Deductive and Inductive: Types of Validity, Not Types of Argument

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Recent contributors to the Informal Logic Newsletter (1, 2, 3, 5) have discussed the legitimacy and nature of the common distinction between deductive and inductive arguments. I shall argue that Weddle (5) has abandoned the distinction for the wrong reasons and has rejected what is worth preserving in it. Fohr (1) argues convincingly against one way of construing the distinction, I shall maintain, but proposes an alternative which is equally unacceptable for several reasons, including one pointed out by Weddle (5) and one pointed out by Govier (3) but not taken to its logical conclusion. I shall propose instead that we regard the distinction between deductive and inductive as a broad and exhaustive distinction between types of validity. On my account Wellman's (6) distinction between inductive and "conductive" is a distinction between two types of inductive validity. Finally, I shall note that my proposal is not novel.

Weddle holds that all carefully drawn arguments, whether traditionally deductive or traditionally inductive, provide conclusive grounds for their conclusions, in the sense that it is (logically, mathematically or physically) not possible for the premises to be true and the conclusion false. In this sense the inference of every carefully drawn argument is deductively valid. The distinction between deductive and inductive therefore disappears, though we can still distinguish syllogisms, analogical arguments, statistical generalizations, causal arguments, arguments from authority and good reasons arguments.

The trouble with Weddle's position is that he is mistaken in his claim that "when an arguer properly hedges the conclusion of a traditionally inductive argument, the result assumes the role held to belong exclusively to deduction." (p. 3) Consider Weddle's own example: "When a low pressure ridge moves down from the Gulf of Alaska (etc.) we usually get rain the next day, and a low pressure ridge is moving down right now (etc.); hence it is likely to rain tomorrow." Weddle claims that with premises thus filled out and the conclusion hedged, it is impossible for the premises to be true and the conclusion false. But suppose some facts not mentioned in the premises (such as a competing high pressure ridge coming from a different direction) make it highly unlikely that it will rain tomorrow. Then, despite the truth of the premises, the conclusion is false. In general, traditionally inductive arguments of this sort become deductively valid only if we stipulate that the premises describe a closed system or we add an open-ended premise to the effect that no other factors obtain which would make the predicted state of affairs improbable. But adding such premises changes the traditionally inductive argument into a traditionally deductive one.

Hedging the conclusion of a traditionally inductive argument in fact involves a claim about the strength of the link between the evidence cited in the premises and the occurrence predicted in the conclusion. Since there may be uncited counter-evidence, the predicted occurrence may be in reality highly improbable, even though the premises provide probable grounds for thinking it will occur.

Although Weddle's elimination of the distinction fails, there are good arguments against three traditional ways of defining it: in terms of logical form, in terms of the strength of the link between premise(s) and conclusion, and in terms of the claimed or intended strength of this link.

Weddle (5) himself provides convincing counter-examples to attempts to make the distinction on the basis of logical form, such as the contention that inductive arguments draw universal conclusions from particular premises and deductive arguments draw particular conclusions from universal premises. Skyrms (4, pp. 13-15) gives examples of all possible combinations of particular and universal statements in both deductively valid and inductively strong arguments.

Fohr (1) rightly points out that a distinction in terms of the strength of the link between premises and conclusion runs foul of the requirement that there can be bad, i.e. invalid or weak, instances of each type of argument. Arguments which are neither deductively valid nor inductively strong (nor conductively valid, etc.) will have no place in a supposedly exhaustive classification. One way of patching up this approach is to label "inductive" all arguments which are not deductively valid, but, as Weddle (5) notes, the practice of logic texts indicates that this is not how logicians make the distinction.

Most recent logic texts define deductive arguments as arguments which involve the claim that the conclusion follows necessarily from the premises, and inductive arguments as arguments which claim only that the premises provide probable grounds for the conclusion. Fohr's (1) proposal to base the distinction on whether the person putting forward the argument intends his premises to provide conclusive or merely probable grounds for the conclusion is a variant of this approach, for the only way of detecting such intentions is to notice what the arguer claims. Although this third type of proposal escapes the objections to the two previous approaches, there are two strong arguments against it.

In the first place, as Weddle (5) points out, the claimed or intended strength of the

inferential link is partly a function of psychological temperament. Bold reasoners will claim more strength than the inference has, timid ones less. In assessing their arguments, however, we would discount the hyperbole of the one and the hesitation of the other, and apply the standards of correctness appropriate to the argument itself, perhaps noting parenthetically the rashness or timidity of the claim the arguer makes for his argument. We would, in other words, treat the bold reasoner's argument as inductive, despite his claim that the conclusion followed necessarily, and the timid reasoner's argument as deductive, despite his hesitation about drawing the conclusion.

In the second place, arguers may in fact have no intentions at all about the strength of the link between premises and conclusion. This is not merely the point made by Govier (4) and conceded by Fohr (1) that, where arguers make no explicit claim about the link, we may not be able to determine what they intend, and may thus have to cover ourselves by assessing the argument both ways. It is the stronger point that the arguer may simply intend his premises to convince his hearers of the conclusion, without either intending that the conclusion follows necessarily or intending that it is made probable by the premises. Suppose, for example, I say to my wife: "You should help me paint the kitchen this evening. You promised you would." My intention is to convince her to help me paint the kitchen, on the ground that she promised she would. But I make no claim, nor (let us suppose) do I have any intention, about the strength of the link between my premise and my conclusion. Though this imaginary example is sufficient to establish my point, I suspect that in the real world a great many people have no such intentions when they put forward arguments. So the distinction between deductive and inductive arguments fails to be exhaustive.

If traditional attempts at defining the distinction break down, we have to remind ourselves of the point of making the distinction in the first place. We can find a clue in Weddle's (5, p. 4) "exaggeration" that "what distinguishes deductive from inductive arguments is the sections of logic books in which they happen to be found." Precisely, although Weddle errs in characterizing the difference between these sections. In the sections of logic books which deal with so-called "deductive arguments", we develop the theory of the circumstances in which an argument is deductively valid or deductively invalid--that is, in which it is impossible or possible for its premise(s) to be true and its conclusion false. Within this general category, there is a variety of types of logic: the logic of truth-functional sentence connectives, the logic of first-order quantifiers, the logic of identity, the logic of the Aristotelian relations between non-empty sets, the logic of Lewis-S5 modalities, and so forth. In the sections of logic books which deal with so-called "inductive arguments", we develop the theory of the circumstances in which an argument is inductively strong or inductively weak--that is, in which it is more or less probable that its conclusion is true given that its premise(s) are true. Within this general category, there is a variety of types of logic: the logic of the confirmation and disconfirmation of hypotheses, the logic of analogical arguments, the logic of inferences from sample characteristics to population characteristics, the logic of controlled experiments to prove causal claims, the logic of conductive or balance-of-considerations or good reasons arguments, and so forth.

We ought to assess an argument on the basis of which of these specialized types of logic seems to provide the most appropriate framework--in other words, on the apparent logical form of the argument. In doing so, we may be guided by the claim or intention of the arguer about the strength of the link between premises and conclusion. But such a claim or intention is at best of heuristic value, and may have to be discounted. The main question to be asked in this connection about any argument is how strong the link is between the arguer's premises and his conclusion, not whether the arguer's claim about their link is correct.

Let me conclude by noting that others before me have rejected the distinction between deductive and inductive arguments in favour of a distinction between deductive validity and inductive strength. One such author is Skyrms (4, p. 12). Since he has not succeeded in convincing everyone, there may nevertheless have been some point in bolstering his position with the preceding arguments.

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