

Validity as (Material!) Truth-Preservation in Virtue of Form

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ABSTRACT: According to a standard story, part of what we have in mind when we say that an argument is valid is that it is *necessarily truth preserving*: if the premises are true, the conclusion must also be true. But—the story continues—that’s not enough, since ‘Roses are red, therefore roses are coloured’ for example, while it may be necessarily truth-preserving, is not so in virtue of form. Thus we arrive at a standard contemporary characterisation of validity: an argument is valid when it is NTP in virtue of form. Here I argue that we can and should drop the N; the resulting account is simpler, less problematic, and performs just as well with examples.

Keywords: validity, logical consequence, logical form, modality, grounding.

1. A Standard Story About Validity

According to a standard story, part of what we have in mind in calling an argument valid—in the sense of logically, or formally, valid—is that it is necessarily truth-preserving. That is, if the premises are true, the conclusion must be true. Or in other words, it’s impossible for the premises to be true and the conclusion false. The customary motivation for this use of modal notions is as follows. Suppose we call an argument *materially* truth-preserving, or simply truth-preserving, when it is not the case that its premises are true and its conclusion false. Now, while arguments that fail to be materially truth-preserving are certainly invalid, there are other invalid arguments which are materially truth-preserving. For example,

Argument 1:

Socrates is mortal.
Therefore, Socrates is a philosopher.

is materially truth-preserving, because the conclusion is true. But it’s not valid, because—according to the standard story—while both premise and conclusion happen to be true, it’s nevertheless *possible* for the premise to be true and the conclusion false. Therefore, the story goes, part of what we have in mind in calling an argument valid is that it is necessarily truth preserving (NTP).

But, the story continues, this is still not enough. There are NTP arguments which are not valid in the relevant sense. For example,

Argument 2:

Roses are red.

Therefore, roses are coloured.

This is NTP because red things are necessarily coloured. However, while it may be a conceptual truth that red things are coloured, it's not a truth of logic. It has to do with the particular meanings of 'red' and 'coloured'. If we had to deal with such matters in our account of logic, there would be no hope of stating a comprehensive logical theory in a single book. (Drawing the line between form and content, and how theoretically significant the line is, are fraught issues, but they can be put aside for present purposes; here I am going along with the standard story *except* for the part I think should be deleted, and it's not this part.) But we can get a valid argument by adding in an extra premise:

Argument 3:

Roses are red.

All red things are coloured.

Therefore, roses are coloured.

This argument is valid, the story goes, because not only is it NTP—it is so *in virtue of form*. In other words, *its form makes it the case* that it's NTP.¹ Forget about the particular content of the argument, we can still see that it's NTP, just based on its form. It doesn't matter what 'red' or 'coloured' means, it doesn't matter what 'roses' means. We could tell that the argument is NTP even if we didn't know the particular meanings of those words; all we need to know is their logico-grammatical category (they're predicates). Argument 2, by contrast, is NTP but is not NTP in virtue of form. We can see this by reflecting that other arguments with the same form are not NTP. For example,

Argument 4:

¹ Just as I am not getting into issues about what counts as form, i.e. about the boundary between the logical and the extra-logical, I will not attempt to theorise here about 'in virtue of', e.g. about whether it indicates a metaphysical grounding relation, something less objective having to do with explanation, or whatever. I take it that we have a working understanding of 'in virtue of' in this context, it's already part of the standard story I'm arguing that we can simplify, and I'm just leaving it in place. (In this connection, note that I'm only arguing that the simplified story is preferable to the standard one—not that it's preferable to all other characterisations of validity.) Having said that, there is a noteworthy analogy between what I am arguing in this paper and the trend of "post-modal metaphysics", wherein philosophical ideas are articulated not with modal notions but with a notion of grounding often expressed using 'in virtue of'. It's just that in the present context, the 'in virtue of' has been in the picture all along—we just need to take it seriously and realise that it already does the work for which the modal notion of necessity was brought in.

Roses are red.

Therefore, roses are blue.

(This is of the same form as Argument 2, since ‘coloured’ and ‘blue’ belong to the same logico-grammatical category.)

Thus we arrive at a standard contemporary account of what validity consists in: necessary truth-preservation in virtue of form. Some authors use ‘valid’ just to mean ‘necessarily truth-preserving’, and then consider the view that logically or formally valid arguments are ‘valid in virtue of form’, but given that by ‘valid’ I here mean logically or formally valid, these authors are also considering the standard story I am interested in, albeit in different terminology.²

2. The Proposal: Go Straight to ‘In Virtue Of Form’

My proposal is simple: the standard story is needlessly complicated. Once we have ‘in virtue of form’ on board, we can drop the N in NTP. No detour through a notion of necessity is required.

To begin to see this, let’s return to the beginning of the standard story while bearing in mind how it ends—namely, by bringing in ‘in virtue of form’. Argument 1 is materially truth-preserving (or, as I’ll say, simply ‘truth-preserving’, or ‘TP’³), i.e. it’s not the case that its premise is true and its conclusion is false; in particular, both premise and conclusion are true. But it’s not valid. This supposedly motivates bringing in a notion of necessity. But hold on, we know where this story ends: with ‘in virtue of form’. So let’s cut a long story short by bringing ‘in virtue of form’ on board at this point. Argument 1 is TP, but it’s not TP in virtue of form. And we can see this by reflecting that other arguments with the same form fail to be TP. For example,

Argument 5:

JFK is mortal.

Therefore, JFK is a philosopher.

² This standard story, expressed in my preferred terminology, is found for instance in the *Stanford Encyclopedia of Philosophy* article on ‘Logical Consequence’ (Beall, Restall & Sagi (2019), §3.1), the popular textbook Smith (2012), pp. 14 - 20, and two recent doctoral theses, Reagan (2018), p. 4 and Bice (2019), pp. 173 - 174. The variant where ‘valid’ is taken to mean just ‘necessarily truth-preserving’ and then our topic - logical or formal validity - is explained as ‘validity in virtue of form’ is found for instance in Read (1994), p. 250, Shapiro (2002), p. 230, Smith (2003), p. 117 and MacFarlane (2021), p. 130.

³ Note in this connection that some authors use ‘truth-preserving’ as short-hand for ‘necessarily truth-preserving’. In their terminology, the standard characterisation of validity may sound deceptively like my simpler proposal.

This has a true premise and a false conclusion, i.e. is not TP. The plain old TP account of validity is a non-starter, since it massively overgenerates, i.e. it counts lots of intuitively invalid arguments as valid. The NTP account (with no ‘in virtue of form’) also overgenerates, albeit less flagrantly. But we can fix these overgeneration problems in one fell swoop by adding ‘in virtue of form’ to the plain old TP account. On the resulting simple account, validity is just TP in virtue of form. Analogous accounts are available for other properties and relations of logical interest. For instance, logical equivalence is material equivalence—i.e. sameness of truth-value—in virtue of form. And logical truth is truth in virtue of form.⁴

To be clear, it is no part of this proposal that there are valid arguments which aren’t NTP. Plausibly, all arguments which are TP in virtue of form are also NTP (in more than one interesting sense of ‘necessarily’). The proposal is just that we don’t need the N in NTP in order to characterise validity. That valid arguments necessarily preserve truth can naturally be seen as *flowing from* the fact that they are valid, without literally being *part of the idea* or *part of our account* of validity.

In short, we can—and therefore should—drop the N in the standard ‘NTP in virtue of form’ explanation of validity. I turn now to defending in a bit more detail the view that the resulting simpler account (which I’ll call ‘TP-Form’) is preferable to the standard more complicated one (‘NTP-Form’).

3. Defense of the Proposal

The most obvious way in which TP-Form is preferable to NTP-Form is that it is simpler, in the straightforward sense that NTP-Form is just like TP-Form but with an extra bit. Since TP-Form performs just as well with regard to examples, this alone gives us reason to favour it.

A further benefit is that we avoid the problem of exactly *which* notion of necessity is best suited to play the role of N in NTP. Should the N in NTP be understood in terms of metaphysical necessity, *a priori* knowability, or in some other way? This can feel somewhat arbitrary, which, from the point of view of my proposal, looks like evidence that validity *itself* is better characterised by TP-Form than by NTP-Form. In this way, my proposal comports well with the following conjecture of MacFarlane’s:

[...] one might worry about characterizing logical consequence in terms of necessity or apriority. These notions are philosophically controversial. There is debate, for example, about whether anything can be known a priori at all, but

⁴ Compare: ‘The fundamental characteristic of logic, obviously, is that which is indicated when we say that logical propositions are true in virtue of their form.’ (Russell (1903), p. xvi.)

those who deny this are not typically skeptics about the relation of logical consequence. Some philosophers have argued that there can be empirical reasons for rejecting the validity of certain inference forms of propositional logic (Quine 1951; Putnam 1968). This suggests that our basic understanding of logical consequence is not tied to any notion of necessity or apriority. (MacFarlane (2021), p. 126.)

This in turn highlights a third potential benefit of TP-Form over NTP-Form: greater ideological parsimony. Arguably, TP-Form does not require any modal notions, whereas NTP-Form does. This however depends on it being the case that we do not require any modal notions in order to explain ‘in virtue of form’, which I will not try to argue for here.

You might think that one way in which NTP-Form is preferable to TP-Form is that the former displays a clear relationship between logical and extra-logical entailments. If you simply delete ‘in virtue of form’, you’re left with a notion of extra-logical entailment, whereas the notion of validity as characterised by TP-Form may seem to stand isolated. This appearance, however, does not stand up to scrutiny. If we drill down a little into what we mean by the ‘form’ in ‘in virtue of form’, we can begin to see this, and that by replacing ‘form’ with something else we can obtain extra-logical notions of entailment. The way I like to think about it, ‘in virtue of form’ means something like ‘in virtue of the semantic properties of logical terms, as well as logically significant categories of expression and modes of composition’. By widening this base, so that it includes for example the meanings of terms like ‘red’ and ‘coloured’, we can obtain extra-logical notions of entailment.

Finally, note that I am not claiming that TP-Form is perfect or that it is preferable to all other characterisations of validity. You might for instance think that when we say that the conclusion of a valid argument must *follow from* the premises, we mean something more than that the argument is TP in virtue of form, e.g. that the premises support (or lead to, etc.) the conclusion.⁵ But this is just as much of a worry for NTP-Form. All I am arguing here is that TP-Form is an improvement over the popular and widespread NTP-Form.

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⁵ This is a classic motivation for relevance logic. See Mares (2020) for an overview.

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