Types and Tokens

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Key points:

- Distinguishing Types and Tokens;
- Clarifying the nature of types compared to tokens;
- Comparing the Type-Token distinction to other related distinctions in the philosophical literature;
- The relationship between types and tokens.

Introduction

The type-token distinction, at least using these terms, originates in the work of CS Peirce (1931-58, sec. 4.537), and is best brought out by example. Consider: Shakespeare, in *As You Like It*, during the monologue more famous for its line about the world, the stage, and mere players, writes the line:

1. Sans teeth, sans eyes, sans taste, sans everything

How many words does this line contain? Peirce highlighted that we have two answers available to us. Either there are eight words, when we count the particular *tokens*, or five words when we count the word *types*. This is a metaphysical or ontology distinction because it highlights that the different answers to the question arise out of our ability to count different entities. When we count eight words, we count the particular entities, while when we count five words we count the general sorts of entities, irrespective of how often that general sort of thing appears.

The type-token has been put to wide philosophical and linguistic use. This includes, but is not limited to (a full list would not be possible in a short entry like this) discussions about the nature of linguistic types (such as nouns, verbs, phonemes, etc.), the distinction between speaker and sentence meaning (see Grice 1969), and prominent work in the philosophy of mind distinguishing between versions of the identity theory of mind. The aim of this entry is to further elaborate on the nature of the type-token distinction, significantly through contrasting and comparing it to certain other distinctions in the philosophical literature, before discussing the relationship between tokens and types. I close by commenting on the distinction between realism about types and nominalism about types.

Why Types and Tokens?

Before discussing what types might be and what properties they might have, it is perhaps useful to first briefly remark on why we might invoke the distinction between types and tokens in the first place. A first reason to invoke this distinction is because it matches or aligns with many of the ordinary and theoretical

ways that we speak about the world. Keeping again to examples concerning linguistics, we make many claims that appear, at least initially (see below) to be about types and not about tokens. For example, if we say that 'The word 'table' contains five letters', this is generally interpreted as being a claim about the type 'table' and not the particular token. This is because even though it may be true that many tokens of this type do contain five letters, it is plausible that not all tokens do. This is because of phenomena such as misspelling. The token 'tablle' may still be recognised by readers to be a token of the type 'table' even though it does not contain five letters. This suggests that the sentence above is about the type, not the token. Or, take the case of the tokens 'color' and 'colour'. Most speakers of English would recognise that these are the same word. And the same for the tokens 'kick [noun]' and 'kick [verb]. Invoking the type-token allows us to capture the intuition that these are the same word, despite their differences. They are tokens of the same type.

Another motivation is that there are other intuitively true claims that cannot be true of tokens as they refer to properties that can only be instantiated by types. For example, the sentence 'Hippos are between 10.8 and 16.5 feet in length' is a true claim, but it cannot be about any particular hippo as no particular animal could be between 10.8 and 16.5 feet in length. The claim is true of the type (or species; or kind – see discussion below), and hence types must exist.

Universal vs Particular

Those examples are also useful to highlight a first distinction that is related to that between types and tokens. This is the distinction between particular entities and universal entities. Universal entities are those things that have (or at least can have) instances, while particular entities cannot. It is commonly held that types are universal entities while tokens are particular entities in this sense. Types have tokens as their instances, and as Wetzel writes, 'having instances means that types are universals' (2009: 124).

Abstract vs Concrete

Another commonly held idea is that types are abstract while tokens are concrete. This is because types, like other abstract entities, seem to lack a unique spatio-temporal location. For example, the word-type 'sans' is (arguably, but not uncontroversially) is not *at* any particular spatio-temporal location. This is unlike the tokens of this type. The tokens of the type 'sans' are located in particular places. The particular tokens are located in (1) above, for instance. This suggests that tokens are themselves concrete. A token must be located at a particular place and time, while a type has no spatio-temporal location at all.

Created vs Non-Created

If we accept that types are non-spatio-temporally located, like abstract objects, this raises the question of whether types have another related property that abstract entities are commonly taken to have: that of being non-created (or even being eternal). The reason for this connection is easy to see. If abstract entities are those things that exist but are not spatio-temporally located, then it cannot be the case that they were caused

to come into existence since causation can only occur between spatio-temporally located entities. There is no way for abstract objects to be brought into existence, and hence they must always have existed. This, again, is unlike tokens. While types, as abstract entities, might be non-created, particular tokens are created and are caused to come into existence at some particular time.

In the case of linguistic types and tokens, and perhaps in particular in the case of words, this characteristic can cause some issues. For many, the idea that words qua types are eternal goes against a strong intuition that words (and language more broadly) are a creation of humans. Words intuitively do not exist prior to human activities – they are created not 'discovered' (perhaps unlike natural kinds – see below).

This issue is a matter of ongoing debate within the literature in the metaphysics of words, with some holding that words must be eternal and hence non-created (e.g., Wetzel 2009; Katz 1981), while others suggest that we should accept words as created abstract objects. One approach to explain how words might be created abstract objects is to hold that words, and other parts of language, are 'artifacts' (see Irmak 2019; Preston 2022. This approach has also been taken in relation to artworks; see, inter alia, Walters 2013). Words, and language, are things that are created intentionally by humans to fulfil a certain purpose or aim. If this view is correct, words (and perhaps other linguistic entities) could still be taken to be types that have tokens, but would be created abstract entities.

(Natural) Kinds

Another relevant notion to (potentially) distinguish types from is kinds, and the subset of kinds that has garnered particular sustained attention, natural kinds. The precise nature of natural kinds is heavily disputed (see Bird and Tobin 2022), but one common idea is that natural kinds reflect the structure of the world independent of any human interests, actions, or conceptualisation. As such, typical examples of natural kinds are normally drawn from sciences. Whether linguistic types are natural kinds is a difficult question, and may depend on whether we take types to be artifacts which are standardly characterised as dependent on human interests in some way (a much discussed sort of artifact are works of art for instance).

Another possible distinction between (natural) kinds and their instances and types and their tokens could be that types have the properties of their tokens. This could be, for example, because types inherit their properties from their tokens. The word-type 'table' has the properties it has because the tokens of this type have those properties. In contrast, we might hold that kinds and their instances may not have the same properties. Continuing an example from above, a particular instance of the kind (or species) hippo might the property of being between 14 feet in length, but the kind hippo does not have this property. Tokens (of types) might therefore be uniform, while instances (of kinds) are not.

Without commenting directly on how plausible this way of distinguishing types and tokens from kinds and instances is, it is worth noting that in the literature on linguistic types, especially the literature on word-types, this approach will not work. This is because the variability of word-tokens is a major data point that theories aim to accommodate, and any type-token view of words that requires all tokens of the same type

to be uniform could not accommodate even the simplest sorts of variation that we intuitively would accept as being possible across tokens of the same word (e.g., 'color' and 'colour' are intuitively the same word, but are clearly not uniform in their orthographic properties). This feature of linguistic types could be used to argue either that we should move to using the notion kind (and instance) over type (and token), or to argue that the type-token distinction is more similar to, or even the same as, the kind-instance distinction.

The Relation Between Types and Tokens

Let us briefly summarise where we have got to. Types are (potentially) universal entities. They are abstract entities, and hence non-spatio-temporally located, and may or may not be created. Types may or may not be distinct from kinds, perhaps due to types being artifacts, though at least sociologically within philosophy, the term 'kind' is more commonly used when discussing 'naturally' occurring entities. Tokens, in contrast, are particular, concrete, and created.

The other major question that immediately arises is the relationship between types and tokens. While the answer to this may vary depending on the precise nature of types, the standard answer is that types and tokens stand in an instantiation relation such that tokens are instances of types (or conversely, that types are instanced by their tokens).

One reason to posit an instantiation relation between types and tokens is to help to provide a solution to a puzzle about whether there is any property that all tokens of a particular type share in virtue of being tokens of that type. For example, take the tokens 'color' and 'colour' again. I take it that intuitively most (if not all) English speakers will accept that these are tokens of the same type despite the difference in spelling. Tokens of the same type may also vary semantically, syntactically and in other ways. This has led some prominent defenders of word-types to argue that there is no property that all tokens of a type share except that they share the property of 'being an instance of type x' (Wetzel 2009). Instantiation, in such ontologies, becomes an important ontological posit, securing why 'color' and 'colour' can be said to be tokens of the same type.

Another idea is to hold that instead of instantiation, tokens *represent* their types. Szabo (1999), for instance, argues that just as a map represents various features of the world it is intended to describe, a word token represents the word type that it is a token of. One benefit of this view, according to Szabo, is that it solves an objection facing those that posit an instantiation relation between types and tokens concerning how it is that our empirical knowledge of tokens can help us know about the nature of the abstract types that those tokens are instances of. Instead, if we posit a representation relation, knowing the properties of the tokens can allow us to infer the properties of the type that the token represents, just as knowing the properties of a map can allow us to gain knowledge about the geographical features that the map represents.

Further Issues and Related Debates

This entry has sought to merely sketch some of the basic terminology and distinctions relevant to understanding the nature of types and tokens, and the relationship between types and tokens. Various

further issues have not been covered here. For example, in this entry we have assumed that types are real entities that exist in addition to the existence of tokens. This is denied by some. Nominalists, for example, may allow 'type-talk' but hold that such talk does not require to posit that types are themselves further entities. Types, under this conception, may be (suitably nominalistically understood) collections of tokens (see Miller 2022; see also the entry on 'Linguistic Kinds' in this encyclopaedia). Kaplan (1990, 2011) also is notable for rejecting the traditional 'type-token' distinction, in favour of his 'stage-continuant' model. For Kaplan, 'utterances and inscriptions are stages of words, which are the continuants made up of these interpersonal stages along with some more mysterious intrapersonal stages' (1990: 98).

One potential motivation for rejecting the type-token distinction as a real distinction in the world, sometimes cited by nominalist and certainly cited by Kaplan, is that the alternatives are more 'naturalistic' in that they do not require the positing of abstract objects. For the nominalist and Kaplan, words are concrete objects, and are cultural objects that can be empirically studied by linguistics, as opposed to (it is claimed) the type-token model which may rely more on intuitions to guide us about the nature of words qua abstract types. See Schindler, Drożdżowicz and Brøcker (2020) for a broader discussion of the role of intuitions in linguistics.

I have also not commented on the nature of tokens extensively. The philosophical literature has been mostly focused on questions concerning the nature of (linguistic) types, not tokens. A plausible, but not universally accepted idea, is that in the case of linguistic tokens, there can be tokens both internally and externally to humans. That is, the ink patterns on this page are word-tokens, but so are the words that (in some sense) compose my internal monologue. For some discussion of the nature of linguistic tokens, including whether we should hold there are any word-tokens, see Collins 2023, Miller 2021, and Rey 2006, 2008.

While the precise nature, and even the existence, or types is disputed, it is generally agreed that type-talk – that is, talk that initially appears to be about types – is prevalent in linguistics and in the ways that we ordinarily talk about language. As noted above, when we say things like 'The word 'table' contains five letters', we do not mean this to be a claim about just the particular token 'table' that appears in this sentence. It is clear that this is intended to be a more general claim that is plausibly true of many different tokens which exist in various places and times. The question is therefore what, if anything, such talk commits us to within our ontology of language, and the nature of any such existents.

Conclusion

The primary aim of this entry has been to introduce the type-token distinction to readers previously unfamiliar with it. We have also compared the type-token distinction to a range of other related distinctions prominent in the philosophical literature, and discussed the relationship between types and tokens.

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