THEORY OF QUOTATION: A CASE FOR THE DESCRIPTION THEORY

YORIYUKI YAMAGATA

Abstract. In this paper we define a syntax and semantics of a language with quotations. This language equips the naming function @, which returns the canonical names of objects. Using this language, we give a case for the description theory of quotation [1].

1. Introduction

On the description theory of quotation, Capplen and Lepore [1] state that “the theory is, by a wide consensus, not much of an improvement over the Proper Name Theory”. This paper, however, presents a case for the description theory of quotation. We construct a formal language with quotations, give a formal semantics of this language. Our language contains the naming function @, which maps objects to their canonical names. The naming function @ allows us to interpret mixed quotation.

2. Syntax and semantics of a language with quotations

This section defines the language $Q$, a language with quotation.

Definition 1 (Vocabulary of $Q$). Vocabulary of $Q$ consists of:

- constants $c_1, c_2, \ldots, c_N$ including person names $p_1, p_2, \ldots$, alphabets $a_1, a_2, \ldots$, the white-space “ “, the empty sequence $\epsilon$ and the first person pronoun $I$,
- function symbols are concatenation $::$ and @,
- predicate symbols $R_1, R_2, \ldots, R_M$ including say.

Alphabets and the white-space are called characters. :: informally means concatenation of a character to a sequence of characters. @ is a function which maps objects of the domain of discourse of $Q$ into their canonical names, if they have. $Q$ does not have function symbols other than :: and @, which simplifies the theory greatly.

Definition 2. The language of $Q$ is that of the first-order predicate logic with vocabulary which is given in Definition 1.

Next, we give a semantics to $Q$.

Definition 3 (Domain of $Q$). The domain (of discourse) of $Q$ is denoted by $D$. $D$ contains $\mathbb{E}$: the set of expressions and $\mathbb{P}$: the set of persons.

We assume that $\mathbb{E}$ contains the set $\mathbb{C}$ of characters and finite sequences $\mathbb{C}^*$ of $\mathbb{C}$ are contained in $\mathbb{E}$. We assume that the elements of $\mathbb{C}$ and characters of the language $Q$ are identical.
A technical difficulty to give a semantics of Q is that :: and @ are not defined on the entire domain D of Q. We may use many sorted logic or free logic to formulate this situation. However to restrict strictly Q to the first order language, we map every illegal argument to e and assume that people never say e.

**Definition 4.** For constant symbol d of Q and a person p ∈ P, we define [d]p as follows (if [d]p does not depend on p, we omit p):

- \([c_i]p \in D\) for all \(i = 1, \ldots, N\).
- In particular, if \(c_i\) is a character, \([c_i] = c_i \in C\) and if \(c_i\) is a person name, \([c_i] \in P\).
- \([\epsilon]\) is the empty sequence \(\epsilon\) in \(C^*\). For simplicity, we assume that there is no synonym of characters and \(\epsilon\).
- \([I]\)p = p.
- \([::(e, s)\) is the concatenation of \(e\) and \(s\) if \(e \in C\) and \(s \in C^*\). Otherwise, \([::(e, s)\) is the empty sequence.
- \([\emptyset]\) is a mapping from D to E with the following property. Let call \(v \in D\) named if \(v = [t]\) for some term \(t\). For named \(v\), \([\emptyset]v = ["u"]\) for some term \(u\) where \(v = [u]\). Otherwise \([\emptyset](v) = \epsilon\).
- For each \(R_i, i = 1, \ldots, M\), \([R_i]\) ∈ Dⁿ where \(n\) is the arity of \(R_i\).

The semantics of formulae and sentences are determined as usual, only relativizing them to \(p\), who utters formulae or sentence.

Quotation is not a primitive symbol of Q. Rather, quotation is a symbol of our metalanguage. Let \(s_1 :: s_2\) be concatenation of two sequences \(s_1, s_2\) which formed by characters using :: in Q, where the white-space is inserted in the middle of \(s_1\) and \(s_2\). The notation \(s_1 :: s_2\) is the symbol in the metalanguage, not in Q. More precisely, \(s_1 :: s_2\) is defined by recursion:

- \(\epsilon :: s \equiv s\),
- \((a :: \epsilon) :: s \equiv a :: " " :: s\),
- \((a :: s_1) :: s_2 \equiv a :: (s_1 :: s_2)\) where \(s_1 \neq \epsilon\).

Then, quotation "A" for a sequence A of primitive symbols of Q is defined as follows. First, for each primitive symbol d of Q, a non-empty finite sequence "d" of alphabets which are constructed by :: is uniquely determined. Next, for each sequence A = \(d_1d_2d_3\cdots d_n\) of primitive symbols, "A" is defined by "\(d_1\) :: "\(d_2\) :: "\(d_3\) :: \cdots :: "\(d_n\)". The sequence \(d_1d_2d_3\cdots d_n\) can be reconstructed from "\(d_1\) :: "\(d_2\) :: "\(d_3\) :: \cdots :: "\(d_n\)" because of the presence of the white-space.

Thus, in Q, The sentence  

I say “Quotation has a certain anomalous feature”

is analyzed as

(1) say(I, “Quotation” :: “has” :: “a” ::  

"certain" :: “anomalous” :: “feature”).

Because “Quotation” :: “has” :: “a” :: “certain” :: “anomalous” :: “feature” is a term of Q, which denotes an ordinary object in the domain of discourse of Q, this analysis can be said the description theory of quotation.

Analyzing mixed quotation uses @ function. For example, the famous example by Davidson

Quine said that quotation “has a certain anomalous feature”
is analyzed as (we change past tense to present tense, for the obvious reason)

\[(2) \quad \text{say(Quine, } @ (\text{quotation}) ::\ "has" ::\ "a" ::\ \\
\qquad \text{"certain" ::\ "anomalous" ::\ "feature")}\]

where *quotation* is a constant which denotes quotation.

3. Case for the description theory

This section discusses the basic properties BQ1-6 of quotation against the language $Q$.

3.1. **BQ1**: In quotation you cannot substitute co-referential or synonymous terms salva veritate. This clearly holds on $Q$ because “bachelor” in

“bachelor” has eight letters

and “unmarried man” in

“unmarried man” has eight letters

are analyzed to different sequences of alphabets, thus their truth values are different.

3.2. **BQ2**: It is not possible to quantify into quotation. This also holds. In $Q$

“bachelor” has eight letters

does not entail

\[(\exists x) \text{“x” has eight letters}\]

because “x” is just a sequence of alphabets, not a variable.

Davidson [3] seems confused in this respect. Davidson seems to argue that in the description theory, we can infer

\[(\exists x) x \text{ has eight letters}\]

and stated “These derivations show clearly that quotation marks plays no vital role in the spelling theory”. The statement is puzzling, because the last inference is correct and perfectly natural. In [2], the similar examples are considered but the statement is inconclusive (“These inferences are not meant in themselves as criticism of the theory of quotation...”).

3.3. **BQ3**: Quotation can be used to introduce novel words, symbols and alphabets; it is not limited to the extant lexicon of any one language. First, quotation cannot be used for introducing unlimited words or symbols. For example, it cannot be used for introducing a tongue of an alien specie, which uses vomiting acid as a word. Thus it is natural to suggest that there is a finite set of “alphabets” which creates a quotation. Note that “alphabets” are not necessarily related to ordinary Latin alphabets. Thus, for example, we can think that the alphabets are consisted by pixels. Also, in $Q$ we only have concatenation :: of sequences but we can introduce concatenation of two dimensional nature. In this way, quotation in printed materials can be handled. Anyways, in this computer era, the inside of a quotation is a string of Unicode character. So, our alphabets are Unicode characters and :: is concatenation of Unicode strings.
3.4. **BQ4: There’s a particularly close relationship between quotations and their semantic values.** In Q, the relation of quoted expressions and semantic values of their quotations may not be clear. However, this is only a superficial observation. Consider “lobster”. Representation of “lobster” in Q is \#t :: \#o :: \#b :: \#s :: \#t :: \#e :: \#r. Its semantic value is lobster, which is identical to the expression “lobster”.

3.5. **BQ5: To understand quotation is to have an infinite capacity, a capacity to understand and generate a potential infinity of new quotations.** Q has such capacity. Q allows any expression inside in quotation, and gives a semantics which consists of finite clauses.

3.6. **BQ6. Quoted words can be simultaneously used and mentioned.** Encoding of Section 2 allows this.

4. **Davidson’s criticism to the description theory**

This section consider the first objection to the description theory of quotation by Davidson [3]. Davidson noted that we transform

 Alice swooned

to

(3) \#A :: \#l :: \#i :: \#e :: \#e :: “ ” :: \#s :: \#w :: \#o :: \#o :: \#n :: \#e :: \#d,

thus remove quotation marks and replaces each alphabet, say “A” to its name \#A. He argued, then, it is not an account of quotation marks and the description theory fails to capture the essence of quotation, which enable us to create a term which denotes a expression just by enclosing quotation marks.

However, his theory, the demonstrative theory, also removes quotation marks in its analyzed form. In fact, any account of quotation removes quotation marks in its analyzed form, because otherwise it is a circular explanation and not a proper account of quotation!

The later claim, that the description theory fails to capture the essence of quotation, seems to miss the roles of surface forms and their analyzed forms in the description theory. In the surface form, Q provides perfectly the way to “create a term which denotes a expression just by enclosing quotation marks”. Only in the analyzed form, the interpretation of quotation becomes awkward and seemingly not directly related to its quoted expression. But this is only because the base language of Q is strictly first order. If we have more rich ontology in Q, we do not need to introduce the analyzed form of quotation. This makes our theory the disquotational theory [1].

Davidson’s ingenious demonstrative theory of quotation seemingly achieves the both goals: purely truth functional yet a quoted expression is interpreted to it self. However, the fundamental problem of his theory is that his theory decompose a single utterance to two utterances. Further, it appears that his theory of meaning does not give any account of text, successive sequence of utterances. Thus we cannot assign any meaning to an utterance with quotation, simply because it is analyzed to two utterances.

Let put the problem into the concrete term. Davidson analyzes

 Galileo said “And yet Earth moves”

to

(3) \#A :: \#l :: \#i :: \#e :: \#e :: “ ” :: \#s :: \#w :: \#o :: \#o :: \#n :: \#e :: \#d,
And yet Earth moves. Galileo said the expression of which this is a token. Intuitively, the latter may not have the same meaning to the former, because in the latter, the speaker may actually claim that the earth moves, while in the former, the speaker’s opinion does not appear. To understand that the speaker does not claim the earth moves in the latter example, somehow the first sentence should lose its assertive force. This, precisely, means to quote the first sentence. Thus, Davidson’s demonstrative theory is circular and not a successful explanation.

5. Phenomena related to mixed quotation

Mixed quotation allows the inference from

Galileo said “Earth moves”

to

Galileo said that Earth “moves”

and further

Galileo said that something “moves”

As seen in Section 2, @ enables us to interpret mixed quotation. In this interpretation, the inference above is valid.

6. Limitation

Q can only mix noun phrases with quotations. For example,

Galileo said “Earth” moves

cannot be interpreted by @, because “moves” is analyzed to a predicate symbol and @ is only applicable to terms. This limitation stems from its first-order nature. If we employ higher-order logic, we can handle this problem.

References


National Institute of Advanced Science and Technology (AIST), 1-8-31 Midorigaoka, Ikeda, Osaka 563-8577 Japan

URL: https://staff.aist.go.jp/yoriyuki.yamagata/en/
E-mail address: yoriyuki.yamagata@aist.go.jp