

Interpreting quotations*

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Mixed quotes appear to mix mention and use, or direct and indirect quotation.

(1) Quine says that quotation ‘has a certain anomalous feature.’ (Davidson 1979)

Most of language is mixed quotes!

- A broader notion of mixed quotation.
- Naming and quantification.

1. The essence of mixed quotation

A mixed quote means what someone uses the quoted expression to mean (Geurts and Maier 2003). The quoted expression need not be grammatical.

(2) The president said he has an ‘eclectic’ reading list. (Maier 2007)

Further functions of mixed quotes (Cappelen and Lepore 2003), such as ‘distancing’:

(3) I am sorry to have used an ‘epithet’.

Focus on ‘essence’.

Nested mixed quotes:

(4) The politician said she is ‘sorry to have used an ‘epithet’.’

(5) The politician said she is sorry to have used an ‘‘epithet’.’

The speaker of the outer quote *presumably* uses the inner quote to mean what someone uses the inner-quoted expression to mean, so the meaning of (4) involves what someone uses the word ‘epithet’ to mean.

Mixed quotes of constructions:

(6) The politician admitted that she ‘lied [her] way into [her job]’.

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- (7) It is a long story how I lied my way into this despicable position of deception.
- (8) The politician admitted that she the property gyz , where g is the ternary relation that she used the construction ‘lied ... way into ...’ to mean, y is her, and z is her job.

Less canonical non-nullary constructions can be mixed-quoted as well.

- (9) John doesn’t know much French, but he thinks he does and tries to show it off whenever possible. At dinner the other day, he ordered not ‘[some dessert] à la mode’ but ‘à la mode [some dessert]’.

At least some mixed quotes of non-constituents can be better analyzed as mixed quotes of constructions.

- (10) Mary allowed as how her dog ate ‘odd things, when left to his own devices’.
(Abbott 2003)
- (11) Mary allowed as how her dog ‘[ate] odd things, when left to his own devices’.
- (12) Fido devoured odd things, when left to his own devices.
- (13) Whereas under human supervision Fido ate odd things, when left to his own devices he would only eat Nutrapup.

1.1. A formal model of grammatical constructions

Fix a set X of syntactic objects (forms) and a set Y of semantic objects (meanings).

An n -ary *construction* is an ordered pair $\langle f, g \rangle$ where f is a partial function from X^n to X and g is a partial function from Y^n to Y .

We can *apply* the construction $\langle f, g \rangle$ to the *constituents* $\langle x_1, y_1 \rangle, \dots, \langle x_n, y_n \rangle$, each a form-meaning pair, to build the form-meaning pair $\langle f x_1 \dots x_n, g y_1 \dots y_n \rangle$, as long as f is defined at $x_1 \dots x_n$ and g is defined at $y_1 \dots y_n$.

For clarity, we sometimes write $x_{1\dots n}$ instead of $x_1 \dots x_n$.

A *grammar* R is a set of constructions that satisfies two closure conditions.

- (14) **Identity** The pair of identity functions $\langle \lambda x. x, \lambda y. y \rangle$ is in R .
- (15) **Composition** If $\langle f, g \rangle$ is an $(n + 1)$ -ary construction in R , and if $\langle f', g' \rangle$ is an n' -ary construction in R , then the $(n + n')$ -ary construction

$$\langle \lambda x_{1\dots i-1} x'_{1\dots n'} x_{i+1\dots n+1} \cdot f x_{1\dots i-1} (f' x'_{1\dots n'}) x_{i+1\dots n+1}, \\ \lambda y_{1\dots i-1} y'_{1\dots n'} y_{i+1\dots n+1} \cdot g y_{1\dots i-1} (g' y'_{1\dots n'}) y_{i+1\dots n+1} \rangle$$

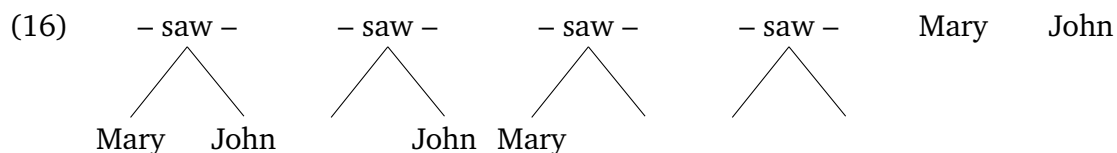
is also in R , for $i = 1, \dots, n + 1$.

This definition is inspired by *operads without permutation* (May 1997).

A binary construction could be Merge, concatenation, or composing constructions as expressions (to enable ‘meta-constructions’, §2.2).

The grammar *generated* by a set of constructions S is the smallest grammar containing S . The closure conditions let us treat mixed quotes of *primitive* constructions (those in S) and *derived* constructions (those in R but not S , ‘Mary saw John’) alike.

What does it mean for a speaker to use a form f to mean something g , or to use a construction $\langle f, g \rangle$?



Different justifications of the same nullary construction in R (Barker 2007).

1.2. Mixed quotes, formally

Mixed quotes are constructions of the form

$$(17) \quad \langle Qf, \iota g. x \text{ uses the construction } \langle f, g \rangle \rangle, \\ \text{not } \langle Qf, g \rangle \text{ where some speaker } x \text{ uses the construction } \langle f, g \rangle.$$

Form: f and Qf are two partial functions from X^n to X , related in some systematic way Q yet to be specified.

Meaning: anaphoric to some discourse referent x and presupposes that the speaker x uses f to mean a partial function g from Y^n to Y .

Multiple Q 's, for example (written English strings with single quotation marks)

$$(18) \quad Qf x_{1\dots n} = \overline{\overline{f(\overline{[\] \wedge x_1 \wedge \overline{[\]})} \dots (\overline{[\] \wedge x_n \wedge \overline{[\]})} \wedge \overline{[\]}}}$$

(Overlines cover literal strings and the operator \wedge denotes string concatenation.)

Now analyze (4) and (6):

$$(19) \quad (\lambda x. \overline{\overline{\text{The politician said she is}} \wedge x}) \\ (Q((\lambda x. \overline{\overline{\text{sorry to have used an}} \wedge x})(Q \text{epithet}))) \\ = \overline{\overline{\text{The politician said she is 'sorry to have used an 'epithet'}}$$

$$(20) \quad (\lambda x. \overline{\overline{\text{The politician admitted that she}} \wedge x}) \\ (Q(\lambda x_1 x_2. \overline{\overline{\text{lied}} \wedge x_1 \wedge \overline{\overline{\text{way into}} \wedge x_2}}) \text{her her job}) \\ = \overline{\overline{\text{The politician admitted that she 'lied [her] way into [her job]'}}$$

Central claim: generate grammar by mixed-quote constructions.

Exceptions: pure quotes $\langle Qf, f \rangle$ and coinage.

1.3. Mixed quotes of formal languages

Pure quotes:

- (21) $P \Rightarrow Q$ and P together entail Q .
- (22) $\Gamma(2)$ contains 2.

Mixed quotes and their paraphrases?

- (23) Alice said $\forall x \in \mathbb{R}. x^2 = -x^2$.
- (24) Alice said what mathematicians use $\forall x \in \mathbb{R}. x^2 = -x^2$ to mean.
- (25) Alice said $\Gamma(2)$ is negative.
- (26) Alice said what mathematicians use $\Gamma(2)$ to mean is negative.

These paraphrases preserve a de-re/de-dicto ambiguity as to whether Alice's errors are due to her ignorance about mathematical notation (de dicto).

Gödel numbering \rightarrow interpret one language in another \rightarrow linguistic creativity and reflection \rightarrow logic embedding; Kolmogorov complexity; universal computation

2. The prevalence of mixed quotation

The quoted speaker may be generic, hypothetical, or institutional, and the quoted use may be generic, hypothetical, or habitual (Geurts and Maier 2003). Mixed quotation is thus a versatile source of constructions.

2.1. Naming and other causes

After initial baptism (Kripke 1980), the nullary construction that pairs the name with the person is a mixed quote. Slightly unusual:

- i. The quoted form (say $\overline{Q \text{ Aristotle}}$) and unquoted form (say $\overline{\text{Aristotle}}$) sound and look exactly the same.
- ii. Possibly quoting a generic use by an institutional speaker, not a specific use by a specific speaker.

Nested mixed-quote, like a causal chain (compactly representable (Smith 1982)):

- (27) “‘...Aristotle...’”

Names take scope differently from ordinary mixed quotes (Michael Johnson, p.c.).

- (28) Quine might have said that quotation ‘has a certain anomalous feature’.
- (29) It might have been the case that Aristotle was not named ‘Aristotle’.

Not just names but also other definitions:

(30) We assume the following notion of c-command ...
'... Hence α c-commands β ...'

(31) Once upon a time, there was a president who likes to insert vowels when he pronounces words ... The president said he had an 'ecelectic' reading list.

'Copy-and-paste' syntax and semantics across the board.

(32) Aristotle saw his sister.

(33) ['Aristotle'] saw [['Sherlock Holmes']'s sister']

Walk up and down a tree of causation to curate forms and meanings from speakers.

2.2. Quantification and polarity

A quantifier as a meta-construction that maps a unary construction to a nullary one:

(34) $\langle \lambda f. f \overline{\text{everybody}}, \lambda g. \forall y. g y \rangle$

Apply (34) to the composition of '- saw -' and 'Mary'. What about multiple quantifiers? Tempting to 'quantify in' the k -th argument of an n -ary construction.

(35) $\langle \lambda f x_{1\dots k-1} x_{k+1\dots n}. f x_{1\dots k-1} \overline{\text{everybody}} x_{k+1\dots n}, \lambda g y_{1\dots k-1} y_{k+1\dots n}. \forall y. g y_{1\dots k-1} y y_{k+1\dots n} \rangle$

But left-to-right evaluation in other linguistic side effects (Shan and Barker 2006) suggests only 'quantifying in' the last argument ($k = n$).

(36) $\langle \lambda f x_{1\dots n-1}. f x_{1\dots n-1} \overline{\text{everybody}}, \lambda g y_{1\dots n-1}. \forall y. g y_{1\dots n-1} y \rangle$

Get surface scope only.

(37) Somebody saw everybody.

(38) Everybody saw somebody.

For inverse scope, mixed-quote the unary construction 'somebody saw -', *hereby* used to mean the property of having been seen by somebody. The resulting interpretation can be glossed as (40) (coherent unlike (41) (Quine 1960)).

(39) 'Somebody saw [everybody]'

(40) For everybody y , the sentence 'Somebody saw y ' is true.

(41) For everybody y , the sentence 'Somebody saw y ' has eight letters.

Perhaps some scope parallelism follows from ease of quotation?

A mixed-quoted quantifier can take inverse scope over an unquoted quantifier. Not to worry: written quotation marks may not indicate every level of actual quotation.

(42) The dean asked that a student 'accompany every professor'. (Cumming 2003)

Constructions over quotes: constructions that incorporate quotable items into larger quotes. We notate the incorporated items using not brackets but ‘mirrored quotation marks’ for *unquoting*, to distinguish them from mixed quotes of constructions.

(43) The secret guide suggested that interested eaters ‘kiss up to ‘name redacted’, class of 2008, for a good meal’ at the Ivy.

(44) The dean asked that ‘‘[‘a student’]’ accompany [every professor]’

A polarity licenser must precede the licensee if they are clausemates (Ladusaw 1979).

(45) Alice introduced nobody to anybody.

(46) *Alice introduced anybody to nobody.

Assume that ‘Alice introduced anybody to ...’ is not quotable alone: to enforce the intuition that it is ‘incomplete’, either classify differently a constituent with an unlicensed polarity item (Fry 1997), or always insert a licenser and a licensee in one fell meta-construction such as

(47) $\langle \lambda f. f \overline{\text{nobody anybody}}, \lambda g. \neg \exists yz. g yz \rangle$.

If there is no construction ‘Alice introduced anybody to [...]’ to quote, then the strategy for generating inverse scope in (39) fails.

(48) *‘Alice introduced anybody to [nobody]’

(49) *For nobody y , the sentence ‘Alice introduced anybody to y ’ is true.

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Exploits of a mom

<http://xkcd.com/327/> (2007)

