I. The Aims of Logic[1]

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The traditional aim of logic is to sort out good forms of argument from bad ones. But this aim needs a little explanation.

An argument or inference takes us from a certain premiss, or from certain premisses, to a certain conclusion. We may write the premiss or premises first and then write the conclusions provided by "therefore" or "so" or "hence", thus:-[2]

> Nothing evil is created by God;
> Everything real is created by God;
> Therefore (or so, or hence) nothing real is evil.

Or we may write the conclusion first and then write the premisses preceded by "for" or "since" or "because", thus:-

> Nothing real is evil, for (or since, or because)
> nothing evil is created by God, +[3] everything real is created by God.

The premisses, wherever placed, are the statements or propositions from which the conclusion is drawn or inferred; the conclusion is the statement or {page 2} proposition inferred from the premiss. In common speech the conclusion is often said to be a deduction or inference from the premisses, but logicians prefer to use the term "deduction" or "inference" for the entire argument – premiss or premisses, conclusion and the word ("so", "for" or whatever it might be) which shows which is which.

Different inferences may be of the same "form". For example, the inference given above is of the same form as the following:-

> Nothing combustible is safe to use;
> Everything in this house is safe to use;
> Therefore nothing in this house is combustible.[4]

The form of an inference is commonly exhibited by replacing those words which do not contribute to it by schematic letters. Thus both of the above inferences have the form

> Nothing (that is) Y is Z;

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[1] Edited by Martin Prior and David Jakobsen. Editors' note: At the top of the page is written, not by Prior "Was this the beginning of that VIth form Logic Book A* was asked to write?" Martin is not sure whether the last part of the sentence is written by Mary but the first part of it looks as if it could be. *'A' is written on top of 'he'. This is perhaps written in 1950, though a mention of tenses in part II could suggest that Prior wrote this after his invention of tense-logic.

[2] Editors' note: The following has been struck through: No Christians are Communists; Therefore (or so) no Communists are Christians.

[3] Editor's note: Prior uses '+' for 'and' in his notes and letters.

[4] Editor's note: In 1946 and in 1949 the home of Mary and Arthur burned down. The use of this example is a slight indication that it could have been written in 1950. The flat in Cashmere Hills burned down in March 1949 and for some 9 month, Martin Prior recollects, they had been renting.

Everything (that is) X is Z

Therefore nothing (that is) X is Y.

The statements or propositions which occur as premisses or conclusions in inferences may be true or false. An inference as a whole, however, is not true or false, but valid (or sound) or invalid (or unsound). An inference is valid if and only if no inference of that form takes us from a true premiss, or from premisses {page 3} all of which are true, to a false conclusion. A particular inference may not itself do this, but if other inferences of the same form do so, the inference is still invalid (unsound, unsafe) – its premisses do not really warrant (imply, entail) its conclusion. For example, the inference

Every three-sided figure is three-angled

Therefore every three-angled figure is three-sided,

does not itself take us from a true premiss to a false conclusion, but from a true to a true; but it is invalid all the same, for other inferences of the same form, e.g.

Every blind man is disabled,

Therefore every disabled man is blind,

do take us from a true premiss to a false conclusion. We may say that the from

Every XY is Z

Therefore every XZ is Y

is an invalid form of inference. Particular inferences of this form may not lead us astray, but others would.

Note that an inference is not rendered invalid merely by having a false conclusion; for if we arrive by inference at a false conclusion the blame for this may be not with the form of inference used but with the false premisses from which we start. We are not then "led astray" {page 4} by the inference, but were "astray" to begin with; and indeed we may come to see that some assumption we have made is false precisely by seeing that a false conclusion may be validly drawn from it. For example, the following inference is valid:-

No mammal lays eggs;

The platypus is a mammal;

Therefore the platypus does not lay eggs.

But its conclusion is false; so one of its premisses must be (in fact the first one is).

So a valid inference with a false conclusion must have at least one false premiss. But a valid inference with a false premiss need not have a false conclusion. For example, the following valid inference has two false premisses but its conclusion is true:- {page 5}

All birds are motor-cars;

All motor-cars have feathers;

Therefore all birds have feathers.

To sum up:

A valid inference may take us from truth to truth, or from falsehood to falsehood, or from falsehood to truth; but never from truth to falsehood – an inference taking us from truth to falsehood is not valid but invalid. And even if a particular inference does not take us from truth to falsehood, it is invalid if other inferences of exactly the same form[5] {page 6} do so. So the aim of logic is to find forms of inference which will never take us from truth to falsehood.[6]

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[5] Editors' note: The following passage has been struck out: It is necessary to say "of <u>exactly</u> the same form" since a form of inference which is not itself valid may have special cases – sub-forms – which <u>are</u> valid. For example, "No A is a B, therefore no B is a C" is an invalid form of inference ("No horse is a dog, therefore no dog is an animal", which is of this form, takes us from a truth to a falsehood), but the special sub-variety of this form in which C is the same as A is perfectly valid. ("No horse is a dog, therefore no dog is a horse" is valid; it exemplifies the …

[6] Editors' note: The following passage has been struck out:

What looks like a different way of stating the aim of logic, or at all events the aims of logic, is to say that it attempts to <u>defeat inconsistencies.</u> In fact this is a by-product of the aim already stated. Two propositions are inconsistent if they cannot both be true, and they are formally inconsistent if, in any pair of propositions of the same form …

If one proposition may be validly inferred from another, we sometimes say that it is <u>deducible from </u>that other, or that the other <u>entails</u> it. So …