The second reason for discussing the Victorian H.S.C. at such length was to bring out what seem to me to be the general attitudes to reasoning in our society, and to try to indicate the ways in which this sort of syllabus presupposes and reinforces them.

[Editor's Note: This paper was presented at the 1978 ALTA Conference together with a second paper in which Dr. Richards suggested details of a school curriculum in reasoning. This second paper, entitled "The Fourth R", was published in the Australian Logic Teachers' Journal, Vol. IV, No. 2 (February 1980), pp. 1-10.]

Notes
3. Ibid.
5. Committee on English in the Sixth Form, "English and English Literature in the Sixth Form", V.U.S.E.B. duplicated, June 1978. Quote is from statement of aims, p. 6.
7. Ibid.

response

Deduction, Induction and Conduction

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The last issue of this Newsletter featured four articles (2, 5, 7, 10) on the inductive-deductive distinction. Sherlock Holmes would deduce that practitioners of informal logic have a great deal of interest in this topic. Or should that be “induces”? Perhaps a few more words on the topic will be conducive, if not conductive, to more enlightenment.

In what follows, I first try to situate the dispute about the deductive-inductive distinction within the context of the appraisal of arguments. I respond briefly to Samuel Fohr's objections (2) to my position. I then explore through a series of examples Perry Weddle's renewed claim (10) that all carefully drawn arguments are deductively valid. I concede that it is possible to fill out the premises of a traditionally inductive argument to make such a way as to make it deductively valid, but argue that in general this requires the addition of premises justifiable only by inductively weak arguments. It is therefore a better strategy in argument appraisal to omit such premises and take the argument to be inductively strong. Consideration of these examples leads naturally to a discussion of Trudy Govier’s defense of a third "conductive" standard of appraisal of arguments. I conclude by advancing amended criteria for determining the appropriate logical standard for appraisal of an argument.

What is at issue in this debate? As practitioners of informal logic, we are oriented towards the appraisal of arguments which people actually advance in an attempt to convince others (or themselves) to believe or to do something. The question at issue, then, is whether any version of the distinction between deduction and induction is helpful in appraising arguments. If so, which one?

Usually our purpose in appraising an argument is to come to a decision about whether to accept its conclusion. I use the term "cogent" of an argument which deserves to convince us of its conclusion, i.e., which provides adequate grounds for believing or doing what the conclusion says. I take an argument to be cogent for somebody when and only when (1) that person has justifications which are independent of the conclusion for accepting its premises and (2) the conclusion follows from the premises. Some arguments are potentially cogent. That is, they would be cogent if they were filled out with premises which their author perhaps takes for granted as known background information, accepted assumptions, and so forth. The cogency or potential cogency of an argument is a relational property; arguments are cogent or potentially cogent to those people who are in possession of relevant evidence. Furthermore, the appraisal of an argument is both an epistemological and a logical matter.

Roughly three positions on the deductive-inductive distinction have emerged.

(1) Perry Weddle (9, 10) maintains that we should abandon the deductive-inductive distinction. "...some traditionally inductive and some traditionally deductive arguments provide conclusive grounds for their conclusions and some do not." (9, p. 4) The ones that do not are apparently not carefully enough drawn. We should presumably fill out their premises and/or hedge their conclusions so that they become deductive in the sense that "it is absolutely impossible for the premises to be true unless the conclusion is true also." Having made the strength of the conclusion proportional to the strength of the premises, we can evaluate the cogency of the argument by evaluating the acceptability of the premises. There are then two questions to ask about any argument: Does the conclusion follow deductively from the premises? What is the relation of the premises to the world? (9, pp. 4-5)
(2) Samuel Fohr (1, 2) maintains that we should retain the deductive-inductive distinction. Since arguments do not exist in vacuo, but are put forward by persons to convince persons, we should pay attention to the intentions of persons who put them forward.

"If a person intends that his premises necessitate his conclusion by rendering his conclusion an inductive argument. If he intends that his premises render his conclusion probable he is giving an inductive argument." (1, p. 7) Fohr could add: If he intends that his premises be non-conclusively relevant to his conclusion he is giving a non-conductive argument. And so on. If arguers give no evidence of their intentions, we should ask them whether they intend their premises to provide conclusive or probabilistic (or non-conclusively relevant or ...) support for their conclusion. If we cannot discover an arguer's intentions in this respect, we must construe the argument as ambiguous and test it against both deductive and inductive (and conductive and ...) standards. An arguer who has no intentions about the strength of the link between premise(s) and conclusion has not put forward a definite argument. (John, 7) Fohr appears to advocate a variant of this position when he urges that we regard "deductive" and "inductive" as characteristic of arguings (acts of putting forward an argument) rather than of arguments themselves. He wants to revise Fohr's vocabulary in order to avoid misleading our students into the mistake of taking arguments themselves to be deductive or inductive. Since two people can put forward the same argument with different intentions as to the strength of the relation between premises and conclusion, it is the arguing and not the argument which is deductive or inductive. Johnson does not say how seriously we should take arguers' intentions in our appraisal either of their arguings or of their arguments, nor does he commit himself on whether there is a sufficient distinction between arguments which are deductively valid and those which are inductively strong. Both Fohr and Johnson, however, are likely to think that arguers' intentions about the strength of the link between premises and conclusion can succeed or fail. (If so, they presuppose a prior distinction between two (or more) ways in which the conclusion of an argument can follow from its premise(s).) That is, they presuppose a distinction between deductive validity and inductive strength (and perhaps other kinds of link as well).

(3) I maintain that we should retain the deductive-inductive distinction, not as a distinction between types of argument, but as a distinction between types of validity—or, as Trudy Govier (5) puts it, standards of appraisal. An argument is deductively valid if and only if the truth of its premises guarantees the truth of its conclusion; that is, it is impossible for the premises to be true and the conclusion false. The description of a possible state of affairs in which its premises are true and its conclusion false is a refutation of the claim that an argument is deductively valid. An argument is inductively strong if and only if the truth of its premises makes the conclusion probable. To refute a claim that an argument is inductively strong, we must deploy arguments which show that the conclusion is improbable relative to the evidence contained in the premises. Trudy Govier (5) defends at least one more standard of appraisal, which we might call, after Carl Wellman (11), a conductive standard. An argument is conductively valid if and only if the truth of its premises provides non-conclusively relevant reasons for accepting the truth of the conclusion. It is hard to know how to refute a claim that an argument is conductively valid. I shall suggest later that, if the premises of such arguments are properly filled out, it is not possible to refute them. Therefore, we must look for such arguments. The only valid objection to a properly filled out argument for which conductive validity is claimed is an attack on one of its premises.

As several of my critics pointed out (2, 5, 7), in maintaining that there is more than one type of validity, I implicitly commit myself to criteria for determining which standards of validity are appropriate for a given argument. Thus, the distinction between deductive and inductive (and conductive?) arguments reappears as the distinction between arguments for whose appraisal standards of deductive validity are appropriate and those for which inductive standards are appropriate (and those for which conductive standards are appropriate?). I return to this objection at the end of the paper.

II

Samuel Fohr (2) contends that an arguer who has no intentions about the strength of the link between his premises and his conclusion has not expressed a unique or definite argument. I find this an odd view, especially since we experts in the field have not yet reached a consensus as to how many possible types of link there are. Weddle says one, I say two, and Govier says three or more. What is the ordinary person to do who simply wishes to express a definite, unambiguous argument?

Fohr further suggests that people who have no such intentions may be giving reasons rather than giving an argument. I do not understand this distinction. To me an argument is a set of statements one of which is advanced on the basis of the rest. If I give my wife's promise as a reason why she should help me paint the kitchen, I make two statements of which ("you should help me paint the kitchen") is advanced on the basis of the other ("you promised you would"). We could even put these statements in standard argument format:

You promised to help me paint the kitchen. Therefore, you ought to help me paint the kitchen.

It seems to me that any case of giving reasons for an action or a belief is an argument which could be put into such a format. If not, we should have some clarification of the distinction.

Perry Weddle (10, p. 12) expresses very well a crucial objection to taking arguers' intentions about the strength of the link between their premises and their conclusion as decisive for the appraisal of their arguments. Typically, he points out, we are not so much concerned to judge the arguer as to judge the argument. We want to come to a
just by hedging the conclusion. One can make them deductively valid by also adding a strong premise. Such a premise, however, may lack any justification at all. Furthermore, it can at best be justified as an inductively strong argument, so we are forced at some point to acknowledge weaker than deductive links in cogent arguments. It seems more straightforward to acknowledge such weaker links in the original argument.

I shall develop the above position in terms of a set of examples. In examining these examples I shall respond to Weddle's defense of his position (10) against my earlier objections (6).

(1) Weddle considers my objection that uncited counter evidence may make the hedged conclusion of a traditionally inductive argument false even though the premises are true. He considers this objection in relation to the following argument:

Set S consists of 360-member subset A and subset B. Smith will select once at random from S.

Therefore, Smith is likely to select a member of subset A.

Wedgele supposes that the uncited counter-evidence would be knowledge of which individual Smith actually selects. If Smith actually selects a member of subset B, the probability is not 360/366 but 1 that he selects a member of subset A. If Smith actually selects a member of subset B, the probability is not 6/366 but 0 that he selects a member of subset B. In either case, the premises are true but the conclusion false. Weddle deals with this supposed counter evidence in the following way:

To object to the original argument on grounds which apply to the amended argument would be an ignoratio elenchii. The uncited evidence counts only against the amended version. The original was deductively valid come what may.

I do not understand this response. In the first place, I do not understand what Weddle means by the amended argument. In the second place, if this further piece of evidence is taken by Weddle to make the conclusion false even though the premises are still true, how can he maintain that the original argument was deductively valid? By calling an argument deductively valid he means that "it is absolutely impossible for the premises to be true unless the conclusion is true also". How then can an argument be deductively valid when it is capable of having true premises and a false conclusion?

Actually I am quite prepared to agree that the argument cited by Weddle is deductively valid. My reason for doing so is that I consider the conclusion as a purported statement of the property of the situation at the time of utterance. That is, it reports the present probability (which, to be precise, is 360/366) that Smith will select a member of subset A. A priori, if Smith's selection from set S is irrelevant to this probability. Given the truth of the premises of Weddle's argument, this conclusion is true. Furthermore,
no conceivable additional evidence can alter the truth-value of this statement. In other words, it is impossible to imagine premises of this argument to be true and the conclusion false.

Weddle's example, therefore, is deductively valid. However, it is not an argument which would be traditionally regarded as inductive. In philosophically sophisticated statistics texts, where such arguments tend to appear, it is pointed out that the conclusion about the characteristics of a sample follows deductively from the premises about the characteristics of a population and about the randomness of the method of selecting members of the sample. In real life, of course, nobody reasons from the characteristics of populations to the characteristics of samples. We reason from the characteristics of samples to the characteristics of populations.

(2) Let us consider, then, some more typical traditionally inductive arguments with their conclusions hedged and their premises filled out. On or about January 15, 1977 the Canadian Institute of Public Opinion (i.e., the Gallup poll), at the request of The Canadian magazine, surveyed 1,043 "representative French- and English-speaking Canadians in interviews across the country." This survey took place two months after the election of a provincial government in Quebec committed to political independence for Quebec. Among the questions the interviewers asked the 1,043 respondents was the question: Should the government of Canada negotiate special political and economic agreements with Quebec to try to prevent separation? Of the 1,043 respondents, 47.4 per cent (494) said "yes", 43.6 per cent (455) said "no", and 8.7 per cent (91) said "don't know". (We were not told what the remaining three persons said.) The report of this survey in The Canadian did not make clear how the sample was drawn; let us assume it was drawn from eligible Canadian voters living in Canada. Nor did it make clear how the sample was selected; it was probably selected on the basis of stratification and geographical clustering, but to keep things simple let us assume that it was obtained by some method of random selection with replacement. Among the respondents thought Canada should negotiate special agreements with Quebec, 43.2 per cent of those asked this question at the time the interview began. 47.4 per cent of those asked this question by an interviewer asked each respondent, "Should the government of Canada negotiate special political and economic agreements with Quebec to try to prevent separation?" Each person interviewed gave his or her honest opinion at the time.

Therefore, it is 95 per cent probable that on or about January 15, 1977 between 45.3 and 49.5 per cent of Canadian voters living in Canada thought the government of Canada should negotiate special political and economic agreements with Quebec to try to prevent separation.

(Incidentally, I made up the numbers in the conclusion. The important point is that a carefully hedged conclusion of this sort would give a 95% or 99% confidence interval.) To assess whether this argument is deductively valid, we have to ask whether it is possible for all the premises to be true but the conclusion false. I maintain that it is possible, and therefore that the above argument is not deductively valid.

Suppose a rival magazine commissioned another polling organization to exactly the same time to do a survey by the same method of public opinion sampling on exactly the same question. (Such coincidences occur quite commonly during election campaigns, so this is not an outlandish example.) Suppose that this polling organization found that 43.3 per cent of the randomly selected respondents said "yes" when asked by an interviewer, and that each person asked gave his or her honest opinion at the time, an opinion not affected by the process of interviewing. Then, looking up our tables, again, we could conclude by a similar argument to the one set out above that it is 95 per cent probable that on or about January 15, 1977 between 41.2 and 45.2 per cent (say) of Canadian voters living in Canada thought the government of Canada should negotiate special political and economic agreements with Quebec to try to prevent separation.

We do not need to go into the mathematics to realize that when we take account of the evidence embodied in the premises of both arguments the conclusion of the first argument will no longer be true. The probability of the frequency of the indicated opinion being within the range mentioned will be much less than 95 per cent. In fact, if we combine the two poll results together to get a sample twice as large in which 45.3 per cent of the respondents thought Canada should negotiate special agreements with Quebec, we can conclude that it is 95 per cent probable that between 44.1 and 46.5 per cent (say) of the population of eligible Canadian voters living in Canada think Canada should negotiate such special agreements.

The probability in this case is the probability that the method of selecting the sample and of calculating the confidence interval will produce an interval which includes the population frequency of the characteristic being examined. This probability is fixed relative to the premises; that is, given that the premises are true, it is impossible for the conclusion to be false. However, when we apply this probability to an estimation of the population frequency as commonly done, the probability is not fixed relative to the premises. New information alters the probabilities. So any conclusion about the frequency of the characteristic in
Assume two people, Jim and Mary, are carriers. Then we can construct the following argument:

### Argument

1. Jim and Mary are carriers of sickle cell anemia.
2. In reproduction Jim's sperm which have the sickle cell gene have a chance of uniting with a fertile egg equal to that of his sperm with the normal gene.

**Likewise, Mary's eggs which have the sickle cell gene have a chance of being fertilized equal to that of those which do not have the normal gene.**

**Sickle cell anemia is a single-gene recessive trait.**

Therefore, if Jim and Mary have a child, that child has a 25% probability of having sickle cell anemia.

This is an argument with a probabilistic conclusion which is deductively valid. That is, it is impossible for the premises to be true and the conclusion false. One can avoid apparent counter-examples based on knowledge after the fact just as we did in the case of the argument about the sample characteristics based on the population characteristics. Suppose, for example, someone does an amniocentesis on Mary's unborn child, conceived by Jim, and discovers that the child has sickle cell anemia. (I believe there is no such test. However, there might be one.) Then the probability that this child has sickle cell anemia is not 25% but 100% (or slightly less, if there is a margin of error in the test). But this objection is beside the point, because the conclusion ascribes a probability as the property of a situation prior to any conception of a child. "It is now 25% probable that, if Jim and Mary do conceive a child in the future, the child will have sickle cell anemia." What happens once Jim and Mary conceive a child is irrelevant to the truth of the statement thus construed.

Such arguments are best construed as arguments from stochastic hypotheses to predictions derived from them. That is, the background of such an argument is a stochastic (probabilistic) theory—in this case, Mendel's theory of the inheritance of single-gene traits. Such a theory I take, in common with a number of contemporary philosophers of science cited by Giere (3), to be a definition of a scientific theory in terms of a definition of a Mendelian inheritance system for a characteristic as one which obeys Mendel's laws of segregation and dominance. Given the state of such a system at any particular time, one can predict for each male-female pair in the system the probability that one of their offspring will have a certain characteristic.

(4) Now let us consider a parallel traditionally inductive argument. A screening program identifies Jim and Mary as sickle cell carriers. A genetic counsellor explains to them what this means and advises them that, if they conceive, there is a 25% probability that the child will have sickle cell anemia. We can set out the counsellor's argument as follows:

- Jim and Mary are carriers of sickle cell anemia.
- Sickle cell anemia is a single-gene recessive trait.
- Therefore, if Jim and Mary have a child, there is a 25% probability that this child will have sickle cell anemia.

Is this argument deductively valid? I think not. There are possible states of affairs in which the premises are true and the conclusion false. Suppose, for example, a tech-
nique is developed to make the sperm with the sickle gene immobile while keeping the other sperm alive. Suppose that Mary is artificially inseminated with Jim's sperm after they have been treated in this way, and this insemination produces a pregnancy. Then, if the technique is fully effective, there is no probability that the child thus conceived will have sickle cell anemia. So we have a counter-example in which the premises are true and the conclusion false. The argument is not deductively valid.

What we have done here is to suppose some external interference with the operation of the law of segregation in a Mendelian inheritance system. We have supposed that the real system of inheritance of characteristics is open to external influences, not closed according to Mendel's laws. In order to block such counter-examples, we have to add a stipulation that the system of transmission of characteristics from Jim and Mary to their children is closed under Mendel's laws.

Why not add such a premise? Presumably we are filling out unstated premises as a preliminary towards making an assessment of the argument. We want to find out whether it is cogent. The next step will be to inquire of each premise whether it is justified independently of the conclusion. But any premise strong enough to make a deductively valid argument out of an argument from a stochastic hypothesis to a probabilistic prediction is incapable of being justified. At least, it can't be justified by a deductively valid argument. All that can be said in support of such a premise is that we have no reason to believe that external influences will interfere with the operation of the stochastic system and that certain (describable) efforts have been made to find such reasons. In principle, no such set of efforts can exhaust the possibilities. It's better to cut the knot at the place where it most obviously demands to be cut, and to construe the original argument as inductively strong, thus recognizing that new information can make the conclusion false. Even though the premises continue to be true.

Let us consider Weddle's meteorological example. The argument supporting the conclusion that there is a 70% chance of rain today is as follows:

The data available to us are such-and-such (a low-pressure ridge moving down from the Gulf of Alaska, etc.). When the data have been such-and-such in the past, it has rained seven out of every ten times on the day after the data have been such-and-such. Therefore, there is a 70 per cent probability that it will rain tomorrow.

This is not very sophisticated science. No well-developed stochastic theory, analogous to Mendel's theory of the inheritance of single-gene recessive characteristics, underlies the meteorologist's forecasts. Unless the "etc." here is an open-ended "etc." which would be impossible to justify (at least deductively), it is possible that the collection of additional data or the formation of more sophisticated theories would lead to a radical alteration of the probability in the conclusion. That is, it is possible for the premises to be true and the conclusion false. If this is one of those low pressure ridges for which we could in principle now predict (if we had the right theories and the right data) that it was going to change direction, then the probability of rain tomorrow might be as low as 10 per cent, and desultory rain at that. So it would not be that good an idea to take our umbrella.

This is an example of uncited counter-evidence making the conclusion false even though the premises remain true. I would object as before to making the argument deductively valid by adding a premise to the effect that no such counter-evidence is obtainable.

IV

I now turn to an argument which not only illustrates my disagreement with Perry Weddle but also opens up discussion of Trudy Govier's contention (4, 5) that there is at least one additional type of link between premises and conclusion. Consider the following argument:

I wish to buy a new car. The only considerations relevant to my choice of a model are cost, comfort, safety, handling and reliability.

On each of these factors model X is superior to every other model. Therefore, all things considered, I should buy model X.

This is a deductively valid argument. That is, it is impossible for the premises to be true and the conclusion false. However, since this is a traditionally deductive argument, it does not count in favour of Weddle's claim that traditionally inductive arguments when carefully formulated are deductively valid. Nor is it an example of a conductively valid argument. It does, however, suggest an analogous argument which Weddle would claim is deductively valid when carefully formulated and Weddle and Govier would classify as conductively valid.

To get a close analogue we could construct an imaginary argument which someone about to buy a new car might use in making up her mind. However, I have chosen a real argument which is a somewhat more distant analogue. It comes from the "News from the World of Medicine" section of the December 1977 Reader's Digest (Canadian edition):

Don't drink if you're pregnant. According to Dr. Joseph R. Cruse of the University of Southern California, women drinking any alcohol at all may run a risk of irreparable damage to their unborn babies.

This brief excerpt combines an appeal to authority with a good reason for an omission. We might put the argument into standard form and fill out its premises as follows:

Dr. Cruse says that pregnant women drinking any alcohol at all may risk causing irreparable damage to their babies.
Dr. Cruse has the expertise required to make reliable judgements on this question. Dr. Cruse is saying what he honestly believes.

Other things being equal, pregnant women should not do anything which subjects their babies to a possible risk of irreparable damage.

Therefore, all things considered, you should not drink if you’re pregnant. I add the last premise in order to bring out what I take to be the logic of such arguments. Wellman (11) maintains that the validity of each conductively valid argument is sui generis, that is, no general form of argument in terms of which such arguments are valid. I think, however, that there are always assumptions in such arguments that the reasons advanced are relevant to the recommendation drawn from them, and such assumptions are best expressed in terms of *ceteris paribus* statements. When such tacit premises are made explicit, arguments of this sort are always valid. One can only object to them by questioning the truth of a premise or by citing additional reasons.

Incidentally, it would not be fair to this argument to supply a strong normative premise which makes it deductively valid. Such a strong premise would be open to obvious counter-examples. It is just not true that no pregnant woman should do anything which subjects her baby to a possible risk of irreparable damage, no matter what the circumstances. A pregnant woman cannot avoid doing some things which carry a possible risk of such damage, and nobody is obligated to do the impossible.

Now let us consider the strength of the link between premises and conclusion in the argument as I expanded it above. Is the argument deductively valid? Suppose the premises true, and consider how the conclusion could still fail. "Under a "risk" is a reporter’s pleonasm, it probably captures the professor’s hesitation about extrapolating empirical data concerning the effects of high doses of alcohol on unborn babies to the effects of low does. In this type of reasoning, it is no general form of argument about the relationship of dose and response is usually assumed. That is, is consuming 20 ounces of alcohol per day carries a 70% per cent risk of irreparable damage to an unborn child, it is assumed that consuming one ounce of alcohol per week carries a 70% cent (70 divided by 20, divided by 7) risk of irreparable damage to an unborn child. An alternative hypothesis is that there is a threshold dose below which there is no response at all. The "may" probably reflects uncertainty about the truth of the linear hypothesis. This difficulty is that it is almost impossible to do a crucial experiment to decide between the linear and the threshold hypothesis. Suppose, however, that such an experiment is performed, and the threshold hypothesis wins out. Then the reason for drinking alcohol changes from drinking alcohol to not drinking alcohol. Assuming no other reasons for not drinking alcohol, the conclusion is no longer true. Again, there may be good reasons for a pregnant woman to drink alcohol which override the possible risk of damage to her unborn child. (It is hard to think of any, but her personal enjoyment might be enough to override a merely possible very remote risk of minor damage.) So there are at least two ways in which the premises could be true and the conclusion false.

Now we could add further premises to prevent such counter-examples from being constructed. We might, for example, add the assumptions that no further evidence will arise which contradicts Dr. Cruse’s assertion. And we might add the assumption that no competing considerations outweigh the possible risk of irreparable damage to an unborn child. But it is impossible to justify the first of these assumptions, and difficult to justify the second one. Any such justification would involve arguments which are not deductively valid. So on Weddle’s theory we would have to conclude that this is not a cogent argument. This seems to be the wrong appraisal. If one could justifiably premise an expanded argument which I set out above, then we would have a cogent argument which, however, was not deductively valid. We would have to recognize that, since the premises provide non-conclusive support for the conclusion, further evidence might arise or further considerations might arise which would lead reasonable people to reject the conclusion, even though they still accepted all the premises of the original argument.

Perry Weddle might suggest hedging the conclusion of the argument in order to make it deductively valid. That is, instead of concluding that, all things considered, you should not drink if you’re pregnant, a reporter ought to have proportioned the strength of his conclusion to the strength of his premises and concluded that, other things being equal, you should not drink if you’re pregnant. Here the relativity of the conclusion to the premises is patent, because the "other" means "other than what is cited in the premises". Further reasons for or against drinking while pregnant could change the truth-value of this statement. Furthermore, it is not in general possible to hedge conclusions which are recommendations for action. In reasoning about what to do, we are interested in coming to a decision about what to do. At some point, we have to make an "all things considered" judgement and act. "Other things being equal" conclusions are not enough. Thus, hedging the conclusion of such arguments does not make them deductively valid, nor (in general) is it possible.

Trudy Govier wishes to distinguish arguments whose premises are nonrelevant to their conclusion from arguments whose premises make their conclusion probable. She seems to have two reasons for making this distinction. In the first place, following Wellman, she takes the concept of probability to have its natural application to the confirmation of empirical hypotheses by supporting evidence. As such evidence accumulates, and no disconfirming evidence is found, the probability of the empirical hypothesis increases. This is too narrow a range of application, as some of the examples above indicate. As probability of an empirical hypothesis like the special theory of relativity is quite unlike the probability that a certain percentage of eligible
Canadian voters living in Canada think Canada should negotiate special arrangements with Quebec to prevent it from separating. The probability that an individual randomly selected from a population will belong to a certain subset of that population is something else again. And the probability that it will rain today in Metropolitan Toronto or that a couple’s next child will have sickle cell anemia is a probability attaching to the consequence of an empirical stochastic hypothesis. In the second place, Govier argues that it is linguistically unnatural to speak of considerations for or against a certain action as making it probable that one should perform or omit that action. Suppose, for example, that legalizing euthanasia carries a great danger of abuse and that we never know for certain that a person is incurably ill. These two considerations are relevant considerations against legalizing euthanasia, but it is unnatural to say that their truth makes it improbable that we should legalize euthanasia. Likewise, when Quebec Liberal party leader Claude Ryan uses an analogy with the time it takes to raise a family of five to support his claim that Canada has not reached political maturity, it is unnatural to say that the analogy in it has some force makes it probable that Canada has not reached political maturity.

Appeals to natural linguistic usage are not very compelling unless they are supported by some rationale. In any living language, the range of application of words is constantly changing. If there is an obvious extension of the range of application of an existing word, why not extend it? What is crucial, therefore, is the reasons why one finds it unnatural to extend the meaning of a word, in this case the meaning of "probable". The reasons why the word "probability" seems unnatural in cases where the premises are non-conclusively relevant to the conclusion seems to be that the activity of probability involves a cardinal measure. That is, if we say that something is probable, we can always be asked "How probable?" and be expected to give an answer which is either a percentage figure or a fraction between 0 and 1. (In my examples above, I deliberately included such percentages.) But such responses are impossible in cases where relevant reasons are being given for doing something or relevant criteria are being cited, either directly or through an analogy, in favour of a certain classification of a phenomenon.

We should not exaggerate this difference between cases where the premises would naturally be said to make the conclusion probable and cases where the premises would naturally be said to provide relevant but non-conclusive reasons for accepting the conclusion. If the hypothesis that sickle cell anemia is a single-gene recessive characteristic is confirmed by examination of thousands of family histories, it makes it very probable that the hypothesis is true. But we cannot cardinaly measure this probability. We can recognize that an examination of thousands more cases which likewise showed the same pattern of inheritance consistent with the hypothesis would increase the probability. And we can recognize that the discovery of some patterns of inheritance which were highly unlikely on

that hypothesis would reduce the probability. So we can make some ordinal comparisons between the strengths of the hypothesis relative to a different body of evidence. We cannot make ordinal comparisons very well between the probability that this hypothesis is true and the probability that another well-confirmed hypothesis (e.g., that Tay-Sachs disease is a single-gene recessive characteristic) is true.

This is precisely our situation with respect to the sorts of arguments which Govier cites. In my view, the important distinction among cogent arguments with regard to the link between their premises and their conclusion is that between those arguments where the truth of the premises guarantees the truth of the conclusion false) and those arguments in which the premises are true and the conclusion false) and those arguments where the truth of the premises provides non-
conclusive grounds for accepting the conclusion (there is a possible state of affairs in which the premises are true and the conclusion false, but the premises make the conclusion probable or provide relevant reasons in its favour). In some of the latter sorts of cases, we can quantify the strength of the link between premises and conclusion; in others, we cannot. To others, we must recognize that we are dealing with an argument where not only new information about the truth-value of the premises but also new information independent of the truth-value of the premises but relevant to the conclusion should lead us to renounce our acceptance of the conclusion. Certainly there is a wide variety of types of argument within the second broad classification of non-deductively valid arguments. And the types of logic appropriate to the assessment of their validity go far beyond those traditionally encompassed by texts on inductive logic. If a difference is to be made among this second broad class of arguments, it might be on the basis of the sort of tacit premises which one normally adds in filling out the elliptical arguments which people present. In the case of apparently conductive arguments, these are typically of the form, "Other things being equal, anything with property A also has property B." (Property A could be a criterion for classification or a reason for doing something or a relevant similarity between analogous cases.) In the case of apparently inductive arguments, it is not appropriate to fill out the premises with such statements.

Let me turn finally to the implications of a distinction among types of argument validity for the classification of arguments. If one maintains that cogent arguments can be deductively valid or inductively strong (or conductively valid), then one has to decide which standard to use in appraising an argument. This means that one must at least tentatively classify the argument as deductive or inductive (or conductive), in the sense that it is appropriately appraised by deductive or inductive (or conductive) standards of validity. As a result, I suggested that this classification should be done on the basis of the apparent logical form of the argument. Fred Johnson's comments (7) have convinced me that such an approach to the classification of arguments is too rigid and narrow.

I suggest instead that we use a version of the principle of charity in settling on the standards by which to assess an argument. That is, we should assess it by those standards which give it the best chance of being a cogent argument. In practice, this means that we should fill out elliptical arguments with premises which stand a chance of being justified and which make the argument deductively valid or inductively strong (or conductively valid). Now it may be that an argument will have a roughly equal chance of being cogent if we fill it out with premises which enable us to test for deductive validity and if we fill it out with premises which enable us to test for inductive strength. For example, it might lack cogency on either interpretation. Or it might be very cogent on either interpretation. How are we to classify such an argument? We can say that it is both deductive and inductive, or that it is neither. Nothing much hinges on our decision between these alternatives. In this sense, I would argue, classifying arguments as deductive or inductive (or conductive) is at best a tentative matter, one which does not produce a neat division of arguments into mutually exclusive and jointly exhaustive kinds. We do, however, have a mutually exclusive and jointly exhaustive division into kinds of standards for appraising the link in an argument between premises and conclusion. It is this division which justifies reference to deduction, induction and perhaps conduction as distinct types of reasoning.

WORKS CITED


(2) Pohr, Samuel D. "Deductive-Inductive: Reply to Criticisms." Informal Logic Newsletter, iii.1 (October 1980), 5-10.


