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Jan Wiślicki

Uniwersytet Warszawski, jan.wislicki@gmail.com

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TYPING AFTER SYNTAX. AN ARGUMENT FROM QUOTATION AND ELLIPSIS[*]

JAN WIŚLICKI
Uniwersytet Warszawski
jan.wislicki@gmail.com

Abstract
The paper, assuming the general framework of Chomsky's (2013a, 2015b) current version of the Minimalist syntax, investigates the syntax of quotation in light of ellipsis. I show that certain unexpected effects arising for quotational ellipsis are problematic for the standard feature valuation system and, especially, for the theory of phases. I discuss some effects of two possible interpretations of such ellipsis, as well as a constraint following from deviant antecedents, to show that the standard view on the internal syntax of quotational expressions should be reconsidered. The paper offers a new view on feature valuation, as well as the connection between the Narrow Syntax and the C-I interface, defined in terms of recursive typing taking place at the interface.

Keywords: quotation, ellipsis, typing, feature valuation

1. Introduction

Within the everlasting discussion on the sense and various faces of the grammatical atomicity/complexity (cf. Jackendoff and Wittenberg, 2014; Trotzke and Zwart, 2014; and references therein for an overall discussion), quotation definitely deserves a prominent position. There are few phenomena in natural languages that pose such serious problems in this regard, idioms being probably one of the most explored areas (cf. Mateu and Espinal, 2007, 2010; Harwood et al., 2016; Ingason et al., 2016), much better than quotation. However, a quick look at the data shows that the problem is apparent and puzzling. To illustrate, take (1) and (2) below:

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(1)

    a. Peter said 'London is a nice city.'.
    b. Peter said 'The capital of England is a nice city.'.

(2)

    a. Peter said that he should study math.
    b. Peter said 'I should study math.'.
    c. What did Peter say he should study ~~what~~?
    d. *What did Peter say 'I should study ~~what~~.'?

While it is clear that both (1) and (2) deliver arguments in favour of treating quotations as atoms, it is worth pointing out that the quotattional expressions in each of the two is atomic in a different sense. Or rather, to put things more precisely, there are two distinct elements of the theory of syntax – Merge and phases – that seem to be vulnerable to each of the effects illustrated above. On the one hand, (1) with (a-b) being pairwise non-equivalent, shows that quotation is not straightforwardly compositional. This means that, contrary to the standard assumption maintained in Chomsky (2015b), it is not the case that each application of Merge is compositionally computable at the C-I interface. If this is so, however, then Merge loses one of its crucial properties, most recently given a new life in the context of Chomsky's (2014a) Thesis T taking language to be optimized solely for C-I. On the other hand, as shown in (2), pure quotation is an island for movement, contrary to indirect speech. However, as pointed out in Boeckx (2012), having dispensed with the notion of barriers (cf. Chomsky, 1986; and much related work), phases are the only way of accounting for islandhood. If this reasoning is on the right track, then the above examples show that quotation should be treated as atomic in two senses. First, it should be an atomic input to the formal semantic computation, and thus an atomic syntactic object (SO). Second, it should be atomic in terms of phases, corresponding to a phase complement.

These preliminary observations have their counterpart in the rich tradition of formal accounts of quotation (cf. Cappelen and Lepore, 2007; Saka, 2013; Maier 2014b, for critical overviews). Indeed, while highly diversified with respect to technical and conceptual details, in the philosophical tradition of the theory of quotation the atomic treatment of such expressions was almost universally assumed. Tarski (1933: 159) explicitly states that what he calls 'quotation-mark names'[1] are 'syntactically simple expressions'. According to Geach (1957) a quotational name *'dogs'* is equivalent to the phonological string formed by

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[1]   Thanks for an anonymous reviewer for bringing to my attention Tarski's explicit statement that quotes are, according to him, names in the logical sense of this word, not just expressions. Further non-trivial assumptions, again suggested by the reviewer and concerning the variable-constant distinction for quotation, were pointed out by Soames (1999). However, the following discussion shows that this kind of approach is problematic on empirical grounds.

subsequent letters (*d*, *o*, *g*, *s*), all the morpho-syntactic features (e.g. [+PLURAL]) being blacked-out for the computation. Finally, in his especially influential demonstrative theory, Davidson (1979) takes quotation to be a whole that demonstrates an expression by providing its particular token. Again, the special act of reference provided by demonstration is clearly distinct from the standard procedure, where syntactic features and dependencies among them are mapped onto semantic functions.

What is especially interesting, however, is that while all the above theories assume the atomic character of quotation, hardly any of them explains how atomic they are. Put differently, subsequent theories simply take a quotational expression to bear its referential properties only when taken as a whole. Still, none of them provides a formal framework stating what actually is the relation or category at hand that does not allow any partition of quotation. However, bearing in mind the well-known methodological point from natural science that atomicity/complexity is not a feature of any object, but of the formal account of this object construed within a given apparatus, the problem is by no means trivial. Thus the character of quotation can be different, depending not only on the particular grammar used for the analysis, but also on the level of analysis and the particular part of grammar being used at a given stage of computation.

It is the main aim of the present paper to investigate the type of atomicity/complexity quotations actually represent. I am going to show that quotational ellipses put the problem of atomicity of quotation in a new light. They show not only that quotations that must indeed be atomic in some sense are simultaneously complex in another. They show that their complexity as such has at least two faces. I will focus on ellipses where complexity, though apparently syntactic, turns out to have much more serious repercussions at the semantic interface. Crucially, it seems to affect force understood as a mode of assertion. At first sight, this seems to be an argument in favour of taking the complexity of quotation to be essentially semantic. However, I argue that the empirical demands of quotation together with conceptually well-argued Minimalist assumptions show that the source of complexity is not an interface effect. This, as I show, motivates a more fine-grained approach to typing, working in a perfectly recursive fashion.

The paper is organised as follows. In section 2 I shortly discuss some challenging effects observable in the syntactic analysis of quotation. I focus on one interesting effect of double interpretation arising for the quotational ellipsis, as well as a technical problem with deriving quotational expressions. In section 3 I show a puzzling problem that comes into play for quotational ellipses having their antecedents in quoted deviant expressions. In section 4 I propose a new way of approaching feature valuation and its connection with the semantic interface, defined in terms of typing. Section 5 summarizes the paper.

2. Ellipsis, syntax and double interpretation: some problems

In this section I am going to have a closer look at some empirical data showing how quotational ellipsis can be problematic from the point of view of formulating their grammatical complexity. In particular, I will focus on the way the syntactic complexity affects the quoting material which, for good reasons, should be treated as an atom. In subsection 2.1 I sketch the problem showing the nature of syntactic/semantic complexity arising in the context of ellipsis. Then, in subsection 2.2, I discuss how these data are problematic for the standard Minimalist Program. It is argued that the atomicity/complexity of quotation looks differently at subsequent levels of computation, posing a serious challenge to the general architecture of grammar.

2.1. The necessity of double interpretation

Before moving to the technical part of the paper, let us first have a look at the problem arising for quotational ellipsis that is especially interesting in the context of the present discussion. The very problem of quotational ellipsis, though hardly explored in the recent research, is not new, dating back to Partee (1973; see also Wiese, 1996; and Maier, 2008, for some comments). The original observation was that quotations allow ellipsis as in (3) below, Δ standing for the ellipsis site:

(3)
        Peter said 'London is nice.', but I think it is not Δ.
        Δ = nice

If this is so, then the quoting inside (the material flanked by quotes) must remain syntactically transparent, and thus automatically non-atomic. Otherwise the system would not be able to reconstruct the ellipsis site.

    Though the above simple example is itself puzzling for the general syntactic discussion, it does not tell us much about the non-trivial character of the very notion of grammatical atomicity/complexity. What it shows is just that while semantically atomic, syntactically the quoting inside must be treated as complex, with all the projections accessible for computation. Still, this phenomenon is by no means new. Various kinds of syntactic complexity combined with semantic atomicity have been discussed in many contexts and analysed by means of different tools (cf. Larson, [2011] and his way of semantic adaptation of phases, interestingly taken into account in Chomsky [2013a: ft. 23], or Gallego's [2016] account of reprojection enabling the derivation of lexical items). However, quotational ellipses are much more challenging. What is crucial here is that even in the case of such a simple example as (3), a closer look shows that an important detail has been omitted. Actually, Δ should have at least two possible values: Δ_1 = nice and Δ_2 = 'nice'. For the former, the reconstruction of the elided

part yields an extensional expression picking out what is standardly denoted by the lexical entry *nice*. By contrast, in the latter the reconstructed material picks out the reference of the quotational expression *'nice'* as used by its (overtly or contextually) salient speaker. That the distinction is by no means trivial can be seen more clearly in the following example:

(4)   <u>Scenario</u>: Tarski uses the adjective *smart* to describe only those persons who are good mathematicians and have made a substantial fortune.
        Tarski said 'Peter is smart.', but I'm not sure whether he really is Δ.
        Δ_1 = smart; Δ_2 = 'smart'

Note that there is a substantial difference between the two[2] ways of reconstructing Δ. While for Δ_1 the speaker simply casts doubts on whether Peter is smart, for Δ_2 she casts doubts on whether Peter is smart in the sense of Tarski's use of *smart.* That is, she questions the fact that Peter is a good mathematician and, in the same time, that he has made a substantial fortune. The two readings[3] result in two different lambda terms formulated at the semantic interface, that is:

(5)

$$\lambda e_i.\lambda x_e.\text{smart}(x,e)$$

(6)

$$\lambda e_i.\lambda x_e.\text{f}(x,e) \ \& \ f \text{ is a feature meaning what the speaker } S \text{ meant}$$
by *smart* & Tarski(S)

At first sight, this resembles the well-known problem of attitudes within reporting clauses (cf. Tiskin, 2015, for some recent comments and overviews). However, a closer look shows that the problem is dramatically different. Contrary to the standard problems arising for *de re*/*de dicto* reports, the present problem hinges on the special syntax of quotation. In particular, it is its syntactic structure that must provide two readings: one for the non-quotational, another for quotational reading of ellipsis targeting quotation, a fact pointed out already in Parsons (1982)[4]. The point is that in the standard approach the proper reading is obtained thanks to an especially rich syntactic representation, with the whole bunch of operators and modifiers assumed to be present either in the derivation or within the semantic interpretation. However, as I will try to show in the next

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2   I leave aside the third possible reading where Δ_3 = '*smart'* is used in the sense of some third contextually salient speaker.

3   The formal account of the denotation of quotation is in general based on the account of mixed quotation proposed in Maier (2014a). I assume, without going into details, that the account is also applicable, perhaps after slight modifications, to pure quotation.

4   Thanks for an anonymous reviewer for bringing this reference to my attention.

subsection, obtaining a syntactic structure that allows this sort of double interpretation is challenging for the current Minimalist syntax.

2.2. Double interpretation as a technical challenge

In the previous subsection I suggested that the effect that at first sight resembles the problem of attitudes in reporting clauses arises from an entirely different syntactic structure. In the present subsection I discuss some technical details of the structure in question and show how challenging it may become for the general architecture of grammar.

The core of the problem lies in the fact that it is simply not the case that the operation of enquotation is defined on standard lexical items. Put differently, it is incorrect to assume, as Tarski (1933) did, that what is flanked by quotes is a standard expression having its own extensional meaning. There are at least two independent pieces of evidence supporting this view: one empirical and one conceptual.

The empirical argument is very simple: the material flanked by quotes, more often than not, has no lexical meaning assigned whatsoever. It can simply be a string that, without being stored in the lexicon as a separate item, can be used only in the quotational mode. This actually is a universal and powerful property of quotation, enabling making reference to expressions that are meaningless, often just to state this very fact, as in (7):

(7)
      a. 'Eckullectic' is not an English expression.

This effect naturally extends to the reconstruction of ellipsis. Take (8) below:

(8)
      Bush said 'I've got an eckullectic reading list.', and I think he really does Δ.
      Δ_1 = 'have got an eckullectic reading list'
      Δ_2 = have got an 'eckullectic' reading list
   *Δ_3 = have got an eckullectic reading list

Obviously, *eckullectic*, functioning solely as a Bushism and not present in standard English, can be reconstructed only as a quotational phrase, reading roughly as *'eckullectic' in the sense of Bush*. But there is little sense in saying that quotes turn a lexical item *eckullectic* into quotational expression *'eckullectic'*, simply because there is no lexical item *eckullectic*.

The conceptual argument comes from phases. As shown in (2) and commented right below, pure quotation is an island for movement. If, on the other hand, we stick firmly to the Minimalist picture in assuming no other account of islandhood than that based on Phase Impenetrability Condition (*PIC*, cf. Chomsky (2000) and the related work), it follows that quotational

expressions should correspond to single phases. This, however, is not a technically trivial problem. Without going into detailed discussion (for various technical and conceptual aspects, see Wiślicki [2016a]), I focus here on one problem rooted in the notion of formal features. That is, there are at least two views on Spell Out observable in the current Phase Theory (cf. Grano, Lasnik [2015] for a recent comparison). According to the first, assumed and argued for in Chomsky (2008, 2013a, 2015b), phases are defined rigidly on particular heads, most standardly $v*$ and C^0, sometimes also D^0. According to another (cf. Wurmbrand [2013, 2016], Alexiadou et al. [2014]), the convergence-based approach, phases are defined in a dynamic way, Spell Out taking place when the full domain (standardly the event domain and the discourse domain) are formed. However, what is crucial for both of them is that they make use of the same mechanism of feature valuation triggering Spell Out. What is being shipped off to the interface – the phase complement – is a complete SO, that is the one whose all formal features have been valued.

Let us then assume that quotation indeed corresponds to phases. Assuming the feature-based approach to phases it follows that there is some feature F that remains unvalued during the derivation of the quoting inside. Let, then, F stand for the general mode of utterance, say a sort of more fine-grained [FORCE] normally appearing in the Left Periphery. [$-F$] becomes valued together with the merger of the exponent of quotation (most standardly quotes), resulting in the following general structure[5]:

(9)

$$\beta_{[+F:quot]}$$

'…'$_{[-F] \rightarrow [+F:quot]}$ $\alpha_{[-F]}$ ➜ valuation of [$-F$] into [$+F$:quot] and Spell Out of α
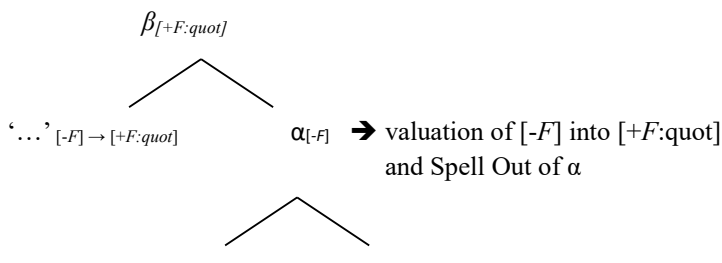
So far, so good. On the one hand, quotation is given an atomic reading in terms of phases, which secures its islandhood and, under the proper formulation of semantics, its lack of straightforward compositionality. On the other hand, it opens up a promising way for accounting for the effects presented in (4) and (8). Note that, though a number of technical and conceptual loose ends remain, in this view ellipsis targets an expression underspecified with regard to the mode it is uttered in. Crucially, if the quotational mode is not imposed on the lexical

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5   I leave aside the detailed discussion on the syntactic status of quotes, the problem being mostly irrelevant for the present paper. For some aspects of this non-trivial problem, see Wiese (1996), Ackema, Neeleman (2004), de Vries (2006), Maier (2014a), among others.

items entering the derivation, a path for reanalysis into the extensional mode remains, at least, unclosed.

Still, the apparatus has to face different problems. Note that the operation of enquotation works in a recursive fashion, being straightforwardly definable on the output of some previous application of the same operation. Such a recursive use of quotes yields the embedding of quotations, which, as shown in (10), affects such mechanisms as binding:

(10)

       a. Alfred$_1$ said that I$_{*1/2}$ was smart.
       b. Alfred$_1$ said 'I$_{1/*2}$ am smart.'.
       c. Alfred$_1$ said (quoting Rudolf$_2$) ' 'I$_{*1/2}$ am smart.' '.

However, while such a recursive use is a fact, it can hardly be formalised along the lines of (9). The source of the problem lies in the mechanism of feature valuation. For an SO valuating some feature *f* to do its job, some different SO in its domain must contain the unvalued [-*f*]. However, let us have a look at (10c) derived as in (9). First, Merge builds *I am smart* with [-*F*] that waits for the exponent of quotes. The first operation of enquotation valuates [-*F*] and forms the single-quoted expression:

(11)

      $[_{\beta:\,[+F:\text{quot}]}$ '…'$_{[\text{assign }F:\text{quot}]}$ $[_{\alpha:\,[-F]}$ I am smart$]]$

This step is fully legitimated: it forms an interpretable, well-formed expression β. Still, it is not the end of the required derivation; there is yet another operation of enquotation to be applied. This can be easily achieved by yet another External Merge of the quoting marker. However, while we can say that due to Free Merge the structure is built without any problem, it hardly follows that the architecture of features works in the expected way. As stated above, each application of quotes should valuate the unvalued feature of its complement. However, contrary to (9) and (11), the second merger of quotes is not able to fulfil this role, simply because there is no item with unvalued [-*F*] in the domain of the outer quotes. Indeed, the situation is as follows:

(12)

      $[_{\gamma:?}$ '…'$_{[\text{assign }F:\text{quot}]}$ $[_{\beta:\,[+F:\text{quot}]}$ '…'$_{[\text{assign }F:\text{quot}]}$ $[_{\alpha:\,[-F]}$ I am smart$]]$

In (12), the second application of quotes is supposed to valuate β. But β is already valued as [+F:quot] by the inner quotes. Thus valuation cannot take place when the outer quotes are merged. As a result, the recursive use of quotes remains unaccounted for in terms of feature valuation. The general sketch presented in (9), empirically supported by the lack of compositionality and islandhood, turns out to be insufficient.

The above problem supports, to some extent, the Richards-Chomsky argument (cf. Richards [2007, 2012]; Chomsky [2007, 2008]) of an alternating occurrence of phase and non-phase heads[6]. The argument, coming from feature inheritance, sheds some light on the present problem. Note that the complication arising for (12) could be easily avoided, had the outer quotes followed some head turning β's [+*F*:quot] into [-*F*]. However, leaving aside a hardly minimalist character of such an underspecifying head, there is no clear empirical data supporting its postulation. Quite to the contrary. First, quotes seem to work in a perfectly recursive way without providing additional projections. Second, the potential underspecifying head would, in principle, open up a landing site for movement, despite the fact that movement from the embedded quotation is not possible[7].

As it stands, then, the standard Minimalist architecture of features meets certain empirical problem. First, there is a non-trivial problem with the quoting inside, whose lack of compositionality and islandhood should not remain unaccounted for. Second, the recursive use of quotes puts the problem in a new light, showing that the straightforward standard feature valuation does not work for the quotational embedding.

2.3. Summary

In this section I presented a particular combination of syntactic and semantic demands of quotational expressions. As shown in subsection 2.1, ellipses from quotation require the possibility of double interpretation: the extensional and the quotational one, together with some way of filtering out those expressions that are not possible for the former reading. This would suggest that there are proper levels of syntactic representation which, when targeted by ellipsis, enable both interpretations. However, when moved to the Narrow Syntax, quotation seems to pose problems that are by no means trivial for the standard Minimalist apparatus. On the one hand, quotation is expected to be treated as an atom, mainly for the lack of compositionality and islandhood. On the other hand, the semantic complexity shown in the form of double interpretation conflicts with the alleged atomicity. While these phenomena seem to be accountable for by means of phases, that is if the quoting inside is said to posses some unvalued formal feature which is valued by quotes, the recursive use of quotes turns out to pose a

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[6]   See also Larson (2015) for a different approach with similar results.

[7]   An anonymous reviewer suggests that that kind of head could have been provided as a silent [*v* say]. However, there are at least three problems arising for this account. First, such a head, if conceived of in terms of Chomsky (2013, 2015b) would be a phase head, not a head. However, it is expected that it is quotes that stand for the crucial valuation, and what they need is a non-phasal head enabling this procedure. Second, it is not at all clear how the machinery could deal with the fact that such a head remains silent at the SM, but relevant at the C-I interface. Third, it would project and thus affect labelling and create its edge area. However, both islandhood and mixed quotation seem to deliver a strong argument against such properties.

problem closely connected to the Richards-Chomsky requirement of the PH^0- H^0 configuration. As it stands, the phase-character of quotation seems to escape the straightforward approach. Consequently, there is no clear way in which the semantic complexity could reasonably follow from the syntactic architecture.

3. Quotational deviancy and ellipsis

The double interpretation of quotational ellipsis as shortly discussed in section 2 can be conceived of as a reflex of a deeper problem. In fact, the above data show that it is by no means clear what is the quoted and, accordingly, the elided material. Indeed, the syntactic behaviour of quotation shows that what forms the quoting inside cannot be conceived of as (a string of) lexical items. That is, under the standard approach, whatever is the operation of enquotation, its domain cannot be the lexicon. Moreover, assuming the Minimalist syntactic architecture, the phasal character of quotation (the lack of compositionality, islandhood) shows that the operation of enquotation must deal with formal features of the complement of quotes standing for the operation in question. It is not at all clear, however, what these formal features can actually be, not mentioning the problem of their interpretation.

This problem is by no means trivial for the general analysis of ellipsis. Unless it is specified what is exactly flanked by quotes, it is impossible to state what undergoes ellipsis. The methodological consequence is rather serious: it is not clear how to formulate the Parallelism Condition for ellipsis, the core of any account of the phenomenon. Indeed, the problem looks even more seriously if we have a look at quite standard, well argued and very general assumptions regarding ellipsis observed in the recent literature; actually, neither of them covers all the effects arising for quotational ellipsis.

Take an especially general condition, discussed most recently in Messick & Thoms (2016). According to it, parallelism domain must be semantically identical to another constituent AC [antecedent clause], modulo focus-marked constituents. The argument for this condition is obvious: we want the grammar to filter out cases like (13) below:

(13)
> Peter saw London, and so did I Δ.
> $^{\#}$Δ = see Paris

The first problem that immediately arises at this point is that of identity; it is far non-trivial what makes two expressions semantically identical. Assume, however, the simplest, most coarse-grained account, according to which two expressions e_1 and e_2 are semantically identical iff for every situation s, e_1 and e_2 have the same truth value in s. It is clear that this approach can hardly explain some phenomena observable for quotational ellipsis. The simple reason is that

the quotational context, being a textbook example of non-compositional contexts, imposes different truth conditions than the standard extensional one. To illustrate, let us have a look at the following example:

(14)

Peter said 'I live in London.' and John confirmed that he really does Δ.
$Δ_1$ = live in London; $Δ_2$ = 'live in London'

While the assumed semantic identity holds for $Δ_2$, it is no longer so for $Δ_1$, because the truth conditions of *live in London* and *'live in London'* are not identical. While the latter is true in every situation in which the speaker has uttered the string at hand, the former is true in every situation in which Peter lives in the capital of England (evaluated in the proper context).

This simple fact shows that the special semantic behaviour of quotation may be problematic for the general theory of ellipsis. However, the problem goes even further. The special, non-compositional nature of quotes lies, among others, in that they legitimize ill-formed expressions, as mentioned in the context of (7)-(8) above. What is especially interesting, however, is that this universal feature looks differently when ellipsis comes into play. To see this, let us have a look at (15) below:

(15)

a. John said 'This guy is smart.', and I think he really is Δ.
$Δ_1$ = smart; $Δ_2$ = 'smart'
b. John said 'This guy are smart.'.
c. *John said 'This guy are smart.', and I think he really is Δ.
$Δ_1$ = smart; $Δ_2$ = 'smart'

(15a) is a standard quotational ellipsis. In (15b) the deviant expression in legitimized by quotes, thus becoming fully grammatical. Surprisingly, the stark deviancy arises together with the mixture of the two, that is the quotes-legitimized deviancy and ellipsis, as shown in (15c). And what is new with regard to (14) is that here the quotational character of the elided part fails to repair the whole expression.

A very similar phenomenon is observable for sluicing. As argued for by Griffiths and Lipták (2014; see, again, Messick & Thoms (2016) for further arguments), variables in the antecedent and the ellipsis clause must be bound from parallel positions. While this works fine for quotational ellipses as a condition, it is clearly not enough to explain their special behaviour. Have a look at the following examples. For simple sluicing, where all the phrases are grammatical as in (16), no problem arises whatsoever.

(16)

    John said 'I want to give you something.', but I don't know what$_1$ Δ
    Δ = he wants to give me t_1

Take, however, (17b), clearly deviant despite the grammatical character of (17a):

(17)

    a. John said 'I want to give you a something.'.
    b. *John said 'I want to give you a something.', but I don't know what$_1$ Δ
    Δ = he wants to give me t_1

The situation is similar to (15). The whole clause (17a) including the antecedent is perfectly fine. So is binding in terms of the above condition. It is then not at all clear why the deviant expression justified by quotes does not allow ellipsis in (17b).

What connects all the above examples is that certain problems for ellipsis arise even if all the standard conditions seem to be met. The deviant character of the quoted expression, once neutralized by quotes, again comes into play when quotation is targeted by ellipsis. This happens despite the fact that neither the deviant expression appears in the elided part, nor is any syntactic condition (as the one for binding) violated.

The intuitive conclusion is that it is the problem of *access* into the quoting inside, necessary for ellipsis to be possible, that is especially problematic and, so far, unexplored. On the one hand, the quoting inside must be accessed in the process of reconstructing ellipsis in such a way that its deviancy affects the ellipsis as such. On the other hand, however, the possibility of such an access must go in tandem with the semantic insensitivity to the deviant character of the quoting inside. As a result, there are two conflicting features, each empirically well attested.

4. Recursive typing and the Minimalist syntax

In this section I shall offer a new way of dealing with the data discussed above. The material, however, is quite demanding. First, we want quotation to be Spelled Out as a single phase complement, covering its typically phasal character (cf. section 1). Moreover, we want this to work in a recursive fashion, allowing to compute subsequent name-formation operations (cf. subsection 2.2). Second, we want the machinery to allow the access to the quotational and disquotational reading of the quoted inside (cf. subsection 2.1). Accordingly, the grammar is expected both to allow ill-formed expressions within quotes and to explain how the legitimized ungrammatical material affects ellipsis (cf. section 3).

The idea is to bridge one basic assumption of the Minimalist syntax, that is cyclic Spell Out working under feature valuation, and the Curry-Church heritage in the form of recursive typing. As I shall try to show, the expected effects can be accounted for under the proper connection between syntactic features and semantic typing, the latter being the interpretation of the former, taking place at the interface. In subsection 4.1 I present a fragment of the machinery that generates the expected effects, showing its close connection to some previous works on type-shifting. In subsection 4.2 I test the machinery by showing how it derives quotational expressions. As it is also shown, the data support rethinking the feature valuation mechanism. In section 4.3 I show how the data discussed in sections 1-2 look in light of the proposed modifications.

4.1. Typing at the interface

The very fact that ellipsis involves non-trivial semantic modifications w.r.t. the antecedent part is by no means limited to quotation. The relevant observations have been recently made by Barros (2016), who argues that cases like (18) below allow at least two interpretations:

(18)

        Peter said he had seen someone$_1$, but I didn't hear who$_1$ Δ

        Δ_1 = Peter said he had seen; Δ_2 = it was

An additional argument, given in Barros and Vicente (2016), comes from pseudosluicing (example (13) in Barros and Vicente [2016]):

(19)

        Sally has a new boyfriend, guess who Δ!

        *Δ_1 = Sally has; Δ_2 = it is

If these arguments are sound, then the observations interestingly extend into intensional contexts. To illustrate, take (20) below:

(20)

        Peter believes he saw someone$_1$, but I don't know who$_1$ Δ

        Δ_1 = Peter believes he saw; Δ_2 = it was

Contrary to (18), in (20) ellipsis in both interpretations involves belief-context shifts. For Δ_1 the elided part is reconstructed to the form of one belief-context (Peter's beliefs) embedded in another (speaker's knowledge). For the second possibility no belief-embedding arises whatsoever, Δ_2 being a purely extensional phrase.

    Now while these examples do not necessarily involve typing, it is clear that the semantic interface cannot be completely blind for the effects at hand. And

quotation, I believe, shows that the problem is more significant than it first seems to be. The reason is that the operation of enquotation changes the ontological status of the arguments it is defined on. Making reference to someone's utterance *dog* by means of *'dog'*, we obviously do not want our quotational expression to pick out a real barking object, but a particular string, which indeed may itself refer to the barking entity. And since it is types that standardly stand for such a categorization, it does not come as a surprise that this way of thinking about quotation has already been developed. The proponent of this strategy is Potts (2007, see also Maier (2014b) for some relevant comments), who argues that quotational expressions are assigned different type – *u*(*tterance*).

In this paper I propose to pursue this approach, going a few steps further. That is, I assume that quotational expressions have the dedicated type, call it *u*, together with the truth conditions t_q, conceived of along the general lines of Maier (2014a)[8]. However, contrary to Potts (2007), I do not assume the existence of *typed* expressions in the lexicon and, accordingly, in the derivation. Rather, I take typing to be a function, a part of the semantic interface, mapping the syntactic information onto proper types. Therefore I am moving closer to the dynamic approach to types dating back to the idea of type-shifting (cf. Partee, Roth [1983] and much related work). In particular, I draw on Chierchia's (1998, most recently adapted to argument ellipsis by Bošković [2016]) idea according to which NPs undergo type-shifting from *et* into *e* when they are turned into arguments. What is crucial for the present purpose is that, when taken at some higher level of abstraction, in this view it is type-shifting that stands for the far non-trivial switch from a syntactic constituent into an argument – the domain of semantics. I take up the idea in treating Spell Out (Transfer) as involving a particular mapping from syntactic structure onto typing machinery, defined as follows:

(21)

> Typing
> Typing is a C-I interface operation T which for every output α of the Narrow Syntax derivation is defined as $T{:}<L_\alpha, FRC_\alpha> \rightarrow M^{R(\sigma)}$, L_α a label of α, FRC_α a syntactic feature standing for the force of α, M a lambda term, $R(\sigma)$ a type constant.

That is, according to the present view, items entering the derivation are *untyped*. However, some of them – those providing features standing for labels and force (treated as something close to F in (9), in a more fine-grained way than just the left periphery head Force[0]) – deliver information that is interpreted at the

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[8]   I leave aside the problem of whether these are entirely different types or just subtypes of a more general type e and t (see Wiślicki [2016b] for the latter approach and Luo [2010, 2012], Asher [2015] for the extended work on subtypes).

interface in the form of proper typing operation. Note also that typing as defined here is recursive, meaning that the apparatus is able to retype an already typed expression. Actually, σ is not defined as a variable. The only constraint is that $R(\sigma)$ is a constant, which guarantees that typing is not a referentially vacuous step, where no type-constant (and thus ontological categorization) is assigned.

It is also worth pointing out that (21) is in accord with what Chomsky (2015b) says about the labelling algorithm and the general ontology of labels:

> Since (…) labeling is required at CI and for the process of externalization (though not at SM, which has no relevant structure), it must take place at the phase level, **as part of the Transfer operation**. Crucially, LA [Labelling Algorithm – JW] does not yield a new category as has been assumed in PSG and its various descendants, including X' theory. Under LA, there is no structure [α X], where α is the label of X. **LA simply determines a property of X for externalization and CI**.
>
> (Chomsky (2015b:6); bolding mine – JW)

(21) in fact goes towards Chomsky's idea; it outlines the way labels can be required by semantic interpretation. Without labels the interface is not able to yield a *typed* lambda-term. An untyped lambda term, on the other hand, is semantically vacuous, providing no ontological categorization whatsoever.

What is new w.r.t. Chomsky's system is the presence of a more fine-grained counterpart of Force (called here *FRC*)[9]. That is, it is proposed that Narrow Syntax provides additional items driving the relevant part of semantic computation, labels alone not being able to guarantee the proper typing at the interface. And there are at least three arguments supporting this approach. First of all, there is simply no one-to-one relation between a label and the ontological category represented by a given type. Bare 'NP' – the information provided by the label – is not in a position to secure the proper typing, because nominals represent various categories (individuals, utterances, functions over types, etc.). Second, there are operations that, within the present framework, affect typing while working in a perfectly recursive way. Enquotation is an especially clear (recall the discussion in subsect. 2.2), but not the only possible candidate (think, for instance, of a recursive way of forming proper names: a proper name of an object, a proper name of the proper name, etc.). On the other hand, if we follow the quite standard assumption according to which it is syntax that is responsible for linguistic recursion, then the presence of items providing *FRC* within the Narrow Syntax is fully legitimized. Finally, the above account pushes the overall architecture closer to the general Minimalist idea of linguistic computation expressed in Chomsky (2013b). According to the view, there is no semantics

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[9] This, however, is not incompatible with Chomsky's view. Note that he does not exclude the possibility that labelling is a part of information required by C-I. It is also worth pointing out that in his earlier account, Chomsky (1995: 292) explicitly states that the force indicator (located, as standardly, in C) is indispensable for interpretation, thus always present, sometimes covertly.

proper, the seemingly semantic computation falling under syntax – the only mechanism of linguistic computation independent from the use of language. It is syntax, the mechanism responsible for the internal symbol manipulation, that is supposed to do all the use-independent work. Now while it is far from obvious how a number of non-trivial operations standardly taking place in the semantic computation (β, η-raductions, substitution, changing bound variables, to itemize the most significant examples) could be defined within the Narrow Syntax, there is a less radical way. The semantic operations could simply follow, possibly unequivocally, from the structure built within the derivation. And this is exactly supposed to be the case in (21): it is the semantic interface that types lambda-terms (the simplest Merge having different purposes and nature), but typing is no more than an interpretation of syntactic information – a necessary but also an automatic one.

4.2. Typing and quotation

In the previous subsection I defined typing as an interface operation, which is supposed to shed some new light on the puzzling problems outlined in sections 1-3. However, before I move directly to the problematic issues, I shall have a closer look at how the proposed account allows to derive and compute quotational expressions.

To see how this works, take some simple example, like (22) below:

(22)

        Alfred said 'Rudolf likes dogs.'.

First, we derive the quoting inside as a standard CP. Therefore, we expect *Rudolf likes dogs* to be interpreted as something like (23), irrelevant details omitted:

(23)

        $\lambda e^i.\lambda y^e.\lambda x^e.Rudolf\,(x^e,e^i)$ & $dogs\,(y^e,e^i)$ & $likes\,(x^e,y^e,e^i)$ & $PRESENT\,(e^i) = 1$
   iff Rudolf likes dogs in e^i

This means that each of the relevant constituents must obtain force (the *FRC* feature) allowing the standard extensional interpretation (type *e*, *i*, and the truth conditions). Call it FRC_{ext}; I leave aside the detailed discussion on such a standard typing. I assume that the constituents providing these features are adjoined to the highest heads within the relevant domains, resulting in complex heads (in a simplest version, assuming the pair-Merge approach, these are $<FRC_{ext},Num^0>$ for *dogs* and *Rudolf*, $<FRC_{ext},<\sqrt{like},v^*>>$ for *like* and $<FRC_{ext},T^0>$ for *PRESENT*)[10]. Let, then, force be specified within such complex

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[10] The exact nature of such complex heads can be conceived of in many ways. See Piggott, Travis (2013), Kupula Roos (2016), and references therein for some relevant discussion.

heads and the rest of derivation proceed standardly (with phases on v^* and C or everywhere else where all formal features are valued), so that the semantic computation is able to yield (23).

So, at the CP level, the semantic interface receives a full-fledged phrase, with all the formal features being valued. The question is what happens next, that is when the CP is merged with quotes. I propose that as a result of such a merger, the adjoined quotes target the *FRC* features of the CP, that is:

(24)

$_{CP}$ 'Rudolf likes dogs'

'...'   → $_{CP}$ Rudolf likes dogs: $FRC_{ext} \rightarrow FRC_{quot}$
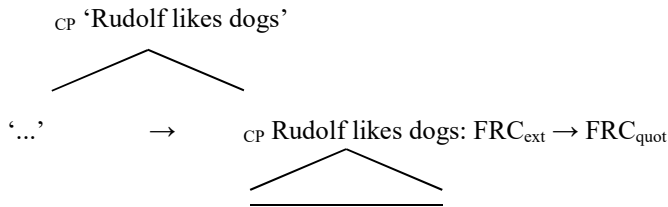
Still, the problem that immediately arises at this point is the operation of *FRC* valuation, turning FRC_{ext} into FRC_{quot}, already signalised is subsection 2.2. As known, within the standard valuation, based on the Probe-Goal relation, a feature [*F*] undergoes valuation from [-*F*] to some[+*F:i*]. The valued feature becomes then invisible for the Probe-Goal mechanism. Under such an approach, anything like (24) is, of course, impossible. However, I propose a generalized view on feature valuation which, I argue, is exactly what is supported by the data observable for quotational ellipsis and the recursive character of Narrow Syntax. The proposed feature valuation reads as follows:

(25)

> Feature valuation
> Let a feature [*F*] be a set $\{[-F],[+F{:}i],[+F{:}j],\ldots,[+F{:}n]\},[+F{:}k]\in[F], i{\leq}k{\leq}n$.
> Feature valuation is a function $FV : [F] \rightarrow [F] \backslash \{[-F]\}$

That is, I propose to treat the unvalued feature [-*F*] as a special case of what is called a feature [*F*]. It is special because it marks syntactic terminals or, following a broader view of Chomsky (2015a: 81), who does take the problem of assuming unvalued features to be serious and puzzling, because it enables cyclicity, required for any efficient computation. It is also special because, under substantial, non-vacuous valuation, it cannot be the output of the operation *FV*. Still, in the truly recursive machinery the Narrow Syntax is supposed to be, the constraint blocking mappings between 'valued' features (revaluation) is an unwanted stipulation, which must be empirically justified.

However, what the analysis of the present data shows is just the contrary: revaluation is not only allowed[11], but also necessary. Let us first get back to (24). At the level of the lower CP, the phrase has all its features (including *FRC*) valued, and thus it undergoes Spell Out. The merger of quotes triggers feature valuation of *FRC*, allowed under (25). As a result, the *FRC* feature undergoes revaluation. However, since no new unvalued features have been added, the upper CP has a complete feature set up. This, on the other hand, automatically triggers Spell Out. The C-I interface receives, among others, information about the label (CP) and force (FRC_{quot}). The typing machinery maps this information onto the proper lambda term along the lines of (21), resulting in something like (26) below (irrelevant details omitted):

(26)

$\lambda e^{iq}.\lambda y^{u}.\lambda x^{u}.Rudolf(x^{u},e^{iq})\&dogs(y^{u},e^{iq})\&likes(x^{u},y^{u},\ e^{iq})\&PRESENT\ (e^{iq}) = 1$
iff p in e^{iq}, where *p* is what the speaker *s* means by *Rudolf likes dogs*

There are two immediate consequences of this sort of approach, both plausible. First, the proposed machinery Spells Out quotational expressions as single chunks – an effect expected for the sake of the phasal character of such expressions (recall the discussion is section 1). Second, note that under (25), recursive enquotation is no longer problematic, contrary to (11)-(12). The inner quotation can simply undergo yet another enquotation, the recursive valuation followed by the recursive typing being its formal reflex. In this regard it is not substantially different from (24).

The last remaining issue is quotation legitimizing deviant expressions like (27) below:

(27)

            Alfred said 'Rudolf like dogs.'

Assume a derivation as in (24). What would be the result of applying the above machinery to quoted deviant expressions. Indeed, the improper agreement between *v**+V and the subject results in the ill-formed expression. If we follow

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[11] An anonymous reviewer raises the question of critierial position and the connected freezing effect, arguing that if we allow the revaluation mechanism, there would be no way for filtering out examples like **Which chocolate do you wonder John ate?*. Indeed, these ideas might look differently within the present framework. However, two comments are in order at this point. First, revaluation neither dispenses with [-*F*], nor questions its special character. Rather, it brings attention to the valuation mechanism, which, in principle, should work in a truly recursive way. Second, these objections are problematic only insofar as we assume anything like freezing effect to be present in the Narrow Syntax. However, its legitimacy was questioned in Chomsky (2015b) as problematic for SMT. The recent framework of Chomsky (2015b) shows a way for overcoming this problem, identifying the problem in labelling (see especially p. 13, ft. 16).

the general line of crash-proof grammar argued for in Frampton, Gutmann (2002 and the related work), then indeed the whole derivation crashes at the lower CP, before the quotational level is reached. Within this framework, the proposed machinery does not work. However, if we follow the recent view of Chomsky (2014b), there is no crash *proper*, understood as the GB-era crash taking place before Spell Out (or LF). Rather, the Narrow Syntax releases into interfaces expressions that may appear to be interpretationally deviant, some more, others less[12].

How this fares for the present machinery? Note that the recursive typing opens up a new way for Chomsky's relaxed approach to deviancy mentioned above. Namely, the recursive typing machinery allows the whole apparatus to compute a deviant expression, and then retype it to the form where it is fully acceptable. And this is exactly what we need for deviant quotation. At the level of lower CP the semantic interface would form the deviant expression, with the incorrect form of the verb. However, thanks to the recursive typing, the ill-formed expression would be retyped in the relevant way after the merger of quotes, which legitimizes the ungrammatical quoting inside. In this sense the recursive typing could be conceived of as tampering with the already computed expression, against the No Tampering Condition. However, leaving aside whether this really violates NTC (actually, the retyped expressions is the third product, composed of the initial expression and quotes), it is worth pointing out that the rule, while strongly required within the Narrow Syntax, may be arguably unwanted at the interfaces (cf. Takita, Goto, Shibata [2016] for more general arguments)[13]. What is crucial for our purpose, however, is that thanks to this approach, we have a cake and eat it. That is, at one stage of derivation, the Narrow Syntax produces a standard expression – either grammatical or not. At the higher stage, it reforms the same expression by means of quotes, yielding all the expected effects that are characteristic for quotation. In the following subsection I shall show that the data from quotational ellipsis strongly support the proposed approach.

4.3. Quotational ellipsis: double interpretation and deviant antecedents

Assuming the above framework, let us now move back to our two core empirical problems arising for quotational ellipsis, that is the double interpretation and the

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[12]   The view is in harmony with the abovementioned Thesis T of Chomsky (2014a), and actually restates an even earlier thought: [*the expressions*] *are sometimes called "deviant", but that is only an informal notion. (...) The only empirical requirement is that SM and C-I assign the interpretations that the expression actually has, including many varieties of "deviance".* (Chomsky 2008:144)

[13]   Note that, strictly speaking, all the reductions defined on lambda-terms violate NTC, which shows not only that NTC is dispensable but also unwanted as an interface constraint. See Jakielaszek (2011) for the relevant discussion.

unexpected effects rooted in antecedents in quoted deviant expressions. Take (4) repeated below as (28):

(28)

> Scenario: Tarski uses the adjective *smart* to describe only those persons who are good mathematicians and have made a substantial fortune.
> Tarski said 'Peter is smart.', but I'm not sure whether he really is Δ.
> $Δ_1$ = smart; $Δ_2$ = 'smart'

The two possible Δs stand for two substantially different interpretations. To cover this effect, the Narrow Syntax should yield two structures: one standing for the extensional, another for the quotational reading. However, this is exactly what is secured by the proposed machinery. Leaving aside some details that are irrelevant for the present purpose, the derivation would be as follows:

(29)   Tarski said:

$_{CP2}$ 'Peter is smart'

'...'   → $_{CP1}$ Peter is smart:

FRC valuation
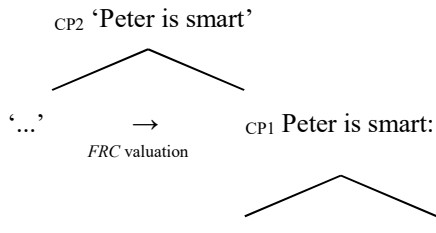
where:
for CP1: $λe^i . λx^e ....smart(x^e, e^i) = 1$
         iff ... x is smart in e
for CP2: $λe^i . λx^u ....smart(x^u, e^i) = 1$
         iff ... x is f in e where f is
         what the speaker S meant by *smart&Tarski(S)*

That is, no matter whether one takes ellipsis to target the syntactic structure *per se* or its interface interpretation (see Zwart [2013] for some relevant comments), there are exactly two possible antecedents for the ellipsis to be reconstructed from. If the reconstruction targets CP1, the result is the extensional reading $Δ_1$; if it targets CP2, the right interpretation is $Δ_2$. Thanks to the connection between the syntactic *FRC* valuation and typing, the two antecedents are available both in the Narrow Syntax and at the interface.

Let us now move to a no less puzzling problem, that is the cases where ellipses are blocked by the deviant character of the quoting inside. As shortly discussed above, the unexpected problem with (30) is that no ellipsis is possible.

(30)

   *Alfred said 'Rudolf like dogs.', and I think he really does Δ.
   Δ_1 = like dogs; Δ_2 = 'like dogs'

Let us chunk this into phases. First, the proposed machinery would derive the *v*P phase and Spell Out the complement *dogs*. No deviancy arises whatsoever. In the second step the interface would receive the product of the CP phase *Rudolf like dogs*, with the incorrect agreement. The phrase is considered ill-formed at the semantic interface. Finally, the merger of quotes is interpreted as a retyping operation, legitimizing ill-formed expressions by providing different ontological categorization marked by different types. What deserves special attention is the fact that the material from the ellipsis site has its first antecedent in the second phase, that is the ill-formed one. And the point here is that there are good arguments for taking this fact to be significant. As Sakamoto (2016) argues for, there is a strict correlation between ellipsis and phases: arguments in the ellipsis site must have the relevant antecedents in the first cycle that includes them. Though the present problem is slightly different, there is a striking analogy: it is exactly the first phase containing all the constituents present in the ellipsis site that is ill formed. And this provides a reasonable line of thinking: ellipsis is not possible if its antecedent is ill-formed at the first phase level. Or, put differently, ellipsis cannot be reconstructed from something that has been interpreted as ungrammatical, even if its ill-formedness appears only in the first phase and then disappears. This also solves the puzzling problem of the impossibility of Δ_2 in (30). The quotational mode, which legitimizes any phrase, cannot rescue the ellipsis because the constraint comes from below: once Spelled Out as an ill-formed expressions, the phrase fails to allow ellipsis, even though it is itself repaired by quotes.

4.4. Summary

This section shows that the discussed effects arising for quotational ellipsis, viz. the double interpretation and the impossibility of ellipsis for deviant quoted expressions, can be accounted for by means of typing understood as an interpretation of the recursive feature valuation. The data from quotational expressions show that this way of rethinking standard feature valuation is necessary for the general syntax of quotation, and additionally supported by the double interpretation arising for ellipsis. The very double interpretation, however, follows from the dynamic approach to types, within which retyping an already typed lambda-term follows directly from the particular syntactic structure. In this regard it is cyclic Spell Out and the proposed interface effect (typing) that allows the expected effects. This fact goes in tandem with the puzzling problem of ellipsis blocked in the case of deviant quoted expressions, the observed effects being borne out under the proper approach to the scope of phases and its consequences.

5. Conclusion and future prospects

In his recent paper, Maier (2016) argues that the additional operation of enquotation should be actually considered, even if not overtly manifested, in the semantic computation. What has been put into the present analysis goes in the opposite direction, namely what can be found when the operation of disquotation, required for the sake of the reconstruction of ellipsis, is applied. And the point is that this operation is by no means trivial. It has been shown that ellipses with quotational antecedents not only allow two distinct interpretations, but also show an interesting sensitivity to the character of the quoting inside. These effects, in turn, show that the traditional view, dating back to the seminal works of Tarski and Geach, according to which the material flanked by quotes is syntactically inactive, must be reconsidered. This, however, turned out to be a challenging problem, mainly due to the widely-accepted feature valuation system. The paper offered a way out by suggesting a new approach to feature valuation and typing machinery. In this regard, its purely theoretical contribution is three-fold. First, it opens up a new way of looking at the architecture of features by letting the feature valuation mechanism work in a truly recursive way. Second, it sketches a way of setting up a formal connection between the Narrow Syntax and the semantic interface. The connection is conceived of in terms of mapping from syntactic features onto semantic types, so that the latter do not have to be assumed to be already present in the lexicon. Rather, types are derivable in the sense of being the output of interpretation of particular syntactic structures, and as such show a perfectly recursive behaviour in the form of retyping. Third, the paper shows a more fine-grained approach to Force, arguing for its special behaviour, remarkably different from the rest of the Left Periphery heads. On empirical grounds, I have scratched the surface of quotational ellipsis – an apparently unexplored area, in spite of the first steps dating back more than 40 years ago. Consequently, the paper opens up at least two paths for future research: the theoretical one, concerning the recursive feature valuation and its connection to the interface effects, as well as the empirical one, deepening our understanding of subsequent effects arising for quotational ellipsis and the required operation of disquotation.

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