ARGUMENTS AGAINST QUOTATION-MARK-NAMES

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Scope

Hugly and Sayward (1981) have shown that Quine's device of quasiquotation is not consistent. They argue that the inconsistency comes about because expressions and tokens are not carefully distinguished. I agree with Hugly and Sayward's assertions that logicians and linguists are often careless about the distinction. For one thing, insufficient attention has been paid to identifying semantics as an empirical science; for another the distinction between natural and artifactual kinds has not been made.

Simons (1982) has suggested that if Hugly and Sayward (1981) are right in noting muddled thinking about the token/type distinction even amongst the most august authorities, this distinction cannot be crucial to the practice of logic and linguistics. However, if the attention given to the liar paradox and Tarski's account of it can be taken as representative, then we would all agree that if Tarski's informal presentation of the paradox were a muddle (with respect to the token/type distinction), then it would become relevant to the practice of logic (if not its foundations) to clear up this muddle. In this paper therefore I want to argue against quotation mark names, structural descriptive names and autonomy, and for a system of naming based on coordinates indicating the context of occurrence of what is named.

It is generally assumed that a sentence (or other linguistic entity) is a type and not a material object or a number of material objects. Whatever a type is exactly, it is an immaterial entity: sentences are imperceptible. I will explain below why I think this is a natural kind fallacy. In my opinion the starting point should be the observation that the meaning and truth value of sentences is context dependent. I have therefore chosen to call sentences what are usually called sentence-tokens. For empirical sets of sentence-tokens, I will be using conventions outlined below in order to specify the context via the coordinates of the original occurence of one token (or at least the coordinates of

a replica, in a replica context which is causally related to the original context). Sentences in this sense are artifacts like weights, mazurka's and electric kettles. An empirical set of sentence-tokens has a finite number of elements at any one time just as the empirical set of kettles has. However, using certain conventions, we can always add more elements. I will not enter into the question of how the meaning of an original sentence-token is to be understood. I will only discuss the conventions that might be used in saying something more about any given context-dependent sentence-token.

I am well aware that it is not easy to provide convincing support for a physical phenomenalistic theory of naming that accounts for replicahood. It is not therefore my intention to give arguments explaining the nominalist variant of the equivalence relation.([1]) However, this paper might be of some limited value in supporting methodological reasons against using quotation-mark-names or any other context-free convention of naming and in support of a coordinate system of naming.([2])

Introduction

Philosophy, theoretical linguistics and mathematical logic, need conventions to name linguistic entities. One common convention is the use of quotation marks, as in,

> 'p' is the sixteenth letter of the alphabet   (1)

Statement (1) will usually be considered to be a statement about a type, because letters are types. On this account the first term in (1) is

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([1]) A priori it seems implausible that the ontology of names is necessarily the same as the ontology of the entities named. For example, it is possible to envisage a research program in which a nominalist account is given of an object language (i.e. a nominalistic account of the names in the metalanguage) while the names used in the object language are given a non-nominalistic analysis. A similar comment can be made with respect to a possible difference between metalanguage and metametalanguage. See for a sympathetic discussion of nominalism in this context Simons (1982, 1983), Goldstein (1983) and references given there.

([2]) I do not use quotation marks in this paper except (i) in sentences (1), (5), (17), (26) and (34) where an example is needed to say something about the use quotation marks are put to by other writers, (ii) if they occur in quotations from other sources. The fact that I quote from another source is indicated by using italic print.

the name of a type. I would like to invite the reader at this point to forget about this and to consider (1) to be an empirical statement about physical objects. The sixteenth letter of the alphabet is an empirical set of written inscriptions and spoken p's. Rough estimates can be made of the number of elements of this set at any one time. It does not matter whether we decide to consider only the English language or any other delineation of context in which the sixteenth letter of the English alphabet may be used. How we structure the world depends on the context. In the context of using the keyboard of a typewriter it is irrelevant to distinguish between the P in the English alphabet, the P in the Spanish alphabet (in which it is not the sixteenth letter), or in the Cyrillic alphabet (where it is not even a P so to-say).(³) But of course the latter distinction is relevant in the context, for example, of transliterating CCCP into SSSR. In deciding which objects are elements of the empirical set of p's, we are dealing in the first place with recognizing similarities and relating new occurences in a metaphorical or analogical way to previous occurences which are familiar to us and eventually to a baptizing or stipulating event. Only after that comes the question whether all elements of the set have the same meaning. In an empirical study of language we start by identifying inscriptions or sounds depending on which are available. Whether one can make any sense of inscriptions or sounds depends on the circumstances. Children eventually make sense of the utterances they are exposed to. Deciphering the Cretean Linear A script is more difficult. We may indeed need universals to make sense of any of this, but here I will only talk about empirical sets of linguistic objects.

Another common convention is to place linguistic entities which are the subject of discussion on separate lines, to number these lines, and to use the numerals as names, as in

> the truth of (1) depends, amongst other things, on the meaning
> of the last word of (1)   (2)

(because, for example, (1) is not true for the Spanish alphabet). In colloquial language or in mathematical or physical text books, this convention rarely if ever leads to problems. In discussions of subjects

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(³) The pronunciation of the Spanish P is roughly equivalent to the English P; the Russian P is roughly equivalent in pronunciation to the English R.

where naming linguistic entities plays an important role, many other conventions have been proposed and used, such as using italics or structural descriptive names. ([4]) There is little consensus however about the advantages and disadvantages of different systems. Often it seems that writers introduce their own personal conventions. ([5]) As a result I have not been able to find any publication in which the choice of conventions for naming linguistic entities is the primary subject of discussion. ([6])

There would be no need to give the choice of conventions special attention, if the choice were completely arbitrary and the application of the convention was always straightforward. However, for quotation marks this is certainly not the case. I will give a few illustrations.

Firstly I would like to refer to Church (1956) who advocates autonomy. Only in cases in which there might otherwise be real doubt about the meaning, is there a need to employ quotation marks or other devices. An example of the latter might be found in Church's (1976)

([4]) See for an early discussion of alternatives for the use of quotation marks Haack (1974); she does not mention the possibility of using coordinate names. The discussion on alternatives for quotation marks is intertwined with the discussion on the function or meaning of quotation marks. They have been analysed in terms of naming a linguistic entity (Tarski, 1956; Quine, 1951; Belnap and Grover, 1973) or describing a linguistic entity (Geach, 1950), in terms of quoting, producing or reproducing an entity (Searle, 1969; Schlossberger, 1983), in terms of demonstrating or pointing to an entity (Davidson, 1979; Goldstein, 1984) and in other ways as well.

([5]) For example in discussing Tarski's account of the paradox of the liar, the following are sources which all use different conventions of naming: Quine (1953), Beth (1968, p. 485), Brander (1969), Fraenkel et al (1973, p. 10), Herzberger (1973), Mackie (1973). It goes too far and is not very interesting to analyse all these conventions in detail. What it does show I think, is that nobody bothers very much whether Tarski's convention T can be applied to tokens such as the only sentence uttered by John Doe on December 1st, 1970; whether the paradox relies on factual assumptions or not; or what precisely we choose to call sentences.

([6]) Disadvantages of certain conventions have been discussed and there are great controversies about the meaning of quotation marks (see note 2), but this is not the same as discussing criteria for the choice of a convention. Quotation marks have the *overwhelming practical convenience of visible reference* (Quine, 1960); they are a *paradigm of opacity* (Wallace, 1972), but this is counterbalanced by the overwhelming disadvantage that the quotation marks produce or point to a linguistic object which is completely barred from any concrete context of occurence, thus supporting the language myth (Harris, 1981).

article on the semantical antinomies of Russell and Tarski. He writes in note 17 of this article:

> *In this sentence, those who wish to be very accurate about use mention distinctions may enclose (...) in Frege's single quotation marks to show that they are mentioned rather than used. But observe that nothing else in the sentence is to be enclosed in single quotation marks......*
>
> *(Added in proof): The writer has just noticed that the use of quotation marks that is suggested in the first sentence of this footnote is itself inaccurate;......*

What then an accurate use of quotation marks is, is not explained. In my opinion it is not acceptable to leave it at this, particularly not in an article about semantical paradoxes. The pragmatic idea of a metalanguage is to convey information; sometimes a hint is enough. If I say

$$p \text{ is true iff } p \qquad (3)$$

in (3) the first p is the name of a sentence and
the second p the designation of that name   (4)

it is clear what I mean. But autonomy is only acceptable, if in principle it can be eliminated.

A second illustration is Tarski's presentation of the paradox of the liar (Tarski, 1956), which has been discussed in masses of articles and books over the past years. Articles however are still appearing in which the ambiguity of the types of names Tarski employs plays a crucial role in the discussions.[7]

Consider as a final illustration the problems that arise when expressing metalinguistic generalisations through quotation as in

$$\text{if } \phi \text{ is a sentence, so is } `\sim\phi` \qquad (5)$$

Quine (1951) has proposed his use of corners or quasi quotation marks. However, as Hugly and Sayward have recently shown (1981),

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[7] See Wachtel (1980) commenting on Hintikka (1976). See also Howson (1982) commenting on Hugly and Sayward (1980).

Quine's proposal does not lead to a consistent system of naming, owing to a lack of distinction between types and tokens. ([8])

I have chosen these three examples, because if authors like Tarski, Quine, and Church have difficulty in using consistent systems of naming linguistic entities, then it makes sense to investigate the reasons why. It is the purpose of this paper to pinpoint some of the difficulties and to propose a system of conventions for naming linguistic entities which overcomes them. ([9])

A coordinate system for naming linguistic entities

The basic demand underlying the system of naming here proposed, is that the name of any linguistic entity should relate the entity to the context of use of a linguistic individual. The term individual is used to characterise those spatio-temporal events or things which differ in some respect from every other spatio-temporal entity. An individual cannot have instances. Usually a linguistic individual is either a particular utterance (utterer, place, time specified) or a particular written expression (location specified).

There are no such things as context-free linguistic entities. The context may be incompletely known, or described, and therefore ambiguous; the context may be a very limited universe of discourse (as in a formal system); or it may lack any practical, sensible or whatever relevance – but there is always some sort of context. The name of any linguistic entity has to refer, by implication, to a particular spatio-temporal context. To point to such a spatio-temporal context we need a coordinate system. Let us for the moment restrict the universe of discourse to the text of this paper and let us agree that all linguistic individuals to be referred to will be placed on separate lines, which are numbered consecutively similar to the way mathema-

([8]) Hugly and Sayward's paper was criticised by Simons (1982) and this again lead to the present paper.

([9]) In this paper I will not question what precisely is the function of quotation marks when they are used, except for noting that I think the discussion on this issue is confused by the fallacy of believing that a sign always has one meaning and philosophers have to find that meaning (van Brakel, 1985).

tical equations are numbered in scientific texts.([10]) The first five of these numbered lines can be found above in the Introduction. If we want to be precise, we should not use quotation mark names at all, although this may lead to a more cumbersome form of presentation. For example, if we want to eliminate the quotation marks from (1), we could write:

$$p \qquad\qquad\qquad\qquad\qquad\qquad\qquad\qquad (6)$$

(6) is the sixteenth letter of the alphabet (7)

Note that, although the meaning or at least the truth conditions of (1) and (7) is the same, the context of (1) and (7) is different. If I had written (7) in the place of (1), I would have written nonsense.

Let us call (1), (2), (3),.....sentences. The convention is easily extended to naming words in sentences by giving them a sequence number in the sentence, similarly for letters in words. Words are separated by spaces, for example sentence (7) has eight words and we may say,

(7.8) means the English alphabet (8)

(9.8.3) is the sixteenth letter of the alphabet (9)

Note that letters include figures and other primary symbols of language and sentences may collapse into words and words into letters as in:

$$(6) = (6.1) = (6.1.1) \qquad\qquad\qquad\qquad\qquad (10)$$

The meaning of a name of a linguistic entity in general depends on the theory adhered to. The number of different categories of linguistic

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([10]) For practical reasons, the coordinate system introduced only covers linguistic expressions placed on separate lines. In principle, a more sophisticated coordinate system can be envisaged permitting reference to any linguistic part of this paper. For example, assume the present text is typed on sheets of paper, each of which contains 10^4 small squares (100×100). Each square contains exactly one letter, or similar symbol (counting a void as a symbol too). Numbering the sheets of paper, the convention could be such that, for example, (2,24,48-50) is the sequence of symbols to be found in squares 48 to 50 on line 24 of page 2. Once the convention is introduced all linguistic entities have well determined coordinates which function as the name. As a name is a linguistic entity its name will be a similar triple of coordinates. A similar, though even more complex, procedure can be designed to have a system of reference that assigns unique coordinates to any linguistic entity anywhere, anytime.

entities that have to be distinguished will depend on the particular problem at hand. Below I shall introduce six categories of names; increasing numbers of (sub) categories can be used as the need arises (following similar conventions to the ones outlined below). All names here defined are of empirical (finite sets of) objects, but similar conventions could be introduced for naming imperceptibilia.

Let us define that for all integers p, in the context of this paper

$$(p) \text{ is a sentence} \tag{11}$$

More particularly, the meaning of (11.1) is that (for all p)

$$(p) \text{ is the set of all copies of O(p) or T(p) in} \atop \text{copies of this paper} \tag{12}$$

where

> T(p) is the individual spatio-temporal sentence-token
> to be found on the copy of this paper the reader
> has in front of him on the line which is marked in   (13)
> the right-hand margin, using a token of the particular
> substitution of (12.1)

and

> O(p) is the master-token to be found in the master copy
> (of this paper) from which T(p) has been copied in one   (14)
> way or another

Note that all elements of (p) occur in the same context. New elements of (p) can always be added, by making more copies derived directly or indirectly from the master copy mentioned in (14). Normally, we assume that (for all p):

$$T(p) = O(p) \tag{15}$$

and that there is no doubt about the elements of (p) being empirically identical and occuring in the same context.([11]) Hence, the system of

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([11]) Communication would fail if it could not be normally assumed that all elements of (p) are identical and that the master against which dubious elements are checked is the copy the writer has submitted or is identical to the writer's original writing. All sorts of errors and frauds are possible. Copies of copies may not be as reliable as a copy of the master-copy. But when a problem or suspicion arises, it is just a matter of empirical

naming proposed here is based on a coordinate system which is used to point to tokens located at the place indicated.

We now come to the least interesting and most often discussed category of linguistic entities: the class of individuals that consist of the same linguistic symbols as a particular prototype:

> D(p) is the set of all sentence tokens that are   (16)
> equal in form to T(p); D(p) is a sentence design

for all p. Here it is assumed that operational criteria are available to assess the empirical relation of being equal in form and that a finite, unambiguous list of primitive symbols exists.([12])

Quotation mark names as used in the literature, usually name sentence designs. Hence we have for example:

> D(16.1.3) = 'p'   (17)

That is to say (17.1) and (17.3) are names of sets which have the same elements.

In general, all elements of D(p) do not have the same meaning and/or reference and/or truth value, because they may occur in all kinds of contexts. Therefore we define (for all p)

> R(p) is the set of tokens that have the same   (17)
> reference as the elements of (p)

> S(p) is the set of tokens that have the same   (18)
> sense as the elements of (p)

To appreciate the sense of this system of naming linguistic entities, it is not necessary to agree whether types or tokens come ontologically first, or what precisely the relation is between sense and reference. It is just a convention to distinguish different categories. If

investigation to find out which copies are not identical with what is the accepted master copy. This does not only apply to written texts but to all artifacts which are produced in large numbers of identical copies or samples; bank notes, stamps, cars of a particular brand and year, and so on. In all such cases a list of defining criteria or a prototype exists against which any individual can be checked.

([12]) Friedman (1975), amongst others, gives examples to show how difficult it is to identify similarity classes. For example, how do we account for different spellings, different hand writings and so on. In my classification of names, the emphasis is on a finite list of primary signs.

in a given context always R(p) = S(p), or if we are not ready to distinguish between sense and reference, we can define (for all p):

$$M(p) \text{ is the set of tokens that have the same} \qquad (20)$$
$$\text{meaning as elements of } (p)$$

This definition is useful, even if it is left completely open what precisely (20.1) and (20.9-11) mean.[13] For example, we can say that in general

$$\text{neither } D(p) \subset M(p) \text{ nor } M(p) \subset D(p) \qquad (21)$$

and it is obvious what (21) means.[14] Similarly, without going into a detailed discussion of sense and reference, when considering

$$\text{Venus is both the morning star and the evening star} \qquad (22)$$

very few people would disagree that R(22.4-6) = R(22.8-10) and not S(22.4-6) = S(22.8-10), and also that many elements of D(22.1) are not elements of M(22.1).

In considerations on the metalevel we need names for linguistic expressions, but in addition we often want to use linguistic expressions out of context – that is to say, we want to use an expression on the metalevel, but at the same time we want to point back to the original context in which it was used. If we attempt to do this, similar problems arise as in finding a consistent system of naming.

For example Geach (1950) in a discussion of Black (1948) pointed out that

[13] We might call substitution examples of M(p) propositions. Quine (1960) uses square brackets when referring to a proposition. This convention is similar to using quotation marks and is subject to the same constraints.

[14] Most writers, when concerned with pure syntax or semiotics consider the types as the individuals, because the tokens do not occur in their ontology. Writers such as Goodman, Quine, Tarski and Carnap tend to take physical inscriptions (tokens) as the building blocks of a given language and sentence-tokens as the bearers of truth (nominalism). However, in practice these authors usually take the type as individuals (for example Carnap, 1964, p. 15 and Quine, 1970, p. 14) because *any well-defined domain may be taken as individuals* (Church, 1976, p. 752). Probably Lesniewski was the most consistent and punctilious nominalist among logicians (Simons, 1982). What I want to show is that the relation between token and type warrants more detailed analysis and in particular, that the conventions used to name types and tokens do seem to lead to the sort of ambiguities which can easily be overcome by using the conventions of naming illustrated above.

for all x and y, if x is a sentence and y   (23)
uniquely designates x, then y is true of x.

is not meaningful and therefore not a proper rephrasing of Tarski's Convention T. I shall use the convention that the reference of the name of a linguistic entity is used when the name is underlined. [15] Under this convention (23), or (3), can be expressed as

(p) is true if and only if (p)   (24)

An example to illustrate the conventions used in (24) is as follows Consider:

in melancholy realm big tears are shed   (25)

where it is to be understood that T(25) is a replica of line 7 of canto II of John Keats's *The Fall of Hyperion*. That is to say, (25) is a quotation; the original source fixes the context. In the conventional application of Tarski's Convention T we write:

'in melancholy realm big tears are shed' is true   (26)
iff in melancholy realm big tears are shed

According to the conventions of naming proposed here, we write:

(25) is true iff (25)   (27)

Although (27) is definitely less opaque than (26), (26) is definitely more ambiguous than (27).

I am primarily concerned with written expressions. However an extension of the system of naming to spoken utterances is straight-forward. In the case of utterances the master-copy is the expression uttered by a particular person at a particular time t and a suitable convention could be that for all integers q, all times t, and all persons x:

O(q,t,x) is an utterance of which T(q) is a written   (28)
representation.

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[15] Conventions for this purpose have also been used by other authors, for example Geach (1950) and Wallace (1972), but they all confine themselves to sentences in pure semantics, where always D(p) = M(p).

Of course it is impossible to fully represent O(q,t,x) and its context in a written text.

Discussion

The convention of numbering lines of sentences or equations is common scientific practice. The convention is also used by logicians but, as far as I can judge, never in a systematic way. To give just one example, Kripke (1975) writes on the one hand:

It has long been recognized that some of the intuitive trouble with Liar sentences is shared with such sentences as
(3)   (3) is true

and on the other hand, when presenting the Liar paradox:

As an example, let P(x) abbreviate the predicate 'has tokens printed in copies of the Journal of Philosophy,
November 6, 1975, p. 691, line 5'. Then the sentence:
(x)   P(x) ⊃ Q(x)
leads to paradox if Q(x) is interpreted as falsehood

Similarly, Tarski (1956), when presenting the paradox of the Liar uses four different conventions of naming linguistic entities. This is very confusing, in particular when it is not clear whether tokens, classes of tokens, abstract types or what, are named. Just how confusing Tarski's article is in this respect, has been analysed in great detail by Ubbink (1977). Why can't we simply write:

$$\text{(29) is not true} \tag{29}$$

Applying Tarski's convention T, see (24), we obtain directly

$$\text{(29) is true iff (29) is not true} \tag{30}$$

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[16] It seems inconvenient not to include t and a in the name of the utterance. For example McKay (1981) uses different names to refer to two utterances which have the same written representation. McKay then comes to conclusions such as *(2) is true and (3) is false* This looks very odd if the written representations of (2) and (3) are identical.

Note that it is not possible to translate (29) such that quotation mark names are used.

Quine (1953) says that one might protest that

(2)   *(2) is false*   (31)

is meaningless, on the ground that an attempt to expand the reference of (31.2) into a specific quotation of an actual statement leads into an infinite regress.([17]) However, I think this is confusing naming with quoting.([18]) As has been pointed out by many authors self-reference in or cross-reference between sentences is absolutely normal in many cases, so that we cannot get rid of the semantic paradoxes by stipulating that self-reference or cross-references are not allowed. Consider the following example of cross-reference:

>   the next sentence is in Dutch   (32)
>   de voorgaande zin is in het Engels   (33)

The translation of (33) into English is *the previous sentence is in English*. If we attempt to expand the reference of (32.1-3) in (32), or of (33.1-3) in (33), into a specific quotation of an actual statement, this leads to an infinite regress. But surely, there is nothing unacceptable in the system of naming sentences I use in (32) and (33). If (32) and (33) cannot be translated using quotation mark names it illustrates a disadvantage of the convention using quotation marks to name sentences and not that there is something wrong with the sentences that cannot be translated. On the other hand, the fact that sentences

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([17]) Quine silences this protest by resorting to a more complex version of the liar paradox: *'does not produce a true statement when appended to its own quotation' produces a true statement when appended to its own quotation*. It can easily be shown that this version of the paradox has the same syntactic structure as the paradox of the liar as presented by Tarski contains an empirical premise. Tarski (1944) presents the paradox of the heteroclitic sentences which does not contain an empiricial premise. The reason that Tarski needs an empirical premise in the construction of the paradox of the liar is that he cannot use quotation mark names in all cases when he needs a name for a sentence. This problem does not arise in the paradox of the heteroclitic sentences (van Brakel, 1982).

([18]) When Suszko (1979) (in an analysis of the semantic theory of truth and the antinomy of the liar) writes *For every expression, we can form and use its quotation, to do so it suffices to write that expression in quotation marks*, I think he is also blurring the distinction between naming and quoting.

such as (31) – (33) cannot be translated in such a way that quotation mark names are used does not prevent us from being able to quote them. In fact, (31) is such a quotation. It is a quotation of the sentence Quine puts forward for consideration in the copy of his paper I consulted.

Sometimes the tokening system here proposed is more efficient than systems involving the use of quotation mark names or structural descriptive names. This is the case in the discussion about semantical paradoxes. In other cases, the presentation becomes more cumbersome. For example, consider again

> if ϕ is a sentence, so is '$\sim\phi$'   (34)

There is no dispute about M(34). The problem is to construct an element of M(34) which removes all ambiguities. Consider (for any p):

(36) is a sentence	(35)
$\sim$(p)	(36)
(36) is true iff (p) is not true	(37)

which, by implication, defines (36.1.1). This, admittedly, is a rather long-winded way of saying something simple. However, as far as I know, there is no other way of putting it that is as precise and unambiguous.

As a further illustration of the differences emerging from using the conventions here proposed consider the following quotation from Simon (1982):([19])

> *Consider a simple language, say first-order, in which are included the names 'a', 'b', the predicates 'F', 'G' and the formulae (sentences) 'Faa', '(Faa & Gab) ⊃Faa'.*
> *Single quotes are used to designate types, double quotes to designate patterns. For example, "Fη" names the pattern, common to 'Fab', 'Fba', 'Faa', etc., of being an atomic formula beginning with 'F', and followed by two (not necessarily distinct) names.*

([19]) The last clause of the following quotation reads in the printed paper: *and followed by two tokens of (not necessarily distinct) names*, but this is incorrect (Simons, personal communication).

How does it look if we translate this quotation and a little bit more using the conventions outlined above? Consider a simple language; containing two names, (38.1.2) and (38.1.3.), two predicate-names, (38.1.1) and (38.2.1), and atomic formula such as (38.1) and (38.2):

$$\text{Gab} \quad \text{Faa} \quad \text{Fab} \quad \text{Fba} \tag{38}$$

In this formal language always $D(...) = M(...)$; hence all elements of $D(38.1.2)$ and $D(38.1.3)$ are names, and similar for predicates and sentences. In the metalanguage of this language, it may be useful to employ sentence forms such as

$$\text{F } \xi\eta \quad \text{F} \xi\xi \quad \text{F}\eta\xi \tag{39}$$

Here all elements of $D(39.1.2)$ and $D(39.1.3)$ are place-holders for names. We can then illustrate the meaning of the phrase

$$\text{--- exemplifies .....} \tag{40}$$

by saying

$$\text{(38.2) (38.3) and (38.4) all exemplify (39.1)} \tag{41}$$
$$\text{(38.2) but not (38.3) exemplifies (39.2)} \tag{42}$$

Note that the difference Simons makes between viewing types as patterns or as classes (or between "types" and "patterns" in the above quotation) in fact disappears.[20]

[20] It may be useful to elucidate the meaning of what I mean by exemplifying in this context in some more detail. (Here I am grateful to comments of P.M. Simons on an earlier draft of my paper). Firstly, the concept of being a place-holder for a name should be taken absolutely literally. If in any context one comes across an object which functions as place-holder for a name, say an element of $D(39.1.2)$, one can decide to physically remove the place-holder and put another object in its place (hence, in exactly the same context), provided this object has the function of being a name, say an element of $D(38.1.2)$. Secondly, it should be stressed that in the end (41) and (42) are about tokens. On first view it may seen odd to talk about tokens exemplifying a token. This is to be understood as follows. Consider

$$\text{F}\eta\eta \tag{181}$$

and substitute $\eta = a$; hence

$$\text{Faa} \tag{182}$$

This means: An element of $D(181)$ is to be placed at some location, in this case at (182). There and then a substitution is to be carried out by replacing any elements of $D(181.1.2)$ by elements of $D(182.1.2)$. The result of this substitution is (182) as given above. This whole procedure is summarised by saying:

$$\text{(182) exemplifies (181)} \tag{183}$$

The natural kind assumption is that the intuitive concept of a type is not extensional. However, it is more relevant to make a careful distinction between type and meaning (both defined as empirical classes), than hastily burden the philosophy of logic with abstract entities of unclear status. The need for this distinction seems self-evident: being equiform is only context-dependent relative to a very broad cultural context, whereas meaning depends much more on the particular context of occurence. For natural languages the meaning of a sentence depends on the context; this is generally accepted. But in formal languages the meaning also depends on the context. Consider (39.1) and (39.3). Certainly $D(39.1) \neq D(39.3)$, but what about $M(39.1)$ and $M(39.3)$? In the context of (41), it would seem that $M(39.1) = M(39.3)$, but it is easy to construct a context in which this is not so.

Often the view that a sentence type is a class of similar sentence tokens, is argued against on the grounds that it leads to problems with untokened sentences, there being provable infinite sentences in most formal languages, the meaning being determined by which tokens actually exist, and so on. I think these problems turn out to be less serious if it is accepted that sentences (and all other vehicles of communication) firstly are artifactual kinds – this applies to both natural and formal languages – and secondly that their meaning is created in the context in which they occur. Because of the latter the meaning of each sentence depends on the first token that was introduced. It will only seem that meaning goes with sentence-type; meanings of words and sentences have been fixed by the logician's approach of rigidifying the process of creating meaning or by the rules in language games that stipulate what the literal meanings are of words and sentences.

Sentences are thought of first and foremost as conceptual if not Platonic objects: *The sentence itself is imperceptible*, Hugly and Sayward say. But I have no idea what that means. Would they argue that the motorcycle itself is imperceptible, or that Hugly and Sayward themselves are imperceptible? A sentence is like a motorcycle (and unlike Hugly and Sayward) in that it is an artifactual kind. Perhaps the imperceptible that Hugly & Sayward are after is the instruction as to how to make tokens of a particular artifactual kind. Perhaps a hunch that such an instruction exists makes Haack (1978) write that a sentence type is a pattern which similar tokens exemplify. The latter

suggests that sentence types would be some sort of natural kind. The pattern is then the underlying trait, like the molecular structure of water. There is nothing of this natural kindness in sentences. They are artifactual kinds. Knowledge about artifactual kinds is always a mixture of knowing the rules or instructions (a priori), checking which entities conform to which rules (a posteriori), and a constant awareness that in the linguistic division of labour one contributes to stipulating the rules of certain closed language games.

In formal semantics we say that a language has infinitely many sentences. Why can't this mean, empirically, that we can construct as many sentences (and names of sentences) as we want? In the theory of measurement we assume that a variable, say the mass of an object, can take on infinitely many values; and usually we also assume that there is an infinite number of objects having the property mass. It is practical to do so (because the mathematics for the finite systems is more difficult), but are we therefore confusing mass with mass-tokens if we define mass as the class of objects having the property mass? First there is an (empirical) language and a tokening system (or empirical objects being ordered by the empirical relation of mass), then we design conceptual systems for which it is an advantage (although not necessary) to assume that there are an infinite number of entities.

What about the problem of untokened sentences? In the present context this means that we use the name of a sentence, whereas it is not possible to find or construct a sentence-token which is an element of the set that is named. [21] It is then said that all untokened sentences have the same truth value, i.e. they are basically the same sentence. On the account presented here, this is ridiculous, because a sentence is something in a context and its name has to refer to that context. The reasoning that is followed when raising the question of untokened sentences is analogous to saying that a meter is the same thing as a kilogram in the context of 30 december 1921 in the possible world in

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[21] If a sentence is named using a structural description, it is possible that no token exists of this sentence, although it is always possible to construct a token following the description. However note that such descriptions of untokened sentences are artificial constructions which usually lack a sensible context. Hence this sort of untokened sentence can be put aside on the grounds of being meaningless.

which the standard meter and the standard kilogram had been destroyed by an explosion on that day in the building in Paris where they had been kept until then. If two sentences are untokened (say the first two sentences in the editorial of the first issue of Le Monde in 1988), the question of whether they are identical is undecided as long as no tokens of these sentences have been produced.

On the one hand, expressions (including sentences) can be construed as classes of perceptible particulars; on the other hand expressions have meaning. But what is usually left under the surface in this discussion is the context-dependence of the meaning of the sentence. In commenting upon Quine's formulations of metalinguistic generalization, Hugly and Sayward suggest that when *a person replaces 'The' by 'A' in 'The house is red'* he is just manipulating tokens and what he is doing has nothing to do with a sentence as an abstract entity. However, what this person is doing depends very much on the context in which he is doing it. Let us assume he is busy correcting a typescript. In which case he is doing the same sort of thing as a person or a machine checking whether all milk bottles contain milk at the end of a production line. I don't think there is anything, in this activity of repairing an artifact, checking it against a master copy or prototype, which is of importance for the logician or the linguist. Now let us assume he is correcting a translation from Russian into English. (The interchange of articles is not implausible, because there are no articles in Russian and we have to guess which articles to use in English from the context.) So we have

$$\text{dom krasnyi} \tag{43}$$

in some context and at least the following possible translations [if (43) is a complete sentence]:

$$\text{a house is red} \tag{44}$$
$$\text{the house is red} \tag{45}$$

Consider now:

$$M(43) \approx M(44) \tag{46}$$
$$M(43) \approx M(45) \tag{47}$$

Note that there is nothing special about (46.2). It says that (43) and (44) are approximately equal in meaning: we are talking empirical

science. What we want to know is whether (46) or (47) is true in the context concerned. The person correcting the translation is not only replacing an element of D(44) by an element of D(45), let alone an element of D(44.1) by an element of D(45.1); he is also replacing an element of M(44) by an element of M(45).

Conclusion

Unambiguous use of quotation marks to refer to linguistic entities may seem quite unproblematic. The explanation for this apparent opacity is the richness of context in which they are used. We might say that we get the meaning right, not because the language conventions used are so precise and unambiguous, but because writer and reader have many shared beliefs. This applies to every day language as much as to that used in articles on the philosophy of logic. Strictly speaking, however, quotation mark names cannot be used to refer to linguistic entities. For something to be a linguistic entity, it has to have meaning, and the latter is determined by the context in which the linguistic entity is or has been used. If quotation mark names are used, there is no reference to a context of occurence. Of course reference to such a context can be supplied in another sort of way. This only stresses that quotation mark names cannot be used for that purpose. Also, it is true that one may have an interest in refering to sets of linguistic tokens of the same form, which in many contexts in a particular natural language have the same meaning, or of which it has been stipulated that they always have the same meaning in a particular closed conceptual or formal structure. But before such an abstraction can be made, as well as in talking about such conceptual systems or sets of equi-formed linguistic tokens, we need a system of naming that not only refers to linguistic entities in abstract, but also refers to their meaning as derived from a particular context. Moreover, there are sentences for which it is not even possible in principle to refer to them using quotation mark names. There is no room therefore for quotation marks if one wants to be precise, and certainly no room for them if one wants to discuss the role and meaning of naming linguistic entities. Instead a coordinate system of naming is to be used which allows reference to linguistic entities as used in their context of occurence

and from which their meaning is derived. It is possible that other conventions of naming exist that fulfill the same function as the system of coordinate names I have proposed, but as yet I have not come across any.

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