Quotational Indefinites

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Abstract This paper discusses one understudied variety of indefinites, which I call QUOTATIONAL INDEFINITES. Quotational indefinites are attested in languages like Bulgarian and German (see Cieschinger & Ebert 2011 on the latter), and are akin to Japanese *wh*-doublets (Sudo 2008; ms) and English placeholder words like *whatshisface* or *so-and-so* (cf. Clark & Gerrig 1990). The main claim of the paper is that quotational indefinites have a mixed semantics: they range over linguistic expressions yet make reference to both expressions and their denotations. These indefinites also require that the expressions they quantify over be of a certain type (a referential expression, a particular type of adverbial, etc.) and be uttered in a previous conversation. The formal analysis is framed in a two-dimensional semantics (Potts 2005; 2007) which cleanly separates the indefinite force and the reportative implications of sentences with quotational indefinites. This work uncovers important interactions between indefiniteness, quotation, and reportativity, and broadens our understanding of the typology of indefinites.

Keywords indefinites · quotation · reportativity · expression-based semantics · two-dimensional semantics

1 Introduction

This paper discusses QUOTATIONAL INDEFINITES (QIs), an understudied variety of indefinites which range over quoted speech. Building on previous work on QIs in German (Cieschinger & Ebert 2011) and indefinite forms with related properties in Japanese (Sudo 2008; ms), I provide fresh data from Bulgarian

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and offer an account which captures the core properties of QIs and has the potential to predict the right amount of crosslinguistic variation.

The empirical phenomenon of QIs is illustrated below for Bulgarian (1) and German (2).[1]

(1) Maria izliza-l-a   s   *edi-koj si.*
     Maria go.out-EV-FEM with QI.MASC

     'Maria is dating someone.'
     ⤳ 'Maria's date was mentioned to the speaker in a previous conversation.'

(2) Luise hat gesagt, dass *die   und die*   von der Schule
     Luise has said   that the.FEM and the.FEM from the school
     geflogen ist.
     expelled is

     'Luise said that someone has been expelled from school.'
     ⤳ 'The person expelled from school was identified in a previous conversation.'   (Cieschinger & Ebert 2011: 176; slightly modified)[2]

The Bulgarian DP *edi-koj si* in (1) has an indefinite-like meaning. The core proposition expressed by the sentence is that Maria is dating someone. The sentence also implies that the speaker heard a referential description of Maria's date in a previous conversation.[3] This REPORTATIVE IMPLICATION is due to the presence of *edi-koj si*, as evidenced by the fact that substituting it with the regular indefinite *njakoj* 'someone.MASC' removes the implication. German indefinites of the form *die und die* have a similar meaning, as seen from (2).

The main question that this paper addresses is the following: What are the semantic properties of QIs and how can these be derived from the lexical meaning of QIs and their interaction with the surrounding discourse? I make the following three major claims. First, QIs have a mixed semantics: they range over linguistic expressions but make reference to both expressions and their denotations. This feature sets them apart from regular indefinites, which range over individuals. Second, QIs serve reportative functions. They existentially quantify over quoted speech, i.e. pieces of language which originate with another speaker. This property can be seen as the source of the reportative implication mentioned above. Third, QIs impose restrictions on the type of expressions they range over. In this paper, I focus on QIs that express nominal categories, such as person or thing. I will show that nominal QIs can only

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[1] The following abbreviations are used in glossed examples: 1SG = first person singular (etc. for other persons and numbers), ACC = accusative, C = declarative complementizer, COP = copula, DAT = dative, DEF = definite, EV = evidential, FEM = feminine, GEN = genitive, MASC = masculine, NEUT = neuter, NOM = nominative, PAST = past tense, PL = plural, PP = past participle, Q = interrogative complementizer, REFL = reflexive, TOP = topic.

[2] Although the formulation of the reportative implication in (2) is absent in Cieschinger & Ebert's original translation, it closely follows their proposal (see Section 3 for discussion).

[3] The particular restrictions on expressions over which QIs can range are discussed in Section 2.3.

range over referential expressions, e.g. proper names, definite descriptions, or demonstratives, but not over quantificational or indefinite expressions. This is the reason why the QIs in (1)-(2) are understood as referring to specific individuals.[4]

Indefinite expressions with related properties are attested in other languages as well. Sudo (2008; ms) discusses the case of Japanese *wh*-doublets, such as *dare-dare*. He argues that such forms fill in for arbitrary person-denoting expressions and can only appear in quotation, as in (3). Japanese *wh*-doublets then differ from QIs in Bulgarian and German, whose distribution is by no means limited to quotational environments.

(3) John-wa "Bill-ga *dare-dare*-o aishitieru" to itta.
     John-TOP "Bill-NOM who-who-ACC love"   C said

     'For some expression X such that X denotes a person, John said "Bill loves X".'   (Sudo 2008: 622; ms: 14)

QIs of the type found in Bulgarian and German are also akin to English placeholder words like *whatshisface*, *whatshisname*, *so-and-so*, *such-and-such*, *thingummy*, *thingy*, *blah blah blah*, *yada yada yada*, etc. Such illocutions fill in for linguistic expressions and are very likely to have an expression-based semantics. In addition, they can easily be understood as pointing at a previous conversation. For example, *whatshisface* in (4a) is most naturally interpreted as a placeholder for the name of the person Rebecca said she saw, and *yada yada yada* in (4b) fills in for various further complaints one would hear from the newly megafamous.

(4) a. Rebecca said she saw *whatshisface* last night.
     b. Becoming Headline News Refreshingly, you will not hear from Affleck the familiar complaints of the newly megafamous: the paparazzi, the zealous fans, lack of privacy, *yada yada yada*.
                              (*Cosmopolitan* 1999, vol. 226, iss. 4, pg. 204)

Unlike QIs in Bulgarian and German though, English placeholders need not make reference to a previous conversation. They can sometimes be used without any such reference, as in (5).

(5) a. Kate Middleton and Husband *Whatshisface* Get Baby George Christened   (*Cosmopolitan*, October 23, 2013)
     b. I met this lawyer, we went out to dinner, I had the lobster bisque, we went back to my place, *yada yada yada*, I never heard from him again.   (*Seinfeld*, episode 147, originally aired April 24, 1997)

Some of the placeholder words listed above also differ from QIs in that they impose no restrictions on the type of the expression they refer to. For example, while *whatshisface* stands for a proper name, *yada yada yada* can fill in for

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[4] In Section 5.2, I will demonstrate how the proposed analysis can be extended to QIs which range over predicative expressions.

any stretch of discourse. English placeholders then match QIs in some but not all respects.

In this paper, I will focus on QIs that meet the three properties listed above and will only briefly discuss Japanese *wh*-doublets or English placeholders. The formal analysis proposed in Section 4 nonetheless makes strong predictions about the potential points of intra- and crosslinguistic variation among expression-denoting indefinites. The cluster of properties mentioned above is likely to be distributed differently among lexical items within and across languages. he emerging typological picture, briefly discussed in the Conclusion, furnishes initial evidence in support of these predictions.

The structure of the paper is as follows. Section 2 discusses the core semantic properties of QIs. In Section 3, I critically evaluate two existing accounts of expression-based indefinites, those of Sudo (2008; ms) and Cieschinger & Ebert (2011). Section 4 presents the formal proposal, which builds on this previous work and is grounded in a simple two-dimensional semantics for quotation. Section 5 examines some alternatives and extensions, and Section 6 is the conclusion.

2 Semantic properties

This section discusses the core semantic properties of QIs in Bulgarian and German. I demonstrate that QIs are true indefinites, trigger reportative implications, and range over referential expressions. These three properties are at the core of the formal analysis presented in Section 4.

2.1 Indefiniteness

QIs are intuitively felt to be indefinite rather than definite expressions. Here I present two pieces of evidence in support of this intuition.[5] The first piece of evidence is the lack of uniqueness effects associated with QIs. According to one influential theory of (in)definiteness that goes back to Russell (1905), the use of definite descriptions requires a unique referent while the use of indefinite descriptions does not. The relevant contrast is illustrated for English in (6a), where in the given context only an indefinite description is felicitous. As demonstrated in (6b)-(6c), QIs in Bulgarian and German pattern with indefinites rather than definites in this respect.[6]

(6) *Sarah has three boyfriends: Ryan, Brian, and Ian. She said tonight she would go out with one of them and mentioned his name but the speaker forgot it.*

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[5] See also Cieschinger & Ebert (2011) for evidence that QIs in German can take scope under quantifiers and modal operators.

[6] I omit the reportative implication whenever its presence is irrelevant to the issue at hand.

    a. Sarah said she will go out with #her boyfriend / a boyfriend.

    b. Sara kaza, če šte izliza s *edi-koe si* gadže.
      Sara say   that will go.out with QI.NEUT boyfriend

      'Sarah said she will go out with a boyfriend.'

    c. Sarah hat   gesagt, dass sie mit *dem und dem* Freund
      Sarah have.3SG say.PP that she with QI.DAT   friend
      rausgehen wird.
      go.out   will

      'Sarah said she will go out with a boyfriend.'

Second, like indefinites and unlike definites, QIs cannot refer back to a salient antecedent. Heim (1982) was among the first to point out that indefinites and definites differ in their discourse properties. In particular, while indefinites establish a new discourse referent, definites typically refer to a discourse referent that is already given.[7] As seen from (7a), once a discourse referent is established, it can be referred back to by definites but not indefinites. Once again, QIs in Bulgarian (7b) and German (7c) exhibit the discourse properties of indefinites.

(7)   a. A man^i walked in. Someone$_{\#i}$ / He$_i$ sat down.

    b. Včera   govori-x s   Ivan^i. *Edi-koj si$_{\#i}$* / Njakoj$_{\#i}$ /
      yesterday talk-PAST with Ivan   QI.MASC   / someone /
      Čovek-ût$_i$ ima-l   nova rabota.
      guy-DEF have-EV new job

      'Yesterday I talked to Ivan^i. The guy$_i$ has a new job.'

    c. Ich habe   gestern mit Claudia über ihren Bruder^i
      I   have.1SG yesterday with Claudia about her   brother
      gesprochen. Sie hat   gesagt, *der und der$_{\#i}$* / jemand$_{\#i}$ / er$_i$
      talk.PP   she have.3SG say.PP QI.MASC   / someone / he
      hat   einen neuen Job.
      have.3SG a   new   job

      'Yesterday Claudia and I talked about her brother. She said he has a new job.'

These data lend strong support to the claim that QIs are indefinite forms. However, this finding does not exhaust their indefinite meaning. I argue below that QIs differ from regular indefinites in that they range over linguistic expressions rather than individuals. But for now we can view them as indefinite forms with some additional properties.

2.2 Reportativity

As already mentioned in the Introduction, QIs trigger reportative implications. By uttering a sentence with a QI, the speaker indicates that the intended

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[7] See in particular her NOVELTY-FAMILIARITY CONDITION (Heim 1982: 312).

entity was referred to in a previous conversation (but she is currently unable to identify it).[8] To illustrate, the Bulgarian sentence in (8) (repeated from (1) above) asserts that Maria is dating someone and implies that Maria's date was mentioned to the speaker in a previous conversation, i.e. the conversation in which the speaker was told who Maria is dating.

(8)   Maria izliza-l-a   s   *edi-koj si.*
      Maria go.out-EV-FEM with QI.MASC

      'Maria is dating someone.'
      ⤳ 'Maria's date was mentioned to the speaker in a previous conversation.'

Interestingly, the reportative implication projects past entailment-canceling operators. For example, it is not canceled when the sentence is negated or embedded under a modal.

(9)   Maria ne / verojatno izliza-l-a   s   *edi-koj si.*
      Maria not / probably go.out-EV-FEM with QI.MASC

      'Maria is not/probably dating a certain person.'
      ⤳ 'Maria's date was mentioned to the speaker in a previous conversation.'

   Cieschinger & Ebert (2011) analyze the reportative implication as presupposed, which nicely captures the projective behavior observed in (9). At the same time, it is clear that reportative implications are not standard presuppositions. For example, they are typically informative while presuppositions usually state discourse-old information. Reportative implications are then at best "informative" presuppositions (see Stalnaker 2002; Schlenker 2007; von Fintel 2008 on this notion). However, the projection behavior of reportative implications is very much unlike that of other presuppositions in at least two respects. First, such implications cannot be canceled the way other presuppositions can. While the simple sentence in (10a) presupposes that Jack has a wife, the sentence in (10b) does not, due to the fact that the presupposition of the main clause is entailed by the conditional antecedent. If we try to construct a parallel sentence and cancel the reportative implication, we get infelicity, as the Bulgarian sentence in (11) demonstrates.

(10)   a. Jack's wife must be very patient.
       b. If Jack has a wife, then Jack's/his wife must be very patient.

(11)   #Ako ču-ja   Maria s   kogo izliza, šte pokan-ja *edi-koj si.*
        if   hear-1SG Maria with whom go.out will invite-1SG QI.MASC

       'If I hear who Maria is dating, I will invite the guy.' (attempted)

Second, Karttunen (1974) (see also Heim 1992; Geurts 1999) notices that if the complement of an attitude predicate (which is not a factive verb or a verb

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[8] The latter ignorance part is argued to be a pragmatic inference (see Section 5.4).

of saying) presupposes p, then the sentence as a whole presupposes not p but that the attitude holder believes p. Under normal circumstances the sentence in (12) would presuppose not (12a) but rather (12b). This projection pattern is not found in sentences with QIs, where the reportative implication projects in its unmodified form (13).

(12)   Patrick wants to sell his cello.   (Heim 1992: 183)

    a.   ↝̸ Patrick owns a cello.

    b.   ↝ Patrick believes that he owns a cello.

(13)   Ivan iska-l   da se   obadi na *edi-koj si.*
       Ivan want-EV to REFL call   to QI.MASC

       'Ivan wants to call someone.'
       REPORTATIVE IMPLICATION:
       ✓ 'The person Ivan wants to call was mentioned to the speaker in a previous conversation.'
       ✗ 'Ivan believes that the person he wants to call was mentioned to the speaker in a previous conversation.'

The Bulgarian data in (11) and (13) is easily replicated in German. It then appears that the reportative implication is systematically informative and projects in a stronger sense than standard presuppositions do. Given this, I will analyze it as a CONVENTIONAL IMPLICATURE in the sense of Potts (2005), i.e. as a secondary entailment that projects. This analysis explains why the reportative implication cannot be canceled and is implied in an unmodified form.[9]

It is clear from the above discussion that reportative implications make reference to a previous conversation. If the interpretation of QIs depends on secondary speech contexts, QIs should only be able to occur in environments in which the existence of such contexts can be inferred. Indeed, an out-of-the-blue utterance of the Bulgarian sentence in (14) would be infelicitous. QIs in this language need to be licensed either from inside the sentence, e.g. by a verb of saying (15) or an indirect evidential marker (see (1)/(8) above), or from previous discourse, as in (16).

(14)   #Iska-m da gleda-m   *edi-koj si* film.
       want-1SG to watch-1SG QI.MASC movie

       'I want to see some movie.' (attempted)

(15)   Ivan kaza, če   ima srešta   s   *edi-koj si.*
       Ivan say   that have meeting with QI.MASC

       'Ivan said that he is meeting someone (he said whom).'

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[9] An anonymous reviewer asks why presupposition plugs (i.e. verbs of saying; see Karttunen 1973; 1974) are not used as a way of telling apart presuppositions from conventional implicatures. The reason is that in the presence of verbs of saying conventional implicatures can undergo a perspective shift (see Kratzer 1999; Harris & Potts 2009; Koev 2013). The effect of such shift is similar to that of presupposition cancelation, which hampers the comparison between those two layers of meaning.

(16)   Govori-x s   Ivan. Toj šte xodi do *edi-koj si* grad.
       talk-PAST with Ivan he   will go   to QI.MASC city

       'I talked to Ivan. He will visit some city (he said which one).'

Cieschinger & Ebert's (2011) discussion may give the impression that QIs
in German need to be licensed by a c-commanding reportative operator. For
example, German QIs are ruled out in simple main clauses (17) and typically
appear in the scope of verbs of saying (see (2) and (6c) above), speech nouns
like *Behauptung* 'claim', or evidential markers like *angeblich* 'allegedly'. Even
so, licensing from discourse is not completely ruled out, as (18) demonstrates.

(17)   Weißt   du was? #*Die und die* ist   von der Schule geflogen.
       know.3SG you what QI.MASC   be.3SG from the school fly.PP

       'Guess what. Someone has been expelled from school.' (attempted)

(18)   Ich habe gestern   mit Luise geredet und sie hat mir von ihrem
       I   have yesterday with Luise spoken and she has me of   her
       Arbeitsalltag erzählt. *Der und der* lässt   immer die Fenster   offen,
       work routine told   the and the leaves always the windows open
       die und die setzt nie   neuen Kaffee auf und *der und der* kommt
       the and the puts never new   coffee on and the and the comes
       immer zu spät.
       always too late

       'I spoke to Luise yesterday and she told me about her work routine.
       Someone [...] always leaves the windows open, someone else [...] never
       brews new coffee, and someone else [...] is always late.'
                                                    (Cieschinger & Ebert 2011: 196)

One could try to claim that the distribution of German QIs is regulated by
grammatical structure. This would establish an intriguing crosslinguistic con-
trast between German and Bulgarian: while German QIs need to occur in
the syntactic scope of a reportative operator, Bulgarian QIs can also be li-
censed if such an operator is saliently present in previous discourse. We could
attempt to explain this alleged contrast as follows. Let us assume that QIs
introduce a free speech context variable (see Section 4). We could then claim
that such variables come in two flavors: as variables that need to be bound by
a c-commanding operator (this is the type associated with German QIs) or as
variables that can also be bound from discourse (this is the type associated
with Bulgarian QIs). But if this is the right story, how come (18) is acceptable?
We have to stipulate that such sentences contain a covert reportative operator.
Notice, however, that covert reportative operators will still need to be licensed
from discourse, e.g. by the presence of a speech verb in the previous sentence.
If we were allowed to insert covert operators at will, (17) would be acceptable,
contrary to fact. This shows that discourse licensing of German QIs needs to
be assumed one way or another. I will then tentatively adopt the more liberal
view that QIs in both German and Bulgarian can be licensed by grammar or

discourse, where discourse licensing in German may be subject to additional restrictions that need to be investigated further. In short, QIs can generally be used as long as the existence of a secondary speech context can somehow be implied.

The final facet of reportativity that I discuss concerns quotation. When they appear in direct quotation, QIs are ambiguous between a reading whereby they lose their semantic properties (just like other quoted material) and a reading whereby their semantic properties are retained. The Bulgarian sentence in (19) is ambiguous between a VERBATIM reading, in which the speaker repeats Ivan's exact words, and a NON-VERBATIM reading, in which the QI fills in for a (referential) description contained in the original utterance. Parallel sentences in German give rise to the same two readings (20). The ambiguity is also found with English placeholders, as Clark & Gerrig (1990) notice in examples similar to (21).[10]

(19) Ivan kaza: "Maria izliza-l-a   s   *edi-koj si*".
      Ivan say: "Maria go.out-EV-FEM with QI.MASC"

    a. 'Ivan said: "Maria izlizala s edi-koj si".'   (verbatim reading)

    b. 'Ivan said: "Maria izlizala s z", for some referential expression z.'
                                                       (non-verbatim reading)

(20) Claudia sag-te: "*Der und der* ist   angeblich von der Schule
      Claudia say-PAST: "QI.MASC   be.3SG allegedly from the school
      geflogen".
      fly.PP"

    a. 'Claudia said: "Der und der ist angeblich von der Schule geflogen".'
                                                        (verbatim reading)

    b. 'Claudia said: "z ist angeblich von der Schule geflogen", for some referential expression z.'   (non-verbatim reading)

(21) Kyle said: "I haven't seen *whatshisface* in a while".

    a. 'Kyle said: "I haven't seen whatshisface in a while".'
                                                        (verbatim reading)

    b. 'Kyle said: "I haven't seen z in a while", for some proper name z.'
                                                       (non-verbatim reading)

One might wonder whether there are cues that disambiguate between the two possible interpretations of such sentences. Indeed, the absence of a reportative operator inside the quotation provides one such cue. The quotations

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[10] These observations crucially rely on quotation marks as indicators of what is quoted and what is not. As a reviewer points out, spoken language rather uses prosodic cues for quoted status and these rarely provide reliable information on where the boundaries are. Also, orthographic traditions may vary across languages; e.g. quotative adjuncts like *she asked* are graphically unquoted in English but not in French. It is thus important to emphasize that all the judgments reported in the paper were obtained from written examples. The use of quotation marks followed the convention of the particular language and the sentences did not involve any syntactic complexities.

in (19)-(20) contain reportative operators (*-l* '-EV' or *angeblich* 'allegedly', respectively), which license yet do not require a QI. The quoted segment is thus ambiguous: it could have been uttered as is (this is the verbatim interpretation) or some specific expression could have occurred in lieu of the QI in the original utterance (this is the non-verbatim interpretation). However, the non-verbatim reading seems to disappear as soon as the reportative operator is removed. This is because it would then be much harder to construe the quoted segment as uttered in isolation.

The availability of non-verbatim readings suggests that QIs can "confuse" language use and mention. This can be taken as a first hint that QIs range over linguistic expressions. This idea will be one of the major stepping stones for the formal analysis presented in Section 4.

2.3 Restrictions on expressions

I indicated above that QIs range over pieces of language that the speaker heard in a previous conversation. Not just any expression can serve as a QI "antecedent" though. Such an expression needs to be a REFERENTIAL term, where referential terms are assumed to include proper names, definite descriptions, and demonstratives (22). The "antecedent" expression cannot be a quantificational DP (23).

(22) *Maria*: Ima-m   srešta   s   Ivan / šef-a   mi / tozi čovek.
                have-1SG meeting with Ivan / boss-DEF my / this guy

              'I am meeting with Ivan / my boss / this guy.'

      Speaker: Maria ima-l-a   srešta   s   *edi-koj si.*
                  Maria have-EV-FEM meeting with QI.MASC

                'Maria is meeting with someone.'

(23) *Maria*: Ima-m   srešta   s   mnogo koleg-i   / vsički deca.
                have-1SG meeting with many   colleague-PL / all   child.PL

              'I am meeting with many coworkers / all the kids.'

      Speaker: #Maria ima-l-a   srešta   s   *edi-koi si* koleg-i
                  Maria   have-EV-FEM meeting with QI.PL   colleague-PL

              / *edi-koi si* deca.
              / QI.PL   child.PL

It should be emphasized that the restrictions QIs impose are indeed on expressions rather than referents. In (22), for example, the speaker may not have been able to identify the person Maria had referred to in the source context. Even so, the fact that the speaker knows Maria used a referential term is enough to license a report with a QI.

The "antecedent" expression cannot be an indefinite, not even a SPECIFIC indefinite.

(24) *Ivan*: Sreštna-x edin prijatel ot učilište.
            meet.PAST one friend from school

          'I met a friend of mine from school.'

    Speaker: #Ivan sreštna-l *edi-koj si* prijatel ot učilište.
               Ivan meet-EV QI.MASC friend from school

This finding may be initially striking, as specific indefinites have sometimes been analyzed as referential (see e.g. Fodor & Sag 1982). If so, the impossibility of QIs to range over specific indefinites, which in context can be understood as referring to specific individuals, could be taken as further evidence that QIs impose restrictions not on regular model-theoretic entities but rather on linguistic expressions. In other words, the generalization of what can "antecede" QIs carves out a natural class if stated in terms of expressions but becomes muddy if stated in terms of individuals. This is because QIs are not sensitive to whether or not an indefinite is interpreted as denoting a specific individual in the particular context. QIs only see expressions, not what these expressions refer to.

The Bulgarian data in (22)-(24) echo similar restrictions on antecedents imposed by QIs in German. Cieschinger & Ebert (2011: 177–178) observe that (25a), which includes referential expressions, but not (25b), which uses indefinites, can be the source of (26).

(25) *a. Luise*: Der Student aus München / Ludwig hat schon wieder
            the student from Munich / Ludwig has yet again
        das Fenster offen gelassen.
        the window open left

        'The student from Munich / Ludwig has left the window open yet again.'

   b. Luise: Irgendjemand / Ein Freund von mir aus München hat
           someone / a friend of mine from Munich has
        schon wieder das Fenster offen gelassen.
        yet again the window open left

        'Someone/A friend of mine from Munich has left the window open yet again.'

(26) *Speaker*: Luise hat sich mal wieder beklagt, *der und der*
            Luise has [REFL] yet again complained the and the
        hätte schon wieder das Fenster offen gelassen.
        would.have yet again the window open left

        'Luise complained again that someone has left the window open yet again.'

These data suggest that the referentiality restriction on "antecedent" expressions is quite robust across Bulgarian and German.

2.4 Summary

I have provided empirical evidence that QIs are a special kind of indefinites which range over referential expressions that were uttered in some target conversation. In other words, QIs range over a particular type of quoted speech, i.e. quoted referential expressions.

3 Previous work

This section briefly reviews two existing accounts of QIs or related indefinite forms: the expression-based account of Sudo (2008; ms) and the individual-based account of Cieschinger & Ebert (2011). Since both accounts were tailored for indefinites in a particular language or even for particular uses of such indefinites, it is not surprising that without important modifications these accounts cannot capture the rich data discussed in Section 2.

Sudo (2008; ms) makes two major claims about Japanese *wh*-doublets.[11] Focusing on *dare-dare*, he argues (i) that this indefinite can only appear in quoted speech and (ii) that it existentially quantifies over person-denoting referential expressions. Sudo develops a compositional fragment which incorporates u as the logical type of linguistic expressions (see Potts 2007). He proposes the following (here slightly simplified) semantics for *dare-dare*.

(27) $\llbracket \text{dare-dare} \rrbracket = \lambda P_{\mathtt{u} \to \mathtt{t}}.\exists z_{\mathtt{u}}(\llbracket z \rrbracket \in D_{\mathtt{e}} \,\&\, \mathbf{person}(\llbracket z \rrbracket) \,\&\, P(z))$

According to (27), Japanese *dare-dare* is a generalized quantifier with an existential force. Since it ranges over expressions, it is expected to be able to make claims about quoted speech. In order to derive non-verbatim readings, Sudo assumes that *dare-dare* can raise and be interpreted outside the quotational environment. Since quotations are strings (of type u), this movement operation creates a property of expressions (of type $\mathtt{u} \to \mathtt{t}$) with which the proposed meaning in (27) can easily be composed. The referentiality condition is captured by requiring that the expressions which *dare-dare* quantifies over have interpretations of type $\mathtt{e}$ and the sortal restriction to person denotations is directly stated.[12]

Can this analysis of Japanese *dare-dare* be extended to QIs in Bulgarian and German? The main challenge to doing so would be derive the uses of QIs outside quotational environments. Accounting for such uses is not straightforward because regular generalized quantifiers express properties of properties of individuals (of type $(\mathtt{e} \to \mathtt{t}) \to \mathtt{t}$) while *dare-dare* meanings, which are supposed to occupy the same syntactic slots in the sentence, are properties of

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[11] The semantic properties of Japanese *wh*-doublets are further discussed in Section 5.3.

[12] Notice that Sudo's solution to the referentiality condition imposes non-trivial restrictions on the logical types assigned to DP meanings. Since proper names, definite descriptions, and demonstratives but not indefinites can "antecede" *dare-dare* (see Sudo 2008; ms), we are forced to assume that the former expressions evaluate to type $\mathtt{e}$ while the latter expressions evaluate to some other logical type, e.g. $(\mathtt{e} \to \mathtt{t}) \to \mathtt{t}$.

properties of expressions (of type $(\mathtt{u} \to \mathtt{t}) \to \mathtt{t}$). Sudo's analysis of Japanese *dare-dare* then needs significant modifications if it is to be of crosslinguistic relevance.

Cieschinger & Ebert (2011) offer a different and more conservative analysis of QIs in German. According to them, German QIs are indefinites over individuals which also carry the presupposition that such individuals are uniquely identifiable in a related speech context. Simplifying a bit and assuming that speech contexts are of type $\mathtt{k}$, Cieschinger & Ebert's proposed meaning for German *der und der* can be rendered as follows.

(28) $[\![\text{der und der}]\!]^c = \begin{cases} \lambda P_{\mathtt{e} \to \mathtt{t}}.\exists x_{\mathtt{e}} P(x) & \text{if } \exists c'_{\mathtt{k}}(c' \neq c \text{ \& } x \text{ is uniquely identifiable in } c') \\ \# & \text{otherwise} \end{cases}$

This interpretation rule treats *der und der* as an indefinite generalized quantifier, i.e. as a function of type $(\mathtt{e} \to \mathtt{t}) \to \mathtt{t}$. It is a partial function, as it is only defined if the referent is uniquely identifiable in some secondary speech context.

The proposed meaning directly captures the indefinite nature of QIs. Unlike in Sudo's analysis, in which the referentiality requirement is stated in terms of logical types, here selecting the right "antecedent" expression is left to pragmatics. The idea seems to be that since the referent is uniquely identifiable in the source context, the original speaker would not have used a non-referential term in order to describe it. Specific indefinites would be ruled out under the assumption that, in the source context, the referent is known to the speaker but not the hearer and thus the referent is not mutually identifiable.[13] While this assumption may commit its proponents to some non-referential view of specificity (e.g. Sæbø 2013; Kamp & Bende-Farkas ms), it does capture the data.

A minor worry about Cieschinger & Ebert's account is that although the reportative inference projects, it does not behave like a regular presupposition (recall the discussion in Section 2.2). More importantly, it is not clear how this account could explain the interaction of QIs with quotation. If QIs were indeed regular indefinites which trigger certain presuppositions, why can they occur in direct quotations and give rise to non-verbatim readings, as in (19)-(20) above? Intuitively, we want to say that in such cases QIs make claims about linguistic expressions. But it is less clear how a regular indefinite meaning as in (28) could talk about expressions. The possibility of occurrence in both quoted and non-quoted speech without an apparent effect on their interpretation is something any theory of QIs should be able to explain.

The upshot of the discussion is that Sudo's expression-based account is better suited to modeling the occurrence of QIs in quotation while Cieschinger & Ebert's individual-based accounts can more naturally capture their appearance outside quotational environments. My strategy in the next section will be to adopt components of both of those accounts. I will propose a single lexical

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[13] I thank Cornelia Ebert (p.c.) for clarifying this point.

meaning for QIs which interacts in the right way with both quotational and non-quotational environments.

4 Proposal

The formal account rests on the assumption that QIs range over referential expressions that originate in a previous conversation and thus serve as place-holders for quoted material. Just like regular indefinites are used to talk about individuals, QIs are used to refer to parts of direct speech. Since quotation plays such an important role in the account, the proposal will be embedded into a simple semantics for quotation. I will first introduce a simple two-dimensional semantics for quotation and then discuss how QIs fit into it.

4.1 A two-dimensional semantics for quotation

The semantics of quotation has been extensively studied in the philosophy literature (see Cappelen & Lepore 2012 and Saka 2013 for two recent overviews). The topic has recently sparked interest in the formal semantics literature as well (see e.g. Potts 2007; Shan 2010; Ginzburg & Cooper 2014; Maier 2014). In this section, I build on the main insights coming from previous work and introduce a two-dimensional semantics for quotation on which the analysis of QIs is based. The semantics presented below is fairly rudimentary and ignores several of the intricacies of quotation, briefly discussed at the end of this subsection. Despite that, it should suffice for our purposes, as the simplifications undertaken do not seem to directly bear on the proposed analysis of QIs.

When analyzing quotation, the first and perhaps most important move is to ensure that linguistic expressions are recognized as model-theoretic entities in their own right. To this end, I follow Potts (2007) and introduce a new logical type for linguistic expressions. I thus assume the following basic types: e for individuals, t for truth values, s for possible worlds, k for speech contexts, and u for linguistic expressions. Complex types are formed from these and can be functional (e.g. $\sigma \to \tau$) or product (e.g. $\sigma \times \tau$), for any types σ and τ. As we will see shortly, product types are assigned to two-dimensional meanings. I assume domains for all basic entities as well as functional and product domains, defined as $D_{\sigma \to \tau} := D_{\tau}^{D_{\sigma}}$ and $D_{\sigma \times \tau} := D_{\sigma} \times D_{\tau}$ (respectively). The full domain is $D := \bigcup_{\tau} D_{\tau}$. Domains of the form D_u are sets of all possible strings, not only the ones that are a part of the language.[14] This idea can be made formally precise as follows. Let A be an alphabet, i.e. a set of letters or phonological segments. For written English, A would be $\{\varepsilon, a, b, c, ...\}$, where ε is the blank space. A^* is the set of all finite strings over A and can be defined as $\{a_1 \frown ... \frown a_n \mid a_i \in A, \text{ for } i = 1, ..., n\}$, where $\frown$ is the concatenation operation. If D_u is identified with A^*, it will contain all possible strings over A. L, the language based on A, is a subset of A^*, as it only contains the grammatical or well-formed expressions

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[14] This is because quoted speech need not be well-formed (see (37) below).

in A^*.[15] I assume that models M are tuples of the form $\langle L, D, [\![\cdot]\!] \rangle$, where L is a natural language, D is the domain of objects of any type, and $[\![\cdot]\!] : L \to D$ is the usual interpretation function. I will relativize the interpretation function to an utterance context, a world of evaluation, and (whenever necessary) to an assignment function.

We saw in Section 2.2 that sentences with QIs give rise to reportative implications which behave like conventional implicatures. In order to capture this fact, I will assume that meanings are two-dimensional such that the at-issue content makes up the first dimension and conventionally implicated content projects a second dimension (cf. Potts 2005). A two-dimensional semantics like this necessitates a reformulation of the standard composition rule of function application along the following lines.

(29) TWO-DIMENSIONAL FUNCTION APPLICATION
       If $[\![A]\!]^{c,w}_{(\sigma \to \tau) \times \mathsf{t}} = \langle a_1, a_2 \rangle$ and $[\![B]\!]^{c,w}_{\sigma \times \mathsf{t}} = \langle b_1, b_2 \rangle$, then $[\![A\ B]\!]^{c,w}_{\tau \times \mathsf{t}} = [\![B\ A]\!]^{c,w}_{\tau \times \mathsf{t}} = \langle a_1(b_1), a_2\ \&\ b_2 \rangle$.

This rule states that function-argument composition happens in the first dimension while conventionally implicated content is simply conjoined. Since the latter content is always of type t, this is always possible.

As a demonstration, imagine that we are given the lexical meanings $[\![\text{Kristen}]\!]^{c,w}_{\mathsf{e} \times \mathsf{t}} = \langle \mathbf{kristen}, \top \rangle$ and $[\![\text{asleep}]\!]^{c,w}_{(\mathsf{e} \to \mathsf{t}) \times \mathsf{t}} = \langle \lambda x_{\mathsf{e}}.\mathbf{asleep}(w, x), \top \rangle$, where c is a context, w is a possible world, and lexical items without conventionally implicated content are assigned $\top$ (for "tautology") in their second dimension. These meanings can be composed by the two-dimensional function application rule as in (30), which asserts that Kristen is asleep (in the world w and the context c) and has an uninformative second meaning dimension.

(30) a. Kristen is asleep.
      b. $[\![\text{Kristen is asleep}]\!]^{c,w} = \langle \lambda x_{\mathsf{e}}.\mathbf{asleep}(w, x)(\mathbf{kristen}), \top\&\top \rangle$
          $= \langle \mathbf{asleep}(w, \mathbf{kristen}), \top \rangle$

This semantics correctly predicts that sentential operators only take scope over the first, at-issue dimension while the second meaning dimension projects. For example, if we define negation as $[\![\text{not}]\!]^{c,w}_{(\mathsf{t} \to \mathsf{t}) \times \mathsf{t}} = \langle \lambda p_{\mathsf{t}}.\neg p, \top \rangle$, we get for (31a) the meaning in (31b).

(31) a. Kristen is not asleep.
      b. $[\![\text{not [Kristen is asleep]}]\!]^{c,w} = \langle \lambda p_{\mathsf{t}}.\neg p(\mathbf{asleep}(w, \mathbf{kristen})), \top\&\top \rangle$
          $= \langle \neg\mathbf{asleep}(w, \mathbf{kristen}), \top \rangle$

Next, I discuss quotation and demonstrate how its basic semantic properties can be captured in the formal setup just outlined. Quotation is often subdivided into three major categories: PURE, DIRECT, and MIXED. These categories are illustrated below.

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[15] See Maier (2014) for a similar implementation.

(32)   a. "Bachelor" has eight letters.   (pure quotation)
        b. Quine said: "Quotation has a certain anomalous feature".
                                                    (direct quotation)
        c. Quine said that quotation "has a certain anomalous feature".
                                                    (mixed quotation)

Pure quotation is a linguistic tool which enables speakers to make reference
not to the denotation of an expression but rather to the expression itself.
Direct quotation makes reference to expressions as well but it also attributes
the quoted segment to a specific agent. Mixed quotation owes its name to
the fact that it exhibits a mixture of properties associated with both direct
and indirect discourse (see Davidson 1979; Cappelen & Lepore 1997; Potts
2007; Shan 2010; Maier 2014). Like indirect discourse, mixed quoted segments
contribute to the semantic composition in the usual way. However, and similar
to direct quotation, such segments attribute the quoted expression to some
agent.

   Although direct and pure quotations are often distinguished as two different
types, for the purposes of this paper I will assume that they share core semantic
properties. This is because direct and pure quotations both contribute an
expression rather than a regular meaning to the semantic computation. In
addition, they both fill argument positions, as can already be seen from (32a)-
(32b) (see also Partee 1973; Recanati 2001; Bonami & Godard 2008; de Vries
2008). I suggest that the main difference between pure and direct quotation
may primarily lie in the immediate linguistic environment rather than the
quoting device itself. The idea can be illustrated as follows: while (33a) would
be characterized as containing a direct quotation and (33c) as containing a pure
quotation, (33b) is somewhere in between. This suggests that we are dealing
with basically the same type of quotation and the felt contrast between direct
and pure quotation is more likely due to the role these play in the sentence
rather than their intrinsic properties.[16]

(33)   a. My brother said: "Ariana is amazing".
        b. "Ariana is amazing" were the words my brother uttered.
        c. "Ariana is amazing" has three words.

   Given this discussion, I propose that pure and direct quotations refer to
the linguistic expression inside the quotation marks. This idea follows the
so-called DISQUOTATIONAL THEORY of quotation (Richard 1986), which has
been widely adopted in the formal semantics literature (see Potts 2007; Pagin
& Westerståhl 2010; Shan 2010; Maier 2014). As a first pass, I assume the
following interpretation rule for pure/direct quotation. (I use Quine corners
$\ulcorner \cdot \urcorner$ in the metalanguage to reference a string.)

(34)   PURE/DIRECT QUOTATION (first version)
        $[\![``\alpha"]\!]^{c,w}_{u \times t} = \langle \ulcorner \alpha \urcorner, \top \rangle$

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[16] More specifically, pure quotation can be viewed as generalizing direct quotation by
abstracting away from the particular speech context (cf. Ginzburg & Cooper 2014).

Notice that the quoted expression is only required to be an element of $D_{\mathtt{u}}$ and need not be well-formed, i.e. need not be in L. This is in line with the finding that quoted expressions are not necessarily a part of the language of the surrounding discourse. For example, the two sentences below are grammatical while the quoted segments they contain are not.

(35) a. "Eculectic" is not a word of English.

   b. Teresa said: "I am agree."

Since pure/direct quotations denote expressions in their first dimension, we expect certain predicates to take arguments of this type in their first dimension. We thus have to enrich the lexicon with meanings like $[\![\text{word}]\!]_{(\mathtt{u}\to\mathtt{t})\times\mathtt{t}}^{c,w} = \langle\lambda z_{\mathtt{u}}.\mathbf{word}(w,z), \top\rangle$, which readily compose with quotation denotations.

   I now turn to mixed quotation. Mixed quotation is a tool which signals that a stretch of discourse is simultaneously being used and attributed to another speaker. For example, the sentence in (36) has as its regular meaning (36a) but it also implies (36b).

(36) Obama is the "coolest president in U.S. history".

   a. Obama is the coolest president in U.S. history.

   b. Someone uttered the words "coolest president in U.S. history".

The secondary implication associated with mixed quotation is very similar to the reportative implication triggered by QIs, except that here the previously uttered expression is spelled out rather than existentially quantified over. Secondary implications introduced by mixed quotations project past entailment-canceling operators (see (37)) and can be analyzed as presuppositions (see Maier 2014) or conventional implicatures (cf. Potts 2007). I will adopt the latter option and give arguments similar to the ones offered for reportative implications associated with QIs (recall Section 2.2): the secondary implication of mixed quotations is typically informative, it is not easily cancelable in conditional sentences (38), and it cannot be weakened when embedded under certain propositional attitude predicates (39).

(37) a. Obama is not / might be the "coolest president in U.S. history".

   b. ⇝ Someone uttered the words "coolest president in U.S. history".

(38) ?If that is what Jack said, then Obama is definitely the "coolest president in US history".

(39) Trump wants to "make America great again".

   a. ⇝ Someone uttered the words "make America great again".

   b. ⇏ Trump believes that someone uttered the words "make America great again".

I assume that mixed quotations make use of the regular meaning of the quoted expression and conventionally implicate that the quoted segment was uttered in a previous conversation. An interpretation rule for mixed quotation that achieves this effect is given below. (For a given speech context c, let $\mathbf{sp}(c)$ be the speaker of c, $\mathbf{hr}(c)$ be the hearer of c, and $\mathbf{utt}(c)$ be the set of expressions uttered in c.)

(40)   MIXED QUOTATION

$$\llbracket \text{``}\alpha\text{''} \rrbracket^{c,w}_{\sigma \times t} = \left\langle \begin{array}{c} \llbracket \alpha \rrbracket^{c',w}, \\ \mathbf{sp}(c) = \mathbf{hr}(c') \, \& \, \ulcorner\alpha\urcorner \in \mathbf{utt}(c') \end{array} \right\rangle, \text{ for any type } \sigma$$

This interpretation rule states that a mixed quoted segment is interpreted relative to a source context c', thus capturing the fact that indexical elements inside mixed quotation usually undergo perspective shift (see Maier 2014). Mixed quotation conventionally implicates that the quoted segment was uttered in the source context and that the current speaker participated in that context as a hearer. I assume that the free metalanguage variable c' is bound by a speech context operator found in previous discourse. For example, in *Trump said that McCain is "not a war hero"* the source context will be understood as the secondary context introduced by the verb of saying.

The semantics for quotation presented in this section is fairly rudimentary and ignores numerous important aspects. Here I briefly mention some of those aspects and occasionally suggest solutions. First, the interpretation rule in (34) predicts that material inside pure/direct quotation is semantically inert, while in reality it can show a surprising amount of transparency. Partee (1973: 412) points out cases like *The sign says, "George Washington slept here," but I don't believe he really ever did*, where the pronoun and the elided VP in the second conjuncts pick out their antecedents from inside the quotation. In addition, quotation-taking verbs seem to impose restrictions on the force of the quoted sentence: while *Bill asked: "Where is Amanda?"* is acceptable, *Bill stated: "Where is Amanda?"* is not.[17] One might suggest that such cases arise through some sort of a pragmatic inference whereby the direct quotation is reinterpreted as a complement of the verb of saying (cf. Potts 2007).[18] Relatedly, (34) requires a string-identity between the original utterance and the cited segment although these could be in two different languages (see Recanati 2001). If so, we need to invoke some sort of a similarity measure between what was originally uttered and what is actually quoted (see Ginzburg & Cooper 2014; Maier 2014). Mixed quoted expressions may slightly deviate from the standard grammar of the language as well, as in *Bush has an "eculectic" reading list*, where *eculectic* spells out Bush's pronunciation of the word "eclectic". In order to allow mixed quoted words to deviate from the standard use of language, the interpretation rule in (40) needs to somehow factor in the intentions

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[17] I owe this observation to Peter Sutton, p.c.

[18] Below, we will encounter another apparent case of transparency in quotations, i.e. the possibility that quoted QIs are interpreted outside the quoted segment. I believe this has less to do with the nature of quotation and has more to do with the expression-based semantics of QIs.

of the original speaker (see Potts 2007; Shan 2010; Maier 2014 for technical implementations of the idea).

4.2 The semantics of QIs

Let me recap the semantic properties of QIs in Bulgarian and German, discussed in Section 2.

 (i) QIs existentially quantify over linguistic expressions.
 (ii) QIs serve reportative functions. They require that the expressions they quantify over be uttered in a previous conversation.
 (iii) QIs impose restrictions on the type of expressions they range over. Nominal QIs, which are the focus of this paper, can only range over referential expressions. Referential expressions include proper names, definite descriptions, and demonstratives.

I propose the following lexical meaning for QIs.[19]

(41)   QUOTATIONAL INDEFINITES

$$\llbracket \mathrm{QI} \rrbracket^{c,w}_{((\mathtt{e} \to \mathtt{t}) \to \mathtt{t}) \times \mathtt{t}} = \left\langle \begin{array}{c} \lambda P_{\mathtt{e} \to \mathtt{t}}.\exists z_{\mathtt{u}} P(\llbracket z \rrbracket^{c',w}), \\ \mathbf{sp}(c) = \mathbf{hr}(c') \,\&\, z \in \mathbf{utt}(c') \,\&\, \mathbf{r\text{-}expr}(w, z) \end{array} \right\rangle$$

According to this definition, QIs are interpreted as properties of properties of individuals, just like under Cieschinger & Ebert's (2011) analysis. However, and in line with Sudo (2008; ms), QIs existentially quantify over expressions. This hybrid analysis implies that even though QIs make reference to expressions, they compose with the rest of the sentence in the usual way. In addition, QI meanings are truly two-dimensional. Their at-issue component is that of indefinites but they also conventionally implicate that the expressions they range over are referential and were uttered in a previous conversation which included the current speaker. The proposed meaning then directly derives the properties of QIs listed in (i)-(iii) above.

Notice that there are free occurrences of two metalanguage variables in (41). First, the expression z is introduced in the first meaning dimension but is free in the second meaning dimension; also, the source context c' is free throughout. I assume that the former variable is bound by the existential quantifier in the first dimension and that the latter variable is bound from previous discourse (just like in the case of mixed quotation). Although the proposed two-dimensional semantics cannot make explicit such discourse anaphoric dependencies, such dependencies are easily captured in dynamic

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[19] I disregard the fact that QIs in Bulgarian and German can optionally take an NP complement, as in *edi-koe si gadže* 'QI.NEUT boyfriend' (6b) or *dem und dem Freund* 'QI.DAT friend' (6c). If a restrictor argument turns out to be obligatory, the at-issue meaning of QIs should be amended to $\lambda P_{\mathtt{e} \to \mathtt{t}} \lambda Q_{\mathtt{e} \to \mathtt{t}}.\exists z_{\mathtt{u}}(P(\llbracket z \rrbracket^{c',w}) \,\&\, Q(\llbracket z \rrbracket^{c',w}))$. One could then assume that when an overt restrictor is missing, a covert NP with some underspecified meaning is present.

systems that separate the primary and the secondary entailments of the sentence (see Nouwen 2007; Koev 2013; Murray 2014; AnderBois et al. 2015).[20] I abstain from introducing a dynamic semantic account for QIs mostly for reasons of expository ease.

One should not miss the close similarity between the meaning of QIs in (41) and the meaning for mixed quotation in (40). While both meanings give rise to reportative implications, mixed quotation refers to a specific expression while QIs existentially quantify over expressions. In other words, QIs can be viewed as existential generalizations over quoted expressions. This consequence of the analysis does justice to the intuition that a sentence of the form *Maria is dating QI* can be understood as a less informative counterpart of a sentence like *Maria is dating "her boss"*.

We now need to demonstrate how the proposed meaning for QIs interacts with the rest of the compositional semantics. In particular, we need to derive the attested readings of QIs in quoted and non-quotational environments. Starting out with non-quotational environments, I assume that when QIs are syntactic arguments of predicates they undergo QUANTIFIER RAISING, i.e. they covertly adjoin to the host clause and their argument slot is lambda bound (see May 1977; Heim & Kratzer 1998).[21] I assume that the lambda-abstracted predicate, which composes with the raised QI, is interpreted via the following predicate abstraction rule. (I follow Heim & Kratzer's 1998 practice of using integers as a syntactic reflex of abstraction operations.)

(42)   TWO-DIMENSIONAL PREDICATE ABSTRACTION
        If $[\![S]\!]^{c,w,g}_{\mathsf{t}\times\mathsf{t}} = \langle [\![S_1]\!]^{c,w,g}, [\![S_2]\!]^{c,w,g} \rangle$, then $[\![i\ S]\!]^{c,w,g}_{(\mathsf{e}\to\mathsf{t})\times\mathsf{t}} = \langle \lambda x_{\mathsf{e}}.[\![S_1]\!]^{c,w,g[t_i/x]}, [\![S_2]\!]^{c,w,g} \rangle$.

As an illustration, consider the compositional interpretation of the Bulgarian clause *Maria xaresva edi-koj si* 'Maria likes QI' (43a). The first line

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[20] For example, Murray (2014) and AnderBois et al. (2015) offer unidimensional dynamic accounts whereby at-issue content introduces an update proposal that can be negotiated among speech participants while conventionally implicated content directly restricts the context set. Building on this idea, let γ be the logical type of assignment functions, information states be characteristic functions from assignment functions (of type $\gamma \to \mathsf{t}$), and updates be functions from information states to information states (of type $(\gamma \to \mathsf{t}) \to (\gamma \to \mathsf{t})$). The dynamic meaning of a sentence of the form *QI arrived* can then be stated as follows. (Notice that each conjunct below abbreviates an appropriate type-theoretic meaning; cf. Muskens 1996.)

(i) $[\![\text{QI arrived}]\!]^c_{(\gamma\to\mathsf{t})\to(\gamma\to\mathsf{t})}$
      $= \exists p_{\mathsf{s}\to\mathsf{t}} \wedge \exists z_{\mathsf{u}} \wedge arrive(p, [\![z]\!]^{c'}) \wedge \mathbf{sp}(c) = \mathbf{hr}(c') \wedge z \in \mathbf{utt}(c') \wedge \mathbf{r\text{-}expr}(\mathbf{cs}(c), z)$

The at-issue proposition is p. Due to the update $arrive(p, [\![z]\!]^{c'})$, p can only contain worlds in which $[\![z]\!]^{c'}$ arrived. If accepted, the at-issue proposition will restrict $\mathbf{cs}(c)$, the context set of c, by means of an update like $\mathbf{cs}(c) \subseteq p$. The conventionally implicated content of the sentence is directly predicated of the context set, via $\mathbf{r\text{-}expr}(\mathbf{cs}(c), z)$. Crucially, all occurrences of z are dynamically bound by $\exists z_{\mathsf{u}}$ and c' will be anaphoric to a speech context operator placed in previous discourse.

[21] The mechanism of quantifier raising is independently motivated by the need to fix type mismatches resulting from occurrences of quantificational objects.

in (43b) is derived as in (30) and the second line makes use of the predicate abstraction rule in (42).

(43)   a. edi-koj si [1 [Maria xaresva t_1]]

      b. $[\![$Maria xaresva $t_1]\!]^{c,w,g} = \langle \mathbf{like}(w, \mathbf{maria}, g(t_1)), \top \rangle$
$[\![1$ [Maria xaresva $t_1]]\!]^{c,w,g} = \langle \lambda x_{\mathsf{e}}.\mathbf{like}(w, \mathbf{maria}, g[t_1/x](t_1)), \top \rangle$
$= \langle \lambda x_{\mathsf{e}}.\mathbf{like}(w, \mathbf{maria}, x), \top \rangle$
$[\![$edi-koj si [1 [Maria xaresva $t_1]]]\!]^{c,w,g}$
$= \left\langle \begin{array}{c} \lambda P_{\mathsf{e}\to\mathsf{t}}.\exists z_{\mathsf{u}} P([\![z]\!]^{c',w,g})(\lambda x_{\mathsf{e}}.\mathbf{like}(w, \mathbf{maria}, x)), \\ \mathbf{sp}(c) = \mathbf{hr}(c') \,\&\, z \in \mathbf{utt}(c') \,\&\, \mathbf{r\text{-}expr}(w, z) \,\&\, \top \end{array} \right\rangle$
$= \left\langle \begin{array}{c} \exists z_{\mathsf{u}}\mathbf{like}(w, \mathbf{maria}, [\![z]\!]^{c',w,g}), \\ \mathbf{sp}(c) = \mathbf{hr}(c') \,\&\, z \in \mathbf{utt}(c') \,\&\, \mathbf{r\text{-}expr}(w, z) \end{array} \right\rangle$

The resulting meaning asserts that Maria likes someone and conventionally implicates that the speaker heard a referential expression denoting that person in another speech context. This meaning will only be acceptable if it is embedded in a discourse which entails the existence of a secondary speech context that can be picked out by c'. For example, this could be the context introduced by verbs of indirect speech, which are sometimes assumed to have denotations along the following lines (cf. Kaplan 1989; Sæbø 2013).

(44) $[\![$say $S]\!]^{c,w}_{(\mathsf{e}\to\mathsf{t})\times\mathsf{t}} = \langle \lambda x_{\mathsf{e}}.\exists c'_{\mathsf{k}}\exists S'_{\mathsf{u}}(S' \in \mathbf{utt}(c') \,\&\, x = \mathbf{sp}(c') \,\&\, [\![S']\!]^{c'} \subseteq [\![S]\!]^c), \top\rangle$

According to this interpretation rule, a sentence of the form *A said that S* requires that *A* uttered some expression S' which (as interpreted in the source context) entails S (as interpreted in the utterance context). The entailment condition is formally stated as $[\![S']\!]^{c'} \subseteq [\![S]\!]^c$, where in general $[\![\alpha]\!]^c$, with the world argument suppressed, is the INTENSION of α in the context c, i.e. a function from possible worlds w to $[\![\alpha]\!]^{c,w}$.[22]

With this meaning in place, the interpretation of (45a) will be as in (45b). This interpretation asserts that Ivan's original utterance entails that Maria likes someone and conventionally implicates that Ivan used a referential expression to pick out that person. The derived meaning is fully in line with intuitions about the meaning of (45a).

(45)   a. Ivan kaza, če   Maria xaresva *edi-koj si.*
        Ivan say   that Maria like   QI.MASC

      b. $[\![$Ivan kaza edi-koj si [1 [Maria xaresva $t_1]]]\!]^{c,w}$
$= \left\langle \begin{array}{c} \exists c'_{\mathsf{k}}\exists S'_{\mathsf{u}}(S' \in \mathbf{utt}(c') \,\&\, \mathbf{ivan} = \mathbf{sp}(c') \,\&\, [\![S']\!]^{c'} \subseteq \lambda w'_{\mathsf{s}}.\exists z_{\mathsf{u}}\mathbf{like}(w', \mathbf{maria}, [\![z]\!]^{c',w})), \\ \mathbf{sp}(c) = \mathbf{hr}(c') \,\&\, z \in \mathbf{utt}(c') \,\&\, \mathbf{r\text{-}expr}(w, z) \end{array} \right\rangle$

Next, I discuss the readings of QIs in pure/direct quotation. Recall from (19), repeated below as (46), that in such cases QIs can be interpreted as part

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[22] I am slightly abusing notation here. Since technically intensions are functions rather than sets, the entailment condition in (44) should rather read $\forall w'([\![S']\!]^{c'}(w') \Rightarrow [\![S]\!]^c(w'))$. Alternatively, the entailment condition could be written as $^{\{\}}[\![S']\!]^{c'} \subseteq {}^{\{\}}[\![S]\!]^c$, where $^{\{\}}\varphi_{\mathsf{s}\to\mathsf{t}} := \{w \in D_{\mathsf{s}} \mid \varphi(w) = 1\}$.

of the quotation (the verbatim reading) or as filling in for some referential expression present in the original utterance (the non-verbatim reading).

(46) Ivan kaza: "Maria izliza-l-a   s   *edi-koj si*".
      Ivan say: "Maria go.out-EV-FEM with QI.MASC"

   a. 'Ivan said: "Maria izlizala s edi-koj si".'   (verbatim reading)

   b. 'Ivan said: "Maria izlizala s z", for some referential expression z.'
                                                        (non-verbatim reading)

The verbatim reading in (46a) is easy to derive. Assuming that direct speech verbs have lexical meanings as in (47) and using the interpretation rule for pure/direct quotations in (34), we obtain the meaning in (48), in which the QI is contained in Ivan's original utterance.

(47) $[\![\text{say: "}S\text{"}]\!]^{c,w} = \langle \lambda x_{\mathbf{e}}.\exists c'_{\mathbf{k}}([\![\text{"}S\text{"}]\!]^{c,w} \in \mathbf{utt}(c') \,\&\, x = \mathbf{sp}(c')), \top \rangle$

(48) $[\![\text{Ivan kaza: "Maria izlizala s edi-koj si"}]\!]^{c,w}$
      $= \langle \exists c'_{\mathbf{k}}(\ulcorner\text{Maria izlizala s edi-koj si}\urcorner \in \mathbf{utt}(c') \,\&\, \mathbf{ivan} = \mathbf{sp}(c')), \top \rangle$

In order to derive non-verbatim readings, I follow Sudo (2008) and Maier (2014) in assuming that QIs can raise out of quotation. Since syntactic movement out of quotation is generally prohibited, I hypothesize that it is possible for QIs because of their expression-based semantics. This move, however, also necessitates a way to handle traces inside quotations. This requires a slight reformulation of the original interpretation rule for pure/direct quotation in (34). The new version of the rule allows traces inside quotations to be substituted by other expressions without interpreting the quotation itself.

(49) PURE/DIRECT QUOTATION (final version)
      $[\![\text{"}\alpha\text{"}]\!]_{\mathbf{u}\times\mathbf{t}}^{c,w,g[t_1/[\![z_1]\!]^{c',w,g},...,t_n/[\![z_n]\!]^{c',w,g}]} = \langle \ulcorner\alpha\urcorner[t_1/z_1,...,t_n/z_n], \top \rangle$,
      where $\ulcorner\alpha\urcorner[t_1/z_1,...,t_n/z_n]$ is just like $\ulcorner\alpha\urcorner$ but with all occurrences of
      $t_1,...,t_n$ in $\ulcorner\alpha\urcorner$ substituted by $z_1,...,z_n$ (respectively)

The non-verbatim reading in (46b) can now be derived as shown below. The updated pure/direct quotation rule is used in the last step of the derivation. The meaning we arrive at roughly states that Ivan uttered the words "Maria izlizala s z", where z is some referential expression. This is as required.

(50) $[\![\text{edi-koj si [1 [Ivan kaza: "Maria izlizala s } t_1\text{"]]]}]\!]^{c,w,g}$

$= \left\langle \begin{array}{c} \lambda P_{\mathbf{e}\to\mathbf{t}}.\exists z_{\mathbf{u}} P([\![z]\!]^{c',w,g})(\lambda x_{\mathbf{e}}.\exists c'_{\mathbf{k}}([\![\text{"Maria izlizala s } t_1\text{"}]\!]^{c,w,g[t_1/x]} \in \mathbf{utt}(c') \,\&\, \mathbf{ivan} = \mathbf{sp}(c'))), \\ \mathbf{sp}(c) = \mathbf{hr}(c') \,\&\, z \in \mathbf{utt}(c') \,\&\, \mathbf{r\text{-}expr}(w,z) \,\&\, \top \end{array} \right\rangle$

$= \left\langle \begin{array}{c} \exists z_{\mathbf{u}}\exists c'_{\mathbf{k}}([\![\text{"Maria izlizala s } t_1\text{"}]\!]^{c,w,g[t_1/[\![z]\!]^{c',w,g}]} \in \mathbf{utt}(c') \,\&\, \mathbf{ivan} = \mathbf{sp}(c')), \\ \mathbf{sp}(c) = \mathbf{hr}(c') \,\&\, z \in \mathbf{utt}(c') \,\&\, \mathbf{r\text{-}expr}(w,z) \end{array} \right\rangle$

$= \left\langle \begin{array}{c} \exists z_{\mathbf{u}}\exists c'_{\mathbf{k}}(\ulcorner\text{Maria izlizala s } z\urcorner \in \mathbf{utt}(c') \,\&\, \mathbf{ivan} = \mathbf{sp}(c')), \\ \mathbf{sp}(c) = \mathbf{hr}(c') \,\&\, z \in \mathbf{utt}(c') \,\&\, \mathbf{r\text{-}expr}(w,z) \end{array} \right\rangle$

This concludes the presentation of the formal account. In the next section, I consider one alternative and discuss three important extensions of the proposal.

5 Alternatives and extensions

In the previous section, I made the less standard assumption that QIs can raise out of quotation. In this section, I consider the possibility that non-verbatim readings arise through the mechanism of "unquotation". I also demonstrate that the formal proposal easily generalizes to QIs that range over predicative expressions, I discuss the case of *wh*-doublets in Japanese, and I show how to derive certain ignorance inferences associated with QIs.

5.1 Unquotation

In order to account for non-verbatim readings of QIs, I proposed in Section 4.2 that QIs can raise out of quotation and be interpreted outside the quotational environment. An alternative way of achieving the same result would be to invoke the mechanism of UNQUOTATION. Unquotation is a stylistic tool that is orthographically marked by square brackets and temporarily suspends the quotational environment. For example, if Lance uttered *I cheated my way to the top*, part of his words can be mixed quoted as in (51), where *his* is unquoted and interpreted from the speaker's point of view.

(51)   Lance admitted that he "cheated [his] way to the top".

Shan (2010) accounts for unquotation by ignoring the context associated with the quotational environment and interpreting the bracketed part relative to the utterance context. In turn, Maier (2014) proposes that the bracketed segment moves to the edge of the quotation and gets interpreted outside it. Interestingly, the formal mechanism Maier invokes is reminiscent of the raising mechanism outlined above.[23] This emphasizes the fact that the two seeming alternatives, i.e. raising vs. unquotation, may be underlined by a similar formal analysis.

   Non-verbatim readings of QIs could be thought of as resulting from unquotation. In this view, the non-verbatim reading in (19) is due to unquoting the QI, as in (52) below.

(52)   Ivan kaza: "Maria izliza-l-a   s   [*edi-koj si*]".
       Ivan say: "Maria go.out-EV-FEM with [QI.MASC]"

       'Ivan said: "Maria izlizala s *z*", for some referential expression *z*.'

However, there are several problems with the idea that non-verbatim readings involve unquotation. For one, QIs inside quotations are not typographically marked by square brackets. One might propose that QIs are lexically marked as unquoted and thus need not be overtly marked as such. But if so, why is it

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[23] Maier's proposal also involves lambda binding over strings, which is intuitively related to the string-substituting component of the quotation rule in (49). See also Kubota & Levine (2016), who invoke a lambda calculus over strings in their analysis of gapping, topicalization, and quantifier scope.

that QIs inside quotations can receive verbatim interpretations as well? In addition, if QIs are lexically marked as unquoted it is not clear what to make of their occurrences outside quotational environments. The best we can do is say that QIs are lexically ambiguous between a regular and an unquoted interpretation. More generally, the unquotation story begs the question of why regular indefinites inside quotation do not give rise to non-verbatim interpretations. There is nothing about the tool of unquotation itself that could distinguish between different expressions based on their semantics. All these challenges seem to argue against the idea that non-verbatim readings of QI arise through unquotation.

5.2 Predicative QIs

The main proposal was designed to explain the semantic properties of QIs which range over nominal (referential) expressions. However, QIs are a much more diverse class and can range over various predicative expressions. This section serves as an illustration that the formal account can be extended to cover such predicative QIs as well.

In his typological study, Haspelmath (1997) demonstrates that indefinite forms are morphologically complex expressions and are commonly built from an indefiniteness marker and a stem. The indefiniteness marker determines the series to which the indefinite belongs (cf. the *some-* series, *any-* series, or *no-* series in English) while the stem indicates the ontological category of the indefinite (e.g. *-body* for people, *-where* for places, *-how* for manners, etc.). Bulgarian indefinites of the *edi-* series roughly follow this morphological strategy. They are made up of three parts: the indefiniteness marker *edi-* (which I assume is based on *edin* 'one'), a *wh*-stem like *-koj* 'who.MASC' or *-kakvo* 'what', and the *si* marker.[24] The full paradigm of the edi- series is given below. Notice that while the QIs in (53a)-(53b) are of the nominal type, the ones in (53c)-(53g) range over predicative expressions.

(53)   BULGARIAN
      a.   *edi-koj/koja/koe/koi si* one-who.MASC/FEM/NEUT/PL SI 'someone/something'
      b.   *edi-kakvo si* one-what SI 'something'
      c.   *edi-koga si* one-when SI 'sometime'
      d.   *edi-kûde si* one-where SI 'somewhere'
      e.   *edi-kak si* one-how SI 'somehow'
      f.   *edi-kolko si* one-how.many SI 'of a certain number'
      g.   *edi-kakûv si* one-what SI 'of a certain property'

QIs in German are formed in a different way: they are conjoined definite determiners or conjoined adverbs. Notice again that the former range over referential expressions whereas the latter range over predicates.

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[24] The *si* marker is probably diachronically related to a proximal demonstrative in Old Church Slavonic (Ora Matushansky, p.c.).

(54)   GERMAN (cf. Cieschinger & Ebert 2011)

    a.   *der und der* the.MASC and the.MASC 'someone/something'

    b.   *die und die* the.FEM and the.FEM/the.PL and the.PL 'someone/something'

    c.   *das und das* the.NEUT and the.NEUT 'someone/something'

    d.   *dann und dann* then and then 'sometime'

    e.   *da und da* there and there 'somewhere'

The formal analysis proposed in Section 4 easily generalizes to predicative QIs. Starting with the semantics for nominal QIs in (41), we need to modify the at-issue component and impose appropriate restrictions on the expressions quantified over. For example, a plausible lexical meaning for Bulgarian *edi-kak si* 'somehow', which ranges over manner adverbials, is as follows. (I assume that that ε is the logical type of events.)

$$(55) \quad [\![\text{edi-kak si}]\!]_{(\varepsilon\to\mathbf{t})\times\mathbf{t}}^{c,w} = \left\langle \begin{array}{c} \lambda e_{\varepsilon}.\exists Z_{\mathbf{u}}[\![Z]\!]^{c',w}(e), \\ \mathbf{sp}(c) = \mathbf{hr}(c') \,\&\, Z \in \mathbf{utt}(c') \,\&\, \mathbf{manner\text{-}adv}(w,Z) \end{array} \right\rangle$$

According to this lexical meaning, *edi-kak si* is a predicate of events. The requirement that it existentially quantifies over manner adverbials is directly stated in the second meaning dimension.[25] A sentence with *edi-kak si* as in (56a), when uttered in a context c and a world w, will be assigned the meaning in (56b).

(56)   a.   Ivan bjaga-l *edi-kak si*.
        Ivan run-EV QI

      'Ivan runs/ran in some previously mentioned manner.'

    b. $\left\langle \begin{array}{c} \exists e_{\varepsilon}\exists Z_{\mathbf{u}}(\mathbf{run}(e) \,\&\, \mathbf{agent}(e) = \mathbf{ivan} \,\&\, [\![Z]\!]^{c',w}(e)), \\ \mathbf{sp}(c) = \mathbf{hr}(c') \,\&\, Z \in \mathbf{utt}(c') \,\&\, \mathbf{manner\text{-}adv}(w,Z) \end{array} \right\rangle$

Other predicative QIs can be analyzed in a similar way.

5.3 Japanese *wh*-doublets

Sudo (2008; ms) discusses Japanese *wh*-doublets and shows that such forms exhibit properties very similar to those of QIs in Bulgarian and German. More specifically, Japanese *wh*-doublets are indefinites and can range over referential expressions. However, Japanese *wh*-doublets differ from QIs in the following two respects: their distribution is limited to quotational environments and they do not give rise to reportative implications. I discuss these two differences in turn.[26]

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[25] Note that this requirement cannot be captured in terms of logical types, as Sudo (2008; ms) proposes for referential terms in (27), unless a much more fine-grained type theory is assumed. One cannot just require that the expressions over which *edi-kak si* quantifies denote functions from events to truth values because this would fail to distinguish between QIs over manner adverbials and QIs over time or place adverbials.

[26] In the interest of space, I omit the relevant data and refer the reader to Sudo's work.

One of Sudo's major claims is that Japanese *wh*-doublets can only occur in pure/direct quotation. This is illustrated for *dare-dare* 'someone' in (57), repeated from (3) above.

(57)   John-wa   "Bill-ga   *dare-dare*-o   aishitieru"   to itta.
       John-TOP "Bill-NOM who-who-ACC love"   C said

       'For some expression X such that X denotes a person, John said "Bill loves X".'   (Sudo 2008: 622; ms: 14)

This claim is significant because it implies an important distributional asymmetry between indefinites with expression-based semantics in Japanese vs. Bulgarian/German. Sudo provides the following two important pieces of evidence. First, he notes that direct and indirect speech verb complements are difficult to tell apart because both are selected by a *to* complementizer. Interrogative speech complements, however, are morphologically distinguished: while quoted questions are accompanied by *to* and the particle *ka*, indirect interrogative complements only appear with *ka*. As Sudo points out, the embedded clause in (58) contains *dare-dare* and requires *to*, which is evidence that *wh*-doublets force a direct speech environment.

(58)   John-wa   [kinoo   *dare-dare*-ga   kita   ka *(to)] kiita.
       John-TOP [yesterday who-who-NOM came Q   C]   asked

       'John asked "Did X come yesterday?".'   (Sudo 2008: 616; ms: 5)

The second major piece of evidence is based on the perspective from which declarative complements are interpreted. As mentioned above, declarative speech complements are ambiguous between a direct and indirect speech reading. In (59), the epithet *baka* 'stupid' can be interpreted from the speaker's perspective (59a) or the attitude holder's perspective (59b). Crucially, if *dare-dare* is inserted in the speech report, only the direct quotation reading is available, which is visible from the fact that the epithet in (60) cannot be speaker-oriented.

(59)   John-wa   [Bill-no   baka-ga   ki-ta   to] itta.
       John-TOP [Bill-GEN stupid-NOM came-PAST TO] said

       a. 'John said that the stupid Bill came.'

       b. 'John said "the stupid Bill came".'   (Sudo ms: 4)

(60)   John-wa   [*dare-dare*-no   baka-ga   ki-ta   to] itta.
       John-TOP [who-who-GEN stupid-NOM came-PAST TO] said

       (lit.) 'John said "the stupid who-who came".'   (Sudo ms: 4)

Notice that Sudo's second argument predicts that material inside speech complements that contain *wh*-doublets is invariably interpreted from a non-speaker's point of view. However, this prediction is not necessarily borne out. In (61), the first person pronoun in the embedded clause can denote the speaker (61a) or the attitude holder (61b). The former reading is unremarkable and the

latter reading could arise through quotation or, perhaps, the type of perspective shift familiar from other languages (see Rice 1986; Speas 1999; Schlenker 2003; Anand 2006; Sudo 2012; Koev 2013). But when *dare-dare* co-occurs with an indexical pronoun in the speech complement, a quoted reading should be forced and only a non-speaker interpretation for the indexical pronoun should be available. Surprisingly though, Japanese speakers find (62) as ambiguous as (61).[27]

(61) Masa-wa   boku-ga/wa kanemochi-da-to itta.
   Masa-TOP I-NOM/TOP rich-COP-COMP   said

   a. 'Masa said that I (=the speaker) am rich.'
   b. 'Masa said that he (=Masa) is rich.'

(62) Masa-wa   boku-ga/wa *dare-dare*-to tsukiatteiru-to itta.
   Masa-TOP I-NOM/TOP QI-COMP   dating-COMP   said.

   a. 'Masa said that I (=the speaker) am dating someone not mentioned.'
   b. 'Masa said that he (=Masa) is dating someone not mentioned.'

The claim that Japanese *wh*-doublets are limited to quotational environments might then deserve a second look. However, given the bulk of the evidence discussed above, I will assume for the purposes of this paper that the distribution of these indefinites is indeed restricted to quotation.

The second difference between QIs and Japanese *wh*-doublets concerns reportativity. Sudo (2008; ms) does not explicitly discuss the possibility that Japanese *wh*-doublets trigger reportative implications. One might think that such implications are obligatorily present because of the distribution of *wh*-doublets. That is, if *wh*-doublets can only appear in quotation, the requirement that the expressions they range over originate in another conversation will always be met and need not be independently stated. However, Sudo also discusses occurrences of *wh*-doublets in pure quotations, as in (63). Here the doublet is interpreted outside the quotation yet it does not make any reference to a previous speech context.[28]

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[27] These data were tested on four Japanese speakers. For each of (61)-(62), they were asked whether Masa's original utterance was about himself or about the utterer of the sentence. One speaker did not accept shifted interpretations in general (whether or not a *wh*-doublet in the complement clause was present) and her judgments were disregarded. The remaining three speakers all agreed that a shifted and a non-shifted interpretation is possible for both (61) and (62). Two speakers commented that the shifted interpretation is preferred with the topic marker *-wa* on the first person pronoun *boku* while the non-shifted interpretation is preferred with the nominative marker *-ga* on the pronoun. Overall, the intuition that Japanese *wh*-doublets have no effect on the interpretation possibilities for indexical pronouns in speech reports was quite robust.

[28] Non-verbatim interpretations of Bulgarian/German QIs in similar contexts do not seem possible. For example, *Der Satz "Die und die ist angeblich geflohen" hat zehn Wörter* 'The sentence "Die und die ist angeblich geflohen" has ten words' is plain false in German. It cannot be made true by the fact that a seven-word subject could be filled in for *die und die* so that the quoted sentence totals ten words.

(63) "*nani-nani*-o   taberu"-wa dooshiku-da.
      "what-what-ACC eat"-TOP   verb.phrase-is

      'It is generally the case for an expression X that X-*o taberu* is a verb
      phrase.'   (Sudo ms: 10)

I now show how the proposed semantics for QIs can be adapted to account
for the properties of *wh*-doublets in Japanese, by focusing on *dare-dare*. I will
basically endorse Sudo's own account, briefly discussed in Section 3, with two
minor modifications. First, I assume that the restrictions on expressions are
stated in the second meaning dimension, as shown in (64). I do this because
this component of the meaning of *dare-dare* projects when e.g. the sentence is
negated (Yasutada Sudo, p.c.).

(64) $[\![\text{dare-dare}]\!]^{c,w}_{((\mathtt{u}\to\mathtt{t})\to\mathtt{t})\times\mathtt{t}} = \left\langle \begin{array}{c} \lambda P_{\mathtt{u}\to\mathtt{t}}.\exists z_{\mathtt{u}}P(z), \\ \mathbf{r\text{-}expr}(w,z)\,\&\,\mathbf{person}(w,[\![z]\!]^{c,w}) \end{array} \right\rangle$

The second modification concerns the explanation of why *dare-dare* must
appear in quotation. According to Sudo, the reason is that the trace *dare-dare*
leaves behind after it undergoes quantifier raising is uninterpretable outside
quotation.[29] However, this line of explanation is not available to us: since QIs
outside quotation were assumed to undergo quantifier raising, their traces must
be interpretable. On the current account, *dare-dare* is ruled out outside quo-
tation for type-theoretic reasons, i.e. because of a type mismatch. According
to (64), the at-issue meaning of *dare-dare* is of type $(\mathtt{u}\to\mathtt{t})\to\mathtt{t}$ and thus ex-
pects a property of expressions. This is an appropriate type when *dare-dare* is
raised out of quotation (because the predicate underneath is of type $\mathtt{u}\to\mathtt{t}$, in
its first dimension) but it is not an appropriate type when *dare-dare* originates
in an argument position. In the latter case, the mechanism of quantifier raising
and the predicate abstraction rule in (42) produce properties of individuals (of
type $\mathtt{e}\to\mathtt{t}$), which cannot compose with *dare-dare*.

5.4 QIs and ignorance inferences

Beyond their regular meaning as existential quantifiers, indefinite expressions
can trigger a range of additional inferences. So-called EPISTEMIC INDEFINITES
are known to convey ignorance or indifference towards the identity of the
referent (see Kratzer & Shimoyama 2002; Alonso-Ovalle & Menendez-Benito
2010; Alonso-Ovalle & Shimoyama 2014; Aloni & Port 2015). For example,
the use of Spanish *algún* in the sentence below suggests that the speaker does
not know which student María married.

(65) María se casó   con *algún* estudiante del   departamento de
      María SE married with ALGÚN student   of the department   of
      lingüística.
      linguistics

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[29] Sudo assumes that traces inside quotation are substituted by a mechanism similar to
the one that is encoded in the interpretation rule for pure/direct quotation in (49).

'María married a linguistics student.'
<div align="right">(Alonso-Ovalle & Menendez-Benito 2010: 2)</div>

Kagan (2011) and Onea & Geist (2011) make related observations about certain indefinites in Russian. They show that the use of *wh-to* indefinites implies that the speaker is unable to identify the referent while the use of *koe-wh* indefinites implies that the speaker is able but unwilling to identify the referent.

The question then becomes: Do QIs carry with them a similar type of inference? Sudo (ms) already observes that Japanese *wh*-doublets can give rise to inferences akin to the ignorance component associated with epistemic indefinites. Indeed, QIs in Bulgarian and German trigger similar inferences. By uttering the Bulgarian sentence in (66), the speaker conveys that she was told but does not remember which student Ivan married. The first component of that inference is the reportative implication, which was argued to be a part of the conventional meaning of QIs. The second component is an ignorance implication and it must come from somewhere else.

(66)   Ivan se   oženi-l   za *edi-koja si* student-ka.
      Ivan REFL go.out-EV to QI.FEM   student-FEM

      'Ivan married some student.'

      a.   ⤳ 'The student Ivan married was mentioned to the speaker in a previous conversation.'

      b.   ⤳ 'The speaker does not know which student Ivan married.'

Following Kratzer & Shimoyama (2002), Alonso-Ovalle & Menendez-Benito (2010), Alonso-Ovalle & Shimoyama (2014), and Sudo (ms), I adopt the idea that the ignorance component is a quantity implicature that arises through competition with more specific alternatives. Here is a sketch of how the analysis is supposed to work. Rather than uttering (66), the speaker could instead have uttered some minimally different and more informative sentence, e.g. one which names Ivan's wife. Since the speaker did not, the hearer can conclude that the speaker lacks the belief that Ivan married any particular student. For example, if Katja, Maria, and Sonja are the only students under consideration, the speaker would believe that Ivan married one of them but would fail to believe any of the following individual propositions: *Ivan married Katja*, *Ivan married Maria*, *Ivan married Sonja*. This is equivalent to saying that the speaker does not know which particular student Ivan got married to, which derives the ignorance implication associated with IQs.

6 Conclusion and the typology of QIs

I have argued that QIs range over quoted speech and that this explains their semantic properties. More specifically, I made the following claims.

(i)   QIs range over linguistic expressions (although they make reference to both expressions and their denotations).

(ii) QIs indicate that the expression they existentially quantify over originate in a previous conversation.

(iii) QIs impose restrictions on expressions. Nominal QIs range over referential expressions, i.e. proper names, definite descriptions, or demonstratives. Predicative QIs range over adverbials, individual predicates, etc.

The formal proposal directly derived all of these properties. By making linguistic expressions a part of the inventory of model-theoretic entities, we were able to account for the readings of QIs both inside and outside quotation.

It is instructive to briefly consider the implicational relations between the three properties of QIs listed above, as this will give us a good sense of the expected amount of variation among indefinites with expression-based semantics. While properties (ii) and (iii) both make reference to linguistic expressions and thus entail property (i), properties (ii) and (iii) are mutually independent from each other. This paper focused on QIs, i.e. indefinite forms that exhibit the full range of properties. However, we also expect to find indefinites that only meet (i) but not (ii) or (iii). As discussed in the Introduction, English *yada yada yada* appears to be fit this profile. In addition, we expect to find indefinites that satisfy just (i) and (ii), or satisfy just (i) and (iii). Indefinites of the former type are not yet attested but are predicted to be possible. They must look similar to *yada yada yada* but should also trigger reportative implications. Examples of indefinites of the latter type are Japanese *dare-dare* (as discussed in Section 5.3) and possibly English *whatshisface* (see again the Introduction).

Overall, this work provides an empirically plausible and theoretically sound account of indefinite forms with quotational semantics. It also broadens our understanding of the typology of indefinites and demonstrates important interactions between phenomena such as indefiniteness, quotation, and reportativity.

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