

Tarski and Naess: material adequacy meets experimental philosophy

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Abstract: Tarski (1944) establishes two conditions that any theory of truth ought to satisfy: formal correctness and material adequacy. Though not widely noted, Tarski indicated that the material adequacy condition might be clarified by the application of empirical methods, specifically citing Naess (1938). We examine this empirical work and consider some implications of the application of empirical results to Tarski's theory.

Tarski's (1944) well-known paper describing the so-called *semantic theory of truth* presents two minimal conditions that any theory of truth ought to satisfy. The first condition is *formal correctness*. Any formal definition must be for a specified language that is constructed in a manner which allows us to avoid both circular definition and semantic paradoxes. Tarski calls the second condition *material adequacy*. This condition is designed to guarantee that the definition of the term 'true' in the specified language is a definition of the "old notion" of truth—the ordinary concept. The extension of Tarski's concept of truth is given by the axioms derived from the so-called T-schema: '*snow is white*' is true, if and only if *snow is white*, and its theoretical kin.

The nature of truth or of the truth concept is not settled by this extensional account. Despite the fact that Tarski sometimes hints at the compatibility of the extensional definition with a correspondence story about the nature of truth, there is sufficient extant critical literature to withhold final judgment on whether Tarski's formalized semantic theory of truth requires a correspondence theory, or vice versa. Nevertheless, for those who return periodically to Tarski's

original paper, coming now with an ear toward recent work in experimental philosophy, there is a further vein to be mined: an attempt to describe the ordinary folk notion of truth and thereby make clear how to satisfy the material adequacy condition using methods adapted from the empirical sciences.

In this paper our main point is quite narrow; we intend to show that Tarski thought that the material adequacy condition could be informed by the application of empirical methods and consider some implications of such a project. First we will discuss Tarski's account of material adequacy and the empirical studies of Arne Naess that attempt to describe the folk concept of truth. Second we will discuss the relevance of the experimental philosophy approach to philosophical theorizing about philosophical concepts like truth. Finally we will consider possible implications of these empirical studies for theories of truth generally.

Material Adequacy and the Ordinary Notion of Truth

The construction of a predicate for a formal language always invites a multiplicity of possible semantic interpretations. Tarski's insistence upon the material adequacy constraint reflected the need to limit the range of possible semantic models for the truth predicate in the formal language in question. Material adequacy allows Tarski to claim that his "definition does not aim to specify the meaning of a familiar word used to denote a novel notion; on the contrary, it aims to catch hold of the actual meaning of an old notion"(Tarski 1944, 341).

Tarski recognized that there is no widely and universally accepted philosophical theory of truth.¹ He also notes that the concept of truth resists attempts to provide a simple philosophical

¹ Tarski writes, "The word "true," like other words from our everyday language, is certainly not unambiguous. And it does not seem to me that the philosophers who have discussed this concept have helped to diminish its ambiguity. In works and discussions of philosophers we meet many different

analysis. The last point of general agreement seems to be what some call ‘Aristotle’s dictum,’ which is where Tarski connects his formal theory to the ordinary notion of truth.

We should like our definition to do justice to the intuitions which adhere to the classical Aristotelian conception of truth – intuitions which find their expression in the well-known words of Aristotle's *Metaphysics*: *To say of what is that it is not, or of what is not that it is, is false, while to say of what is that it is, or of what is not that it is not, is true.* (Tarski 1944, 342f)

Tarski’s criterion of material adequacy is expressed in terms of the so-called T-sentences. Tarski appeals to a kind of intuition-pumping example:

Consider the sentence “*snow is white.*” We ask the question under what conditions this sentence is true or false. It seems clear that if we base ourselves on the classical conception of truth, we shall say that the sentence is true if snow is white, and that it is false if snow is not white. Thus, if the definition of truth is to conform to our conception, it must imply the following equivalence: *The sentence “snow is white” is true if, and only if, snow is white.* (Tarski 1944, 343)

This result is bootstrapped up to a general schema (T) ‘X is true if and only if p’, and permits

Tarski to

put into a precise form the conditions under which we will consider the usage and the definition of the term "true" as adequate from the material point of view: we wish to use the term "true" in such a way that all equivalences of the form (T) can be asserted, and we shall call a definition of truth "adequate" if all these equivalences follow from it. (Tarski 1944, 344).

This is the familiar version of the material adequacy formulation, but the discussion of material adequacy re-emerges later in response to critical worries. Tarski notes that,

some doubts have been expressed whether the semantic conception does reflect the notion of truth in its common-sense and everyday usage. ...I happen to believe that the

conceptions of truth and falsity, and we must indicate which conception will be the basis of our discussion.” (1944, 342)

semantic conception does conform to a very considerable extent with the common-sense usage although I readily admit I may be mistaken. (Tarski 1944, 360)

It is significant, but not surprising that Tarski abdicates authority over the question of whether the definition he is proposing is materially adequate. Against the backdrop of early logical positivism, the deference to a scientific solution makes perfect sense (recall that the publication of the semantic theory was delayed over a decade due to WWII). Tarski thought that an experimental project had a good chance of resolving the question:

I believe that the issue raised can be settled scientifically, though of course not by a deductive procedure, but with the help of the statistical questionnaire method. As a matter of fact, such research has been carried on, and some of the results have been reported at congresses and in part published. (Tarski 1944, 360)

This passage refers to the work of Arne Naess on how “non-philosophers” conceive of truth – an empirical examination of a folk-theory.

Empirical Questions and Experimental Philosophy

Naess advocated an empirical approach to resolving philosophical problems. A similar approach has been advocated by many in recent years. For example, in “Analytic Epistemology and Experimental Philosophy,” Alexander and Weinberg (2007) contrast two general approaches to answering philosophical questions, *standard philosophical practice* with *experimental philosophy*. They sketch a trajectory for the emergence of experimental philosophy that starts with the recognition that a) much philosophy makes, at least tacit, appeal to intuitions (or even to what we might call common intuitions), but b) philosophers usually have little to say about how they justify their claims about the content of these intuitions. Alexander and Weinberg distinguish three stances that philosophers might take vis-à-vis the use of intuitions.

³ The actual phrasing was “What is the common characteristic of what is true?”

(I) Intuition Solipsism – the view that a philosopher can rely upon their own intuitions as definitive evidence for some philosophically substantive claim.

(II) Intuition Elitism – the view a philosopher can rely upon her intuitions because they somehow correspond to a representative subset of intuitions or consensus intuitions attributable to professional philosophers can be employed as evidence for some philosophically substantive claim.

(III) Intuition Populism – the view that a philosopher can rely upon her own intuitions because they track the intuitions of a population which includes philosophers and non-philosophers alike. (Alexander and Weinberg 2007, 57)

The experimental philosophy wedge that gets behind standard philosophical practice is the fact that the questions of what the common conception of X or the widely held intuition about Y looks like can be, and many would argue should be, treated as empirical questions.

If intuitions generated in response to thought experiments are supposed to be able to be used as reasons to accept or reject some philosophical claim, then we should be interested in studying the nature of the relevant intuitions. Experimental philosophy takes up this challenge, applying the methods of experimental philosophy to the study of the nature of intuitions generated in response to thought-experiments.” (Alexander and Weinberg 2007, 60)

In these terms, Tarski began with a form of intuition elitism manifested by his appeal to Aristotle’s dictum, but was willing to defer to Naess’ empirical approach.

Naess’ motivations for taking an experimental stance towards questions about truth follow a similar trajectory. Naess describes the task of trying to give an account of truth. He describes how a philosopher might start by reviewing dictionary definitions, or operational definitions of truth from specific sciences, or by constructing “a formal definition suited to logical purposes.” (Naess 1938, 13). But when this process leads to “various types of theories which deal with the non-philosopher’s opinion on the notion of truth,” with the “opinion of the man in the street,” (Naess 1938, 14), Naess immediately asks:

How do philosophers *know* these things? What is the source of their knowledge? What have they done to arrive at it? Much work...would have been saved...if the philosophers had indicated how they investigated the opinions of the non-philosopher ('the amateur') and how they arrived at the conclusion that there is a thorough-going difference between opinions (explicitly or implicitly) of philosophers and non-philosophers. But the fact remains: their writings contain almost nothing of this matter."(Naess 1938, 15)

Naess continues: "one is forced to ask: ...Have the philosophers any interest in writing on a subject capable of empirical treatment without knowing anything about it? What could the possible interest be?" (Naess 1938, 15-16). In other words: Naess looks at the ubiquity of claims to appeal to the common person's idea of truth, and asks the obvious question—is this really the ordinary concept?

Naess applies empirical methods of opinion sampling to the question that Tarski was concerned with: What is the ordinary notion of truth?³ Naess' research team conducted questionnaire based personal interviews complemented by a series of open-ended (and follow-up) questions.⁴ Naess did not use vignettes designed to elicit subjects' responses to specific questions. Instead, Naess' project was descriptive and taxonomic.

The diversity and consistency of amateur theories of truth point to the possibility of an "experimental philosophy". By this expression we do not mean more than in other cases in which "experimental" is used as a characteristic, for instance, "experimental biology". If the ecology of pine forests is studied by means of planting pines in new areas and under systematically changing conditions, the behavior of the pines throws some light on the dynamics of pine woods in general. The fact that one cannot build a pine synthetically corresponds to the fact that we cannot experiment with milieu in which truth-theories grow spontaneously."(Naess 1938, 161)

Here Naess provides a clearly empirical take on the problem of clarifying a philosophically significant notion, but the model differs from that employed by more recent experimental

⁴ Responses were not coded by anyone except Naess and his research assistants.

philosophers.⁵ Instead of testing specific narrow examples or constraining the possible forms that the concept of truth might take in advance, various conceptions of truth were allowed to emerge organically from the interviews.⁶

Space and time preclude a full discussion of the results of Naess' study, but there are some interesting results that deserve a brief re-statement—and suggest lines for further experimental research in this area.⁷ Naess found that:

(1) The wide range of opinions expressed do not support the claim that there is a single explicit statement that captures “a criterion of truth,” “meaning of the word true,” or “nature of truth, etc” for the non-philosopher. (Naess 1938, 71)

(2) There is no specific folk-theory of truth which distinguishes non-philosophers from philosophers. Further every major type of theory proposed in the philosophical literature (as of 1938) was expressed by some of the non-philosophers surveyed. (Naess 1938, 159-160)

(3) There is some meaningful correlation between age and educational level and the frequency of certain views on truth (i.e. treating truth as involving a relation of “agreement” becomes more common with age and educational attainment.) (Naess 1938, 87-90) But there is little evidence that an individual's concept of truth will change with age or education. However the arguments used to support the view may change. (Naess 1938, 160)

(4) Absolutist views on truth become less common with increasing education (Naess 1938, 168). Further, persons advancing absolutist theories also tended to conceive of truth in ethical terms (Naess 1938, 160).

⁵ There are, of course, a number of conceptions of experimental philosophy currently on offer. Our point here is that Naess' model differs in important respects from the narrower model that is commonly employed in recent work following from the work by Joshua Knobe (2003).

⁶ For discussion of the worry that contemporary experimental philosophy may not actually be tracking the ordinary folk-concepts see the discussion in Alexander and Weinberg, 2007, pp. 68ff.

⁷ Opportunities to conduct longitudinal and cross-cultural comparisons also exist: Naess' cohort was about 500 Norwegian non-philosophers and the study is over 70 years old.

Although Naess focuses on the concept of truth in the study under consideration here, he thought that the approach he developed had the promise of being applied to a wide range of philosophical notions.

The question arises how far speculations other than those centering around the essence of 'truth' can be investigated on the same lines as those adopted in this paper. No problem of speculative philosophy seems to be as easily dealt with statistically as the truth-problem... There are scarcely any of the traditional philosophical problems which are not suitable for this [questionnaire and free-response] procedure. (Naess 1938, 161-162)

Further Naess worries that more narrow experiment centered approaches may tend to favor "hasty and 'profound' conclusions if no carefully elaborated statistical material is already available." (Naess 1938, 162).

Naess's work on the folk-theory of truth provides a valuable historical touchstone against which to compare more recent attempts at experimental philosophy, as well as raising some interesting points about methodology. However our main focus in this paper is on whether Naess's results can help clarify Tarski's notion of material adequacy. We return to that question in the final section.

Do Alethic Questions have X-Phi answers?

Tarski's semantic theory of truth can only be said to describe the logical geography of the ordinary concept of truth to the extent that it is materially adequate. And any claim one might make for its applicability outside of narrow well defined formalized languages depends upon its claim to be materially adequate. Tarski provided us with two possible models for determining whether the theory is adequate from a material standpoint. The first was whether it was compatible with Aristotle's dictum, which according to Tarski's individual intuitions about truth and intuitions about a minimal consensus among philosophers was a fair statement of the nature

of the ordinary concept of truth. The second proposed criterion was to appeal to Naess' empirical work.

If material adequacy really requires agreement with the "ordinary concept," then it seems certain that there is a fact of the matter about what the ordinary concept of truth looks like. So, ought we allow Naess's results to trump philosophers' intuitions—should intuition populism trump intuition solipsism or elitism?

Naess' results fail to settle the question of what *the* ordinary concept of truth could be. Indeed, Naess' results show that there is no single folk-concept of truth against which to test Tarski's semantic theory of truth for material adequacy. The "folk" of Naess' study seem to hold every view ever imagined by philosophers. But at the same time they all share a deeper characteristic; all are attempts to express the nature of truth. One response to these results would be to say that every philosophical theory is a refined version of an unstated or un-stateable folk-theory about truth.⁸ But, this leaves open the matter of what one should say about material adequacy. Here are some possibilities:

1) We might advocate an approach that treats each putative folk-theory as expressing the dominant member of a cluster of different possible thin claims about truth. On this model, the folk theory of truth might best be understood as a cluster of platitudes with the particular conception the respondent offers functioning as the dominant or central platitude. Thus material adequacy is the satisfaction of some or all of the platitudes. Such an interpretation comports well with e.g. Crispin Wright's minimalism (1993), or Mike Lynch's Alethic Functionalism (e.g. Lynch 1998, 2005).

2) Alternatively, Naess' results may suggest that there is no substantive answer to the question 'what is truth?' or that the answer is so thin that it resists a clear statement. The material adequacy requirement would not make more than grammatical demands if there is no ordinary concept of truth. If so, then the deflationists (Field 1970, Horwich 1990), the redundancy theorists (Ramsey 1927, Quine 1935, 1990), and perhaps even the

⁸ cf. (Naess 1938, 161) on the distinction between *primitive* and *elaborated* theories.

primitivists (Davidson 1999, Hornsby 1997) could all lay presumptive claim to Tarski's mantle.

3) Or, as Naess actually suggests, we might reject the special philosophical status of theories about truth altogether (Naess 1938, 175ff). Interesting truths, for Naess, are all truths of particular sciences. And so, a full account of 'truth' as it is ordinarily used would be an account which generalized over uses of 'true' in these divergent scientific discourses. Material adequacy would be a kind of compatibility with science.

4) Of course the other traditional substantive theories of truth would also still be live options.

The empirical results do not settle questions over the deep nature of truth. The results do describe how non-philosophers conceive of truth, but those conceptions are widely divergent. What does seem to follow is that the material adequacy requirement can either be interpreted in a narrow or broad manner. If we understand material adequacy in the narrow sense, such that the semantic definition must agree with a single narrow ordinary notion of truth, then it seems pretty clear that Tarski's account will not count as materially adequate; there is no single ordinary notion. If we interpret the material adequacy condition more broadly, then it demands far less of Tarski's definition. How much less is unclear.

A minimal but definitive account of material adequacy is needed; however it is hard to see how it could move beyond consistency with platitudes like Aristotle's dictum, or the ability to entail T-sentences (*assuming* that there actually is a general folk-theoretical acceptance of T-sentences). This suggests that Tarski's original intuitions about the ordinary concept of truth were close enough to provide something approximating a minimal standard for material adequacy. What this also suggests is that neither philosophers' intuition nor a Naess style empirical description of the views expressed by non-philosophers can make the material adequacy standard more precise.

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