

# Hartry Field's Truth Characterization

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Hartry Field, in his famous 1972 paper, criticizes Alfred Tarski's work on truth on three important points. He (i) suggests using sentence tokens instead of sentence types as the primary truth bearers, (ii) thinks the need to change the truth theory for every change in vocabulary is undesirable, and (iii) claims that Tarski merely provides an elimination of semantic terms and not a proper reduction. In this paper I will (a) analyze Field's attacks against Tarski's work, (b) consider the arguments presented by several objectors, and (c) determine the strengths and weaknesses of the arguments on both sides.

## 1. THE REDUCTION OF TRUTH

The distinction Field makes between sentence types and sentence tokens is easy to understand in light of his full project. He has two separate motivations for preferring sentences tokens. The first is that since sentence types in which all of the same words appear may have different meanings, we need a way to contextually disambiguate our sentences. Sentence tokens have all of their context dependent elements fixed on the occasion of utterance. Because the truth of a sentence depends on its meaning, and the meaning is not fixed for sentence types, but is for sentence tokens, we should consider sentence tokens as the primary bearers of truth.

Tarski holds that "the sense of every expression is uniquely determined by its form" [7, p.166], and he is justified in this claim because he is referring to formalized languages useful for "studying deductive sciences formalized on the basis of such languages" [7, p.166]. Tarski also believes that the results gained from his work in formalized languages can shed some light on colloquial languages, giving us a "fragmentary definition of truth which embraces a wider or narrower category of sentences" [7, p.165 ft. 8]. Field correctly points out that if we extend Tarski's work on truth to colloquial languages, we cannot depend on the form of the sentence to uniquely determine its meaning because colloquial languages include context sensitive elements (indexicals and homonyms). Sentence tokens, i.e. particular utterances and writings of a sentence, avoid this ambiguity of meaning.

By using token utterances Field disambiguates both indexicals and homonyms without adding the complex rules necessary for disambiguating context sensitive elements using sentence types. When a person S says, "I am cold" or "That is the cafeteria" at time T, it is always clear that 'I' refers to S and 'that' refers to what S is

pointing to at time T. And when S says, “Suzy met with the manager of the bank,” it is clear that this token of ‘bank’ refers to a financial institution and not a river’s edge.

Field’s interest in a physicalistic reduction of semantic notions constitutes his second motivation for using sentence tokens as the primary truth bearers. He believes that the concept of *true sentence* picks out, is a part of, or is related to semantic concepts (or a set of semantic concepts) that can and should be reduced to physical concepts (more below). Because sentence tokens are actual physical events and actual physical events are already acceptable to the physicalist, concepts involving them are either already physical concepts or are more clearly reducible to physical concepts than ones involving abstract entities. And if truth is a physical property, then it makes sense to look for it in physical events. Utterances, but not sentence types, are physical events, so a search for truth should look at utterances and other sorts of sentence tokens.

Tarski’s definition of truth is language-relative, and Field’s second major objection addresses this point. The language relativization objection reveals two important aspects of Tarski’s theory of truth. First it shows that he was looking for an account of ‘true sentence of L’ and not looking for an account of ‘truth’ or even ‘true sentence’. This will lead to a difference in the type of reduction sought by Tarski and Field (see below). The second result is that in Tarski’s theory the vocabulary of the language must remain constant. If a word is added to the language, then a new axiom must be added to the truth theory for that language. It is not that Tarski thought our concept of truth needed to change when a new word was added to the language, but since a new word implies an infinite number of new T-sentences (as required by adding a new axiom to the theory), it would require a reformulation of the truth theory for that language.

It is this second result of truth-relativity that I will concentrate on here. Field feels that if a theory of truth were really an explication of our actual concept of ‘truth’, then not only would it not need to change for new words in the language, but it would be usable across languages. Tarski’s formulation has neither of these two qualities due to the list-like reduction Tarski offers for primitive denotation. What Tarski had does is to give an account of truth in terms of *satisfaction*, and then give an account of *satisfaction* in terms of *refers* (R), *applies* (A), and *fulfills* (F). Stopping there we have Field’s T1, but if we continue to give lists of all the terms in the language that satisfy R, A, and F, we will have completed Tarski’s project, which Field calls T2. Field leaves his truth characterization in terms of the three semantic terms (R, A, F) because this gives him flexibility of vocabulary. He need not change the truth theory when new words are added, only when new semantic categories are added. As a result T1 is applicable to any object language with the same semantic categories. Field therefore offers a truth theory (or ‘truth characterization’ to use his term) that is not language-relative, and he achieves this by not following Tarski in the eliminating of the basic semantic notions via lists of terms that satisfy them.

The primary objective of Field’s 1972 paper is to show that what Tarski offers

is an elimination of the semantic notions from a theory of truth, and not a proper reduction. According to Field, Tarski attempts to make ‘is true’ acceptable for use in the sciences through a physicalistically acceptable reduction of the terms. And while he succeeds in doing so, Field objects that he does not give a reduction of the right sort. Tarski gives a truth theory that included no semantic concepts and gives coextensive lists of all sentences to which the predicate ‘is true’ applies in a given language. As Field points out [3, p.351], this is exactly what is needed for scientists to use model theory, and is a significant contribution to this end, but it is not a physicalistic reduction (i.e. not a reduction to physical concepts). Field gives two examples (valence and witchcraft) to show what a reduction of Tarski’s style lacks.

Field’s example of reducing valence is very illuminating for his overall project. It makes clear the distinction between elimination and reduction in Field’s sense. If we gave a list-like definition of valence that listed every element together with its valence, and included rules by which the valence of compounds can be determined by their constituent elements, we would have a definition that allowed us to eliminate talk of valence from our talk of chemicals. This definition would not, however, give us any insight into the nature of valence, i.e., the physical properties that make an element’s valence what it is. The definition, in failing to illuminate the concept of valence, would not add to our understanding of the world. Furthermore, insofar as it is not a reduction to physical concepts, it is not the kind of reduction the physicalist is looking for anyway. A real reduction of valence would demonstrate the physical properties of elements and how those properties make them bond in the proportions that they do.

Applying this example to ‘truth’, Field accuses Tarski of only providing the eliminative type of reduction. It succeeds in giving us a way of talking about truth in ways that avoid any semantic terms, but it does not illuminate the *concept* of truth. And insofar as it fails to illuminate the concept of truth, it fails to be a reduction *of the proper sort*. Specifically, it fails to provide a physicalistic reduction of truth in the same way that the list of elements and their valences fails to be a physicalistic reduction of valence. The witchcraft example really solidifies Field’s point here. It is possible to give an eliminative reduction of spell casting by listing all witch/victim pairs, and in doing so would make talk of witchcraft safe for science. But certainly this is not a reduction of witchcraft to physical concepts. It would not better our understanding of spell casting, and more importantly it would not be doing anything interesting for philosophy or science. Therefore, if this sort of reduction is all Tarski has done for ‘truth’, then it too is not interesting for philosophy or science.

While Field does not give an account of how to reduce the concept of truth to physical concepts, he does show that this is the sort of thing physicalists should be looking for in a reduction of truth. He leaves his truth characterization in terms of the three semantic notions *refers*, *applies*, and *fulfills*, and points to these as needing a physicalist reduction. The type of reduction he is looking for would require a *property* ‘truth’ that all and only true token sentences shared, or a reduction of primitive denotation to only physical concepts. In the next section I will evaluate arguments against Field’s paper, and determine whether or not they are fatal to his project.

## 2. OBJECTIONS TO FIELD'S TRUTH CHARACTERIZATION

One of Field's two reasons for wanting to consider sentence tokens as truth-bearers is his conviction that it is the easiest way to disambiguate the language. But disambiguating sentence types is not as difficult of a project as Field seemed to think it was. As Soames [6, p.426] points out, Field asks, "In virtue of what are certain sounds utterances which are true in L?" but could (and according to Soames should) have been asking, "In virtue of what are certain sounds utterances in L of its sentences?" and "In virtue of what are sentences of L true (in L)?" This is because words are to be individuated by their meanings. The disambiguation of homonymous terms like 'bank' can be accomplished by treated them as different words with the same morphology. On this account there is no ambiguity of meaning between 'bank1' (financial institution) and 'bank2' (the side of a river), but only a difficulty in identifying of which type a particular token belongs.

Soames has another objection to Field's use of sentence tokens; he believes that Field has other semantic notions (the logical constants) remaining to be reduced. The need for a reduction of logical constants is supposed to raise a difficulty for Field because it seems impossible to give a convincing story of how this is to be done. Field, in wanting to maintain generality, loses the ability to stipulate the meanings of the logical connectives. He must therefore, Soames claims, treat them as semantic notions in need of separate reductions. The logical constants, however, are not semantic notions, and furthermore do not add anything to the language that is physicalistically worrisome. If the two physicalistically acceptable sentences "The cat is on the mat" and "The pen is full of ink" are joined via the logical connective 'and', nothing more has been added that is important to the physicalist. The new sentence "The cat is on the mat and the pen is full of ink" needs nothing new on the lines of reduction. Soames' confusion on this point deflates this second objection. So, even if Field's overall project fails, it does not do so at the hands of Soames.

Clear objections to Field's problem with the need to change the theory of truth for every addition of a word to the vocabulary of the language are difficult to tease out of the literature. Field's critique that Tarski has made truth relative to language has not gone unnoticed [4, p.135] [5, p.20], but it has not received a great deal of direct attention. Instead, the strategy is to undermine this objection by arguing against his reduction project. This strategy is used because if it can be shown that there is no property 'truth' to be found, then a theory of truth *should* explicate 'true sentence of L' instead of the more general concept. Keeping the vocabulary constant is necessary for Tarski's project because it is necessary for establishing material adequacy. Tarski himself did not have to worry about this because he was concerned with formalized languages, and it is only when trying to apply his conclusions to natural languages does a problem arise. McDowell [4, p.140] accuses Field of under-appreciating the importance of material adequacy, and putting too much emphasis on formal correctness. McDowell then argues that meeting the criterion of material adequacy will ensure that our truth theory fixes the proper extension of the predicate 'is true.' What happens after that is closely related to what is said about the reduction of truth and other

semantic notions to physical notions. Field argues [3, p.362] that material adequacy (extensional equivalence) is not a sufficient standard of reduction, and this is why he avoids list-like eliminations of the semantic terms from his truth characterization. McDowell's point, however, is that there is no reduction to be had. That is, instead of reducing semantic notions to physical notions, we ought to see how the T-sentences of a truth theory relate to the physical world in some other way. This leads us into a discussion of Field's reductionist project to which I now turn.

The majority of objections to Field's project are, as one would expect, against his primary point: Tarski did not provide a physicalistic reduction of truth. Tarski reduced 'truth' to *satisfaction*, and *satisfaction* into *refers*, *applies*, and *fulfills*. Field claims that we should investigate what kind of physical relationship satisfaction is [1, p.108], or determine what property all true utterances share. But since Field abandons material adequacy, he is left with only a formal, syntactically unified structure to deal with. Cummins points out that "it may not be possible to fix satisfaction conditions for expressions in a natural language by appeal to formal properties only" [1, p.110], and Sher comments that the assumption that syntactic unity implies semantic unity is unfounded [5, p.31]. It is true that if Field could establish a physical relationship that all uses of *applies* (for instance) share, then we could appeal to this relation and dispense with the case-by-case eliminations. Cummins suggests that the lack of unity could be a signal that each primitive predicate is satisfied differently. By denying that truth can be reduced to a single substantive principle, these objections cause problems for giving a physicalistically reductive account. If different uses of semantic primitives have no single important physical relation, then either Field would have to look for more than one property of truth, or he would have to give up the search for a physical property.

McDowell further argues that Field's method of reconciling the network of semantic notions with our physical notions is wrongheaded. There are two possible levels at which a truth theory may link up to the physical world: (i) at the level of its axioms, or (ii) at the level of the T-sentences. Field was trying to work at the axiomatic level, reducing the semantic notions themselves to physical notions. Operating on a more abstract level, McDowell suggests connecting the T-sentences themselves to the physical world. He suggests we do this by incorporating them into a theory about the behavior of the members of a linguistic community. In this way we are not reducing anything, but we are showing how the interrelated network of semantic notions connects to the behavior of individuals, or to the physical world. This is not satisfying to the physicalist, and is an admission of defeat with regards to the physicalists project, but McDowell thinks that it is the best we can do. If it can be shown that Field's conception of reduction is impossible to carry out, then McDowell's suggestion may be worth taking up, but outside of determining whether Field's project is indeed possible, as I shall do in the final section, this issue is beyond the scope of this paper.

### 3. WEIGHING THE ARGUMENTS

In this section I will examine the forcefulness of the various objections made to Field's project, and advance some other objections that were not in the literature covered, but that are relevant to each of Field's three important points. The first is the difference between sentence types and sentence tokens. Field wants to count token utterances as the bearers of truth because (i) they are physical events and (ii) they disambiguate sentences in a straightforward manner. Soames rejects Field's use of utterances [6, p.427] and suggests that by individuating words by their meanings, we can disambiguate homonyms and therefore consider sentence types as bearers of truth (specifically, the proposition that a type of sentence expresses).

Donald Davidson's formulation provides another alternative. Davidson proposes disambiguating sentences before their truth status is determined [2, p.74] by making sentences relative to speaker and time through a modified T-schema of the form:

$X$  understood as if spoken by a person  $S$  at time  $T$  is true iff  $p$

where  $X$  is the quote name of an object language sentence in the meta-language and  $p$  is the meta-linguistic translation of that sentence. In doing so, we can contextually disambiguate sentence types without seriously altering our understanding of what words are (or what gives them their meaning) as Soames suggests. This means that we switch the project from needing an account of 'truth' to needing an account of 'true sentence', which is closer to what Tarski provided. Furthermore, Soames' motivation for individuating words by their meaning is not altogether without difficulty. Doing so entails individuating sentences by their meanings and therefore to talk about propositions. Talk of propositions is exactly what Soames intends because he believes that propositions are the primary truth bearers. There are independent motivations for being suspicious of propositions, however, and insofar as taking up Davidson's suggestion will allow us to achieve what we want without having to rely on propositions, I think we are justified in abandoning Soames' suggestion in favor of Davidson's more plausible one.

Tarski's theory, in its requirement for material adequacy, made truth language-relative and required a new truth theory for every addition to the vocabulary of the language. Because he is looking for a definition of truth for formalized languages this limitation is not an undesirable one. If we expand Tarski's project to illuminating something about our natural concept of truth, then our satisfaction with his results might wane. However, this is certainly no reflection of an inadequacy on Tarski's part because he didn't truly aim at illuminating our natural concept of truth. The natural concept of truth is not only incoherent, but contains several elements that preclude a full formalization. By limiting his scope to formalized languages useful for the deductive sciences, Tarski was able to give an adequate account of exactly what was needed: 'true sentence of  $L$ '. However, if there were a physical property that explained what made certain utterances true, as Field thinks there is, then truth would not be language-relative and new words could be analyzed by determining if their utterance shared the truth-making property. But even though a *definition* of

truth is language-specific, it does not mean that our *concept* must be. Certainly it is this fact that motivated Field to undergo the project that he did.

While Field's attempts at uncovering a unified theory of truth are considered to have failed, his charge that Tarski provides merely an elimination, and not a proper reduction of truth, is quite incisive. Field's witchcraft example shows exactly what is worrisome about Tarski's results. Even though truth is safe for scientists wanting to use model theory, and even though his definition is free from employing any semantic terms, it does not reduce truth in the way physicalists want. It can be claimed that while Tarski made talk about truth safe for science, he failed to make the concept acceptable. Cummins points out that "there is a distinction to be drawn between making satisfaction acceptable to physicalism, and making 'satisfies' acceptable to physicalism" [1, p.107]. He thinks that the second is important, and is actually what is needed from an account of satisfaction. What this comes to is that Tarski did succeed in showing what he wanted to show, but did not succeed in what Field wanted to see. So Field is actually engaging in a vastly different project than Tarski, a project of trying to reduce the concept of truth to physical concepts.

#### 4. CONCLUSIONS

The task of reducing the concept of truth to physical concepts, though desirable if possible, seems not to be possible. In fact, we have no reason to believe that it should be possible, even if we are sympathetic to the physicalists' overall project. The reason for this is that, if there were a predicate 'is true' that expressed our concept of truth and picked out a property 'truth', then because the concept of truth is incoherent (due to liar sentences) the property would also be incoherent. Since properties cannot be incoherent, the property of truth cannot be incoherent. Therefore there must not be a property of truth. This undermines Field's physicalist project, but not Tarski's project of articulating the concept of 'true sentence of L'. For the restricted predicate does not give rise to paradox, and even if we think that it expresses a concept that is not essentially restricted in the sense that the predicate is, it is not impossible for concepts to be incoherent as it is for properties.

Hartry Field's analysis of Tarski's definition of 'truth' for formalized languages clearly demonstrates that Tarski failed to give a physicalistic reduction of 'truth'. Field himself does not provide such a reduction, but does show what such a reduction must look like. The result of his work on truth is that, knowing what it would mean for there to be a property of truth, there must not be one. Also, knowing what we would gain from finding such a property, it does not seem like a dramatic loss that there is no such property.

## References

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