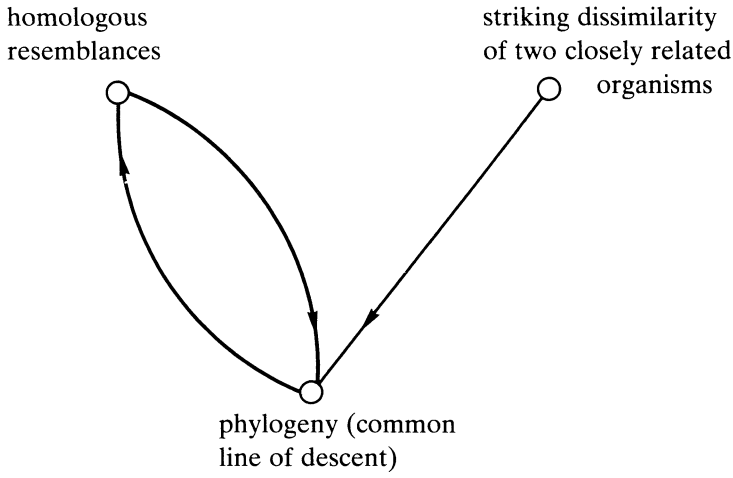
Subsequently however, the evolutionists themselves were accused of arguing in a circle. Initially it was not Darwin himself who was so accused, but other evolutionists. But as the criticism of circularity in evolutionary

taxonomy gained momentum, even Darwin's arguments came under suspicion.

These charges of circularity in evolutionary taxonomy have been reviewed and clarified by David L. Hull (1967), a philosopher of biology. According to Hull's argument, the charges of circularity, once properly understood, can be seen to be based on philosophical preconceptions of the methodology of biology as a science that can be refuted.

The problem arises because evolutionary biologists must start with some classifications or taxonomies of the organisms they propose to investigate. Using such a taxomony, a biologist can then set to examine the evidence of fossils and then arrive at generalizations about the evolution of the organisms. However, no system of classification is perfect, and as the evidence of fossils is considered, refinements or alterations in the system of initial classifications is bound to take place. Indeed, Hull argues that this process of successive approximation and refinement is properly characteristic of good hypothesis formation and confirmation in scientific method. But the problem arises out of the fact that some critics find this process circular. For after all, the taxonomy is being used as an essential part of the interpretation of the fossil evidence. But then the investigation of the fossil evidence is being used to correct and to validate the taxonomy as a useful structure of classification. Hull breaks this general suspicion of circularity down into three specific charges.

The first criticism Hull examines (p.177) is the charge that homologous resemblances (structural resemblances, e.g. where both species have an arm structure) are defined in terms of phylogeny (common line of descent), and then phylogeny is defined in terms of homologous resemblances. Hull's reply to the criticism is (a) to concede that there is a circle in this case, (b) but to argue that the circle is not vicious. Hull concedes (p.178), "... any evidence to the effect that a particular resemblance is homologous would necessarily be evidence to the effect that it was due to common line of descent and vice versa." But he goes on to make the additional point (b) that the evidence from which phylogeny is inferred can come from another source as well — any evidence of a dissimilarity between two organisms, e.g. genetic evidence, could be good evidence for the right way to construe phylogeny without depending on homology at all. His rebuttal takes this form.



Clearly then Hull's reply above is a rebuttal that takes the form of the seventh step.[7] in our procedure for evaluating a circular argument.

The second criticism Hull examines is the charge that, in some cases, a taxon, or classification of an organism, can begin to assume a permanence and reality out of proportion to the tentative basis on which it was originally established (p.178). Hull's response to this criticism is to concede that there is a feedback process at work in the successive approximation of use of taxonomy in evidence, but that the circularity of this process is not fallacious. He points out (p.179) that, in real life, certain processes are circular. For example, as a diabetic gets more overweight there is more insulin in his blood. But the more insulin he builds up, the more he tends to eat, and consequently he stores up more fat. Similarly, evolutionary taxonomists reclassify in order to present evolutionary descent with greater accuracy. But according to Hull (p.179), there is no logical fallacy in either of these circular processes.

Hull's reply to this charge is to concede that initial classifications in science are tentative, and are improved through a "groping" process that takes place as additional evidence is collected. But according to Hull, all science starts from imperfect hypotheses which are then refined and improved through the collection of further evidence. But this process of successive approximation is not a vicious circle, or evidence of any logical error or fallacy in the method.

The third criticism is that there are gaps in many fossil records, and

therefore some classifications must be made on an insufficient basis of phylogenetic evidence. Hull's reply here is to point out there is a difference between two types of criticisms: (1) claiming that an argument is based on insufficient evidence, and (2) claiming that an argument is viciously circular. In effect, the distinction Hull alludes to here is the one described by Woods and Walton (1975) as the difference between bereftness of evidence and circularity of argument. This is an important distinction, often confused, and Hull is quite right to deploy it here and to insist on its importance in studying any criticisms of circularity in argument.

Curiously, Hull's analysis of scientific method in the role of taxonomy in hypothesis formation suggests that there could be a circularity implicit in inductive methods, parallel to Mill's argument that all deductive reasoning contains a circle. At any rate, his analysis shows how a third party can throw light on disputes over alleged fallacies in reasoning amongst experts in a specialized discipline.

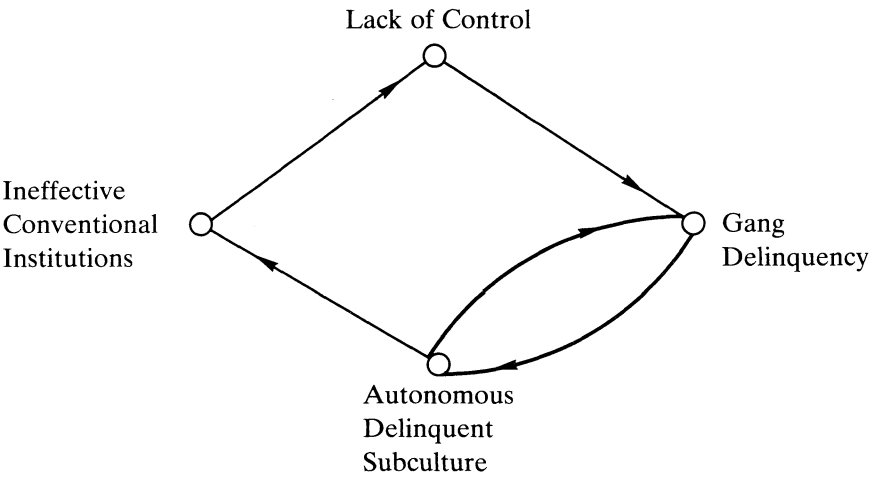
What needs to be done in further studies of these interesting cases is to reconstruct the whole network of argumentation using the method of graphs in chapter 6, and then decide whether the model of argument incorporates a plausibility requirement that allows or bans the circle. It has already been shown to some extent that Harper's and Hull's contentions that the circles they identify are benign, can be justified by the structures of argument analysis we have set.

Once the specialist's arguments are in, it is up to the dialectician to find whether the defence of benign circularity can be justified or not. However, in realistic argumentation, in some cases it may be better to think of the argument as an open-ended, information-oriented game of Hamblin's type rather than a strategically closed game of Hintikka's type. If so, it may be that the dialogue can be continued until the dialectician can get more information. Clearly however, as many of our case studies have shown, even a provisional assessment of an argument can be very revealing and useful.

The usefulness of dialectic as a method of discourse analysis and controversy resolution has been brought out by the uses we have made of it in the preceding two detailed case studies. A briefer consideration of another example may also be helpful.

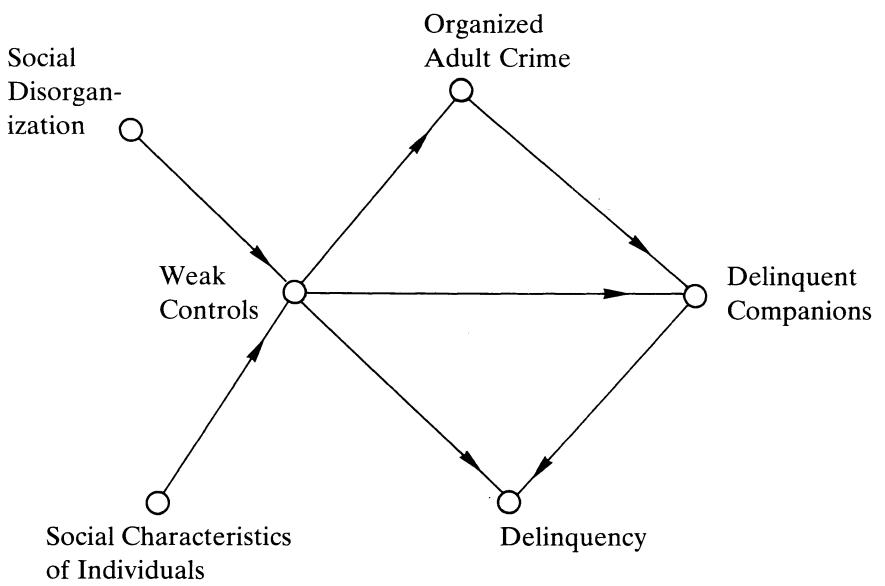
A similar type of dispute concerning circularity has taken place within the methodology of the social science on the study of the subject of juvenile delinquency. Kornhauser (1978) distinguishes two types of models of delinquency theories, the mixed model and the control model, pictured as graphs below.

Mixed Model



This mixed model, clearly circular, can be contrasted with the recursive model below.

Control Model



According to Kornhauser (1978, p.70), nonrecursive models, like the mixed model, are essentially circular. That does not mean they are fallacious, for as Kornhauser hastens to add, their circularity may be warranted by the operation of feedback mechanisms. However, with nonrecursive models, we may question whether we can talk as favorably of "evidence justifying a conclusion." Thus Kornhauser concludes that recursive (non-circular) models are preferable because of their greater power and simplicity.

The case studies from paleontology, evolutionary biology, and sociology all show the same general structure in their concern about the coherence of sequences of reasoning in their methodologies relative to certain problems. We conclude that while the substantive study of the actual issue in each case is indeed particular to the special knowledge and expertise of the discipline, still the structure of the *petitio* argumentation in both is so clearly the same in its essential form that the study of *petitio principii* argument is separate from both subjects. In all instances we had to look at the graphic network of the over-all sequence of argumentation. In all instances we had to determine what are the appropriate conditions governing plausible inference, and thereby reach a judgement of the acceptability or fallaciousness of the circles in the argumentation. Each case is a different argument in a different specialized field, but the same essential job of analysis needs to be done in order to resolve the question of *petitio*. These are the common elements.

But in determining what are the premisses and conclusions of the arguments, and in determining how the various special terms are to be defined, it is the expert disputants themselves in the particular fields we should best turn to. Moreover, in seeing how the argument will evolve as a result of the informal logician's interposition by the pointing out of circular argumentation, we may again turn to the topical experts themselves. These determinations do not rule out the usefulness of the critic who may, even from a positional external to the particular discipline of the dispute, step in to clarify some aspects of the structure of the argumentation. Our thesis has been that the traditional fallacies most often come out not as "fallacies" at all, in the sense of knock-down refutations. More intelligently reconstructed in the theory of logical dialogue, they most often come out as criticisms that can be replied to, or as requests for procedural clarifications.

We conclude that the study of *petitio principii* should not be located exclusively within a particular subject area like sociology, biology, or paleontology, but is to some extent, properly a distinct object of study for

argument analysis or informal logic in its own right, as a theory of reasonable criticisms.

However, the subject-specificity objection of Sextus is an interesting one, for it has been made clear that analysis of actual bits of argumentation does involve pragmatic steps of working with raw argumentation as well as formal models, dialectical rules, and structured procedures. The specific skills needed here involve skills of filling in missing steps in a discourse, and further development of applied logic must surely strive to further study these pragmatic aspects of argument analysis. Of course, as we have seen, the dialectical model of argument is the underlying structure. The saying "There are always two sides to an argument" is always the best guideline in approaching an argument. In filling in the various pragmatic blanks, we have seen that the best guidelines are furnished by a careful tracking of the dialogue sequence and commitment-store information of the participant to whom the argument is attributed. Then this information can be evaluated by the rules of dialogue found appropriate.

6. Conversational Pragmatics

Dialectical games are idealized models of how argumentation should take place, and in many arguments that are analysed retrospectively, the participants aren't available to answer further questions. Consequently, application of dialectical models to actual argumentation often requires certain presumptions of accommodation. By such allowances, conversational context can sometimes determine whether a statement is true or not.

An example is the slippery slope argument. If someone is on the borderline of being bald, whether or not the statement that he is bald is adjudged true in a particular context depends on the standards of accuracy appropriate to that context. However, if the statement is close to being true, then in most conversations we are inclined to give the speaker the benefit of any doubt, and simply accept it as true. In numerous conversational contexts, this tolerance of vagueness leads to no serious problems.

However, as we saw with the slippery slope fallacy, sometimes tolerance of vagueness without specifying standards of accuracy does lead to problems. Over a whole sequence of steps of *modus ponens* argumentation, standards of accuracy that were adequate in the beginning become insufficiently accurate to prevent us from going from truth to falsehood by ostensibly valid argument. Thus what is usually accurate enough for most conversational contexts can become insufficiently accurate for another. As

David Lewis (1979, p.181) points out, standards of precision are not only different for different conversations, but can change from one conversation to another.

As Lewis (1979) relates, this sort of contextual shift sponsors some skeptical arguments. The skeptic argues that hardly anything is flat. You think that the pavement is flat, for example. But the skeptic can always get you to concede that your desk is flatter. If flat is an absolute term, then if your desk is flat, the pavement can't really be flat after all. Reason: if something is conceded to be absolutely flat, then nothing else can be flatter than it.

Lewis's answer to the skeptic's argument is that the latter is changing the "conversational score." Under the initial standards of accuracy, the pavement is flat, or close enough to being flat, its unevenness not being counted as significant relative to the given standards adopted. However, bringing in comparison with the flatness of the desk raises the standards of accuracy of the conversation. What was true, or close enough to being true in the first context became false in the second context. Hence we can see that truth or falsity is accommodated by conversational conventions that may vary.

Lewis gives us a picture of how conversational rules work by an analogy to scorekeeping in a baseball game. In a baseball game, there are rules which specify how scoring takes place, rules that specify what counts as correct play, and directives to the players to follow the rules of correct play and to try to make the score change in certain directions. These rules are literal or non-accommodating, unlike conversational score-keeping. In conversation, according to the rule of accommodation for presuppositions, if something is said at some point that requires presupposition p to become acceptable, then p becomes presupposed after that point, other things being equal, if it was not already presupposed. This example of a rule of conversational scorekeeping shows how rules in conversations have an accommodating character. In baseball, no such leeway is allowed, as Lewis's discussion shows. If a batter walks after three balls instead of four, the rule of baseball does not allow for an accommodation, making it true that there were really "four" balls instead of three. The rules of baseball make for literal scorekeeping, unlike the rules of conversational scorekeeping, which allow for accommodations.

This means that in assessing a conversational record, the accommodational character of interpreting literal rules of dialectical procedure allow

for a certain filling in of presuppositions and premisses, allowed to be made true by the context of the conversation. However, as David Lewis points out, a shift in the conversational context may also dictate a shift in the conversational scorekeeping, and with it a shift in the truth-values of statements in the conversation.

It is because of the pragmatic character of conversational scorekeeping that the use of games of dialogue to analyse actual conversational argumentation can, with some justification, be called "informal logic." Otherwise, the contention that there is essentially no difference between formal fallacies and informal fallacies would be correct. It is a longstanding tradition to divide fallacies into informal ones like those we have considered, and formal ones. By "formal" ones are usually meant instances of invalid forms of classical logic, e.g. 'If I pass, I have paid tuition. I have paid tuition, therefore I pass.' This argument is an instance of the invalid form '$p \supset q$, q, therefore p.'

According to the analyses given in this book, the traditional fallacies all turn out to be modelled, at least to some extent, by underlying formal structures that determine which forms of criticisms or rebuttal are correct or incorrect. Are we then committed to the consequence that all informal fallacies are really formal fallacies after all? If so, there would be no informal logic as a separate discipline, but only difficulties in applying formal logics. Perhaps these difficulties could just be due to the lack of systematic development of many of the appropriate formal structures, a formalist might insist.

While there is some truth in this line of argument, it fails to be entirely correct or insightful because of the pragmatic gaps of applying formal systems to actual argumentation which need to be filled in by accommodating principles of conversational scorekeeping. This means that the adjective "informal" is partly inappropriate. Where it becomes inappropriate is in the suggestions that formal structures have no role to play at all in the evaluation of argumentation. Because of this unwelcome interpretation that erects an unproductive barrier between formal logic and informal argumentation, alternative names like "applied logic," "practical logic" or "the logic of argumentation" would be preferable. However, it is because conversational scorekeeping always outruns precisely regulated formal or dialectical rules that a pragmatic element is desirable, and the term "informal logic" is not altogether inappropriate.

Another reason why the term "informal logic" has a certain approp-

riateness is that the job of argument analysis that characterizes the sort of work that the texts in this field of endeavor attempt involves a creative element. For the task typically attempted is to confront a corpus of given argument (a case) that is incomplete, that has many gaps and uncertainties of interpretation. To a certain extent, the argument critic must "invent" arguments, or parts of them, to fill these gaps. Our thesis has been that the critic should not take too many liberties in his "inventions," that he should operate under reasonable constraints.

We should make a careful distinction here between construction, or invention of an argument, and evaluation of a given argument. Thinking of a new line of argument could be called a process of invention. Of course, in realistic arguments in natural language the process of argument pro and con is never or rarely closed off altogether. It is always possible to think of a new criticism, argument, or rebuttal — or to modify your position in response to criticism.

In recent times however, logic has usually been taken to refer to the job of evaluating a given argument. This traditional use of formal logic to determine validity or invalidity starts from a given set of (designated) premisses. The procedure, usually conceived, presumes that the argument is already constructed and "closed off." This presumption met, the evaluator checks for validity or other structural properties of the given set of propositions.

But should this be all there is to the reasoned analysis of arguments? Our account of argument analysis has indicated that we can, and should in some cases, go beyond that point. This job involves adding in more steps or missing parts of the argument where such moves can be justified by the appropriate rules of dialectic. Such moves, as we have studied them, should not be untrammelled or gratuitous inventions. Informal logic is the set of rules and structures that justifies the reasoned use of this process of analysis.

There are certain historical antecedents for this "new" applied approach to argument analysis. Indeed, the sort of approach I have been arguing for is by no means altogether new.

The quest for a philosophical basis for the kind of subject that in recent years has been suggested by the demand for an informal logic or method of argument analysis, in my view, takes us back to the model of argument called 'dialectical' by Aristotle. According to Aristotle (*Topics* 101 a37), dialectic is a kind of argument that can be used to discuss the status of

reasoning and axioms in science because the aim of dialectic is to work towards agreement by a question-answer process in a disputation. In dialectic, the questioner does not require in every instance a premiss that is better established or known than the conclusion he needs to prove. What he needs are premisses that the answerer will concede. And from these commitments, his aim is to prove his thesis. By contrast, in a demonstrative as opposed to a dialectical argument, the prover must always work from premisses better established than the conclusion he sets out to prove.

According to Aristotle, a characteristic of dialectic as a type of argument is that it can argue from premisses that are plausible, even if they fall short of being known to be true on the basis of firm evidence.

The idea that dialectic might have an aspect that relates to the invention of arguments is one that is suggested by the history of the so-called topics in logic.

In Aristotle, the concept of a *topic* (*topos*) was a device that enabled an arguer to confront an argument and respond to it effectively by constructing new arguments for or against it. Aristotle's list of the topics depended on his concept of the predicables: genus, species, definition, differentia, property and accident. Hence a topic is a kind of strategy of argumentation that enables one engaged in dialectic to construct new arguments for or against a position.

So construed, the topic seems to function as a creative device that enables one to discover or invent new arguments. Cicero and Boethius thought of the topics in this way. For them, dialectic is the art of finding arguments, as opposed to logic, the method of judging arguments — see Stump (1978, p.25).

However, according to Stump, there was a tendency in the medievals after Boethius to absorb the study of topics into the method of judging the validity of an argument.

Bird (1960) shows that Abelard used the topic as an inference rule that helps an argument evaluator find what is missing (enthymematic propositions) in an inference. The topic provides a relationship that makes an imperfect syllogism valid by adding premisses. For example, according to Abelard, the inference 'If it is man, it is animal' is justified as a good inference by the Topical Maxim of Species: of whatever the species is predicated, so is the genus (Bird, 1960, p.144). It is also interesting to note that Abelard recognized less perfect enthymemes in which there is no necessity of consecution. An example given by Bird (1960, p.142) is that it might be

argued from the fact that I ran off with this girl that I love her.

The next historical development took place with William of Ockham, where the study of topics became absorbed into the theory of conditionals. These later developments tended to think of the topics less and less a technique for inventing new arguments. And hence the study of topics tended to become absorbed into the dominant conception of logic as a method for judging the validity of arguments.

Perhaps then the history of logic is repeating itself to some extent. The basic problem of the new informal logic is for us to see how the reasonable critic or evaluator of an argument can reasonably fill in enough of the missing bits to give a significant and helpful evaluation without himself taking the step of entering into the argument as a participant. For that would be too much "creativity" — beyond the objectivity and distance required of the critic.

It seems to me the would-be informal logician at present is characteristically put in the position of one who must evaluate an argument where the argument is partly hidden or missing. Not all the relevant premisses and conclusions are given to him, just some of them. Therefore, he must do his best to fill in the missing parts in a fair and justifiable way, before he can go on to apply standards which will evaluate the argument as open or closed to the types of criticisms of arguments that are made in informal logic. Hence his job, in the initial stages, is somewhat like that of an archeologist of argument. He must look over the existing bits of argument he is given — somewhat like the archaeologist looks at ruins or fossils — and then arrive at some reasoned judgement or reconstruction of what the whole entity might have looked like, judging by the existing traces.

The two basic tools the analyst of argument has, according to the theory of argument expounded in the foregoing account, is the structure of a game of dialogue and the structure of the graph of an argument. By this account, the informal logician is directed to the task of attempting to reconstruct the context of dialogue — the arguer's position, his ultimate thesis, his strategy and the questions asked and answered according to rules of dialogue that evolved his argument. Then he has the job of mapping out the graph of the overall network of argumentation as juxtaposed against the context of dialogue. This means filling in many presumed premisses and conclusions in a way that fairly represents the position of the arguer whose argument is being evaluated or criticized. It also involves accounting for the opposing side of the argument in a fair and reasonable way. From this

reconstruction, there can evolve fair and justifiable criticisms of an argument, as well as replies or rebuttals of those criticisms. The informal logician's job is to arrive, on reasonably well-argued evidence, at an evaluation of these criticisms. Even where the analysis does not decisively refute or establish the target argument, it can still be valuable and informative.

7. Pedagogical Directions for Informal Logic

The proliferation of "new wave" textbooks of informal logic suggests the beginnings of a new subject. There is a very genuine need for this subject, and some of the new texts, especially in the past two years, show an increasing practical sophistication in the use of applied argument analysis techniques. The main problem continues to be the shortage of serious investigation of the foundations of this new field. Clearly, the textbooks are whistling in the dark. Authors of textbooks have even confided to me that they feel a little guilty teaching in this area because, being constantly forced to oversimplify complex matters in order to make their points, they wonder whether this "lying" is justified. Even if it is, the feeling of possible subterfuge can make one uneasy.

Perhaps the superficiality of many textbooks in this area is a reflection that the motivation of informal logic courses has been to expand enrolment by finding a subject-matter that will appeal to, or be tolerated by, less able or less motivated students. Even so, the more serious students will only tolerate the Standard Treatment for so long, and then some will begin to earnestly inquire whether there really are objective guidelines or procedures to effect an orderly classification of arguments into "correct" or "incorrect" bits of reasoning. If there is no good generally applicable answer why a particular example labelled an *ad hominem* or *ad verecundiam* fallacy is fallacious or not, by appeal to some well-formulated rule or general procedure, the students are rightly entitled to conclude that the course is going nowhere.

Sometimes the remedy used is to introduce a stiff dose of classical logic, but if that goes on long enough the students will correctly perceive that it is not related in any way — as these courses are often taught, at any rate — to the fallacies. Thus what is needed now in informal logic is a rapprochement of formal procedures and informal fallacies and arguments, and a deepening of the methodological roots of informal logic by the study of the structures of arguments. My own suggestion is that these two directions are one and the same at bottom.

Fortunately, some of the texts that have recently begun to appear, as well as some of the older texts, do successfully bring some structure and sophistication to bear on the treatment of the fallacies and related problems of argument analysis. Moreover, as we have seen, there are resources of a theoretical nature available from some quarters that can be marshalled to give some coherence to the collection of rudimentary techniques now being used by these texts. Moreover sources like the *Informal Logic Newsletter* provide new resources for serious investigation of this area as a subject for scholarly research. Part of the problem is getting enough teachers of philosophy to take seriously the claim that there is a genuine area here for legitimate scholarly research in its own right.

However, I believe that such a definite need has always been implicit in the claims of logic as taught within philosophy departments. Our mandate is not simply to investigate formal structures for their purely mathematical interest, but to teach logic as a criterion for correct argument that is applicable to arguments in domains other than the purely mathematical. The legitimate attraction of a logic course taken in the philosophy department is that is should help the student to reason more clearly or soundly in areas as diverse as public affairs, the consumer marketplace, ethics, or anywhere where real arguments are advanced and criticized. I do not believe that this is exclusively the domain of English composition or of pure mathematics. There is surely a broad area of "informal logic" somewhere in between that is and was supposed to be taught in philosophy departments. I think we are just not doing a very good job of working on applied logic as a discipline worthy of study in its own right at the moment, and need to pull up our socks. If we are going to teach the subject, we should try to find out what it is all about. And in fact we are now teaching it on a wide scale in departments of philosophy, in my opinion.

The recommendations I make are the following. First, informal logic should broaden its pedagogical scope of study to include not only the detection of fallacies in existing arguments in newspaper articles, and other written sources or reports. More broadly, the discipline should adopt as a pedagogical methodology the study of actual case disputes on particular questions in topic. First, the arguments should be set out, *pro* and *con*, in a case study on a particular issue or dispute. Once the thesis of each position is formulated, rebuttals and objections should be constructed, and further replies considered. Thus conceived, the study of argument takes criticism on as one important aspect, but also studies reasoning by disputation as a con-

structive method of inquiry in its own right.

I have argued that formal dialectic is the most appropriate theoretical model for rational disputation so conceived. Therefore, my second recommendation is that the theoretical roots of disputational argument be deepened by the study of formal games of dialogue and the applicable models of inference, be they classical or non-classical logics and structures, contained within formal games. The area now widely recognized as pragmatics by linguists needs to be taken more seriously by all who profess an interest in or commitment to informal logic.

These recommendations represent the best future directions for informal logic as a discipline if it is to fulfill the needs and objectives it appears to have set for itself, given current pedagogical practices.

The game of dialogue as a model of argument allows for the development of discriminations and refinements in arguments by its contestive and developing nature as a dynamic interaction of participants. It forces the participant to look to the evidential roots of his thesis to try to defend it, and to react critically to the arguments of the opponent. Needless to say, such a shift in our perception of logic as a discipline toward the dialectical, and toward the applied case study of actual disputations, represents a significant departure from many current pedagogical and scholarly practices and traditions.

NOTES

1. See the *Informal Logic Newsletter*, iv. no.2, 1982, p.1 [Editor's note].

2. See R.H. Johnson and J.A. Blair, 'The Recent Development of Informal Logic,' in R.H. Johnson and J.A. Blair, eds., *Informal Logic*: *The First International Symposium*, Inverness, California, Edgepress, 1980, 3-28.

3. Scriven (1976) is an exponent of this view.

4. *Ibid.*, p.38.

5. See Tarski (1956) on the liar paradox and related semantical paradoxes.

6. See Scriven (1976).

7. See chapter six, section seven.

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