**Formal and Lexical Semantics and the Genitive
in Negated Existential Sentences in Russian**[*]

Vladimir Borschev and Barbara H. Partee
VINITI, Russian Academy of Sciences, Moscow and
University of Massachusetts, Amherst

1   Goals

1.1 Theoretical concerns and general goals

The theoretical concern of this paper is the integration of formal and lexical semantics, more specifically the traditions of (post-) Montague Grammar and the Moscow semantic school, respectively. We propose to represent lexical meaning in the form of meaning postulates, and the output of compositional semantic interpretation in a formula of intensional logic in which lexical items are primitives, and to integrate lexical and compositional information via entailments from these (and other) sources.

We think of the content of a text as a *theory* determined by a set of axioms together with their entailments. The axioms come from various sources: lexicon, compositional semantics, context and background knowledge. (Broader and narrower notions of semantic or semantico-pragmatic interpretation correspond to the inclusion or exclusion of various potential sources of axioms.) Such a theory characterizes the class of all models that are consistent with the content of the given text, or of the text together with aspects of its context. Some of the most general axioms, which may be taken to form part of the theory of any text, are those that represent some of the most general constraints on possible models of a given language, axioms which contribute to what the Moscow School calls *naivnaja kartina mira* 'the naive picture of the world' (Apresjan 1974), and what formal semanticists, following Bach (1986), call Natural Language Metaphysics.

We do not pretend to have an articulated view of the nature of all the different sorts of axioms that may play a role in the "theory" of a text, but here we will illustrate some of the possibilities.

1.2 The Genitive in Negated Existential Sentences

The Russian genitive with subjects of negated existential sentences (the NES construction, in Babby's terms) provides an interesting empirical domain for examining the interaction of lexical and compositional semantics and testing theoretical approaches. From the work of Babby (1980), Padu**.**eva (1992,1997), and others it seems clear that an account of the NES construction involves at least the syntax and Theme-Rheme (or topic-focus) structure of negative sentences, the lexical semantics of verbs, and often additional context-specific presuppositions or implicatures.

We will follow Babby in analyzing the NES construction as implying the negation of existence of "the NP"; but not as "denying that the NP has a referent," rather as denying that "NP" exists *in a given "location.*" What the relevant "location" is depends in part on the Theme-Rheme structure. The relativization of "existence" to a "location" makes it possible to subsume *byt'* under the class of verbs covered by Babby's analysis, and to account for NES sentences with proper names and other definite NPs as their (genitive) subjects.

We suggest a compositional interpretation of the NES construction which involves an assertion part negating the literal predication of the given verb to the given subject and location, together with a presupposition that that verb in that sentence is equivalent to "be" or "exist." The role of the additional axioms that we discuss (lexical, encyclopedic, contextual) is seen to consist in providing the support needed for such a presupposition to hold in a given context.[1]

2 "Existence" and "existential sentences"

2.1 Babby's distinction between NES and NDS

Babby contrasts negated existential sentences (NES), with genitive subjects, from "negated declarative sentences" (NDS), with nominative subjects, as in the following (his (81a-b), from Ickovi**...**1974):

(1) Otvet   iz   polka   ne   prišel.
    Answer-NOM-m-sg from regiment NEG   arrived-m-sg
    'The answer from the regiment has not arrived.'
(2) Otveta   iz   polka   ne   prišlo.
    Answer-GEN-m-sg from regiment NEG   arrived-n-sg
    'There was no answer from the regiment.'

Chart (3), from Babby, shows a "scope of assertion" difference, argued by Babby to follow from Theme-Rheme differences.

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[1] We neglect much existing syntactic work to focus on semantics. Among important issues we do not address are the potential unification of subject and object genitives, Pesetsky's (1982) assumption of an empty quantifier governing the genitive NP, and the suggestion of Perelstvaig (1997) and others of a connection with negative polarity phenomena.

(3)   **AFFIRMATIVE**   **NEGATED**

EXISTENTIAL   [$_{\text{Scope of A}}$ VP NP]   **Y**$_{\textbf{NEG}}$ [$_{\text{ne}}$ VP NP$_{\text{gen}}$]

DECLARATIVE   NP [$_{\text{Scope of A}}$ VP]   **Y**$_{\textbf{NEG}}$ NP$_{\text{nom}}$ [$_{\text{ne}}$VP]

Although Babby generally characterizes NES's as having the entire sentence inside the scope of negation, he notes that there may be an optional locative outside the scope of negation. Below we will make "location" obligatory in NES's but possibly implicit.

2.2 Sentences with byt'
Babby does not claim that his analysis applies to sentences with *byt'*. He argues that since the main assertion in an NES is a denial of existence of the referent of the subject NP, NES's should normally not permit definite NPs as subjects; but sentences with *byt'* do commonly allow the genitive of negation with proper names and other definite NPs. Babby claims that the sentence (4) below cannot be an existential sentence because of its definite subject and therefore must be a "locative sentence," a type of NDS, with "be at the lecture" as the negated part, which goes contrary to the generalization in 2.1 above.

(4) Ivana   ne   bylo   na lekcii
    Ivan-GEN-m-sg NEG was-n-sg at lecture
    'Ivan wasn't at the lecture.'

However, *byt'* is in a sense a "basic" verb of existence ("being"), and as many have observed, all NES's can be approximately paraphrased as NES's with *byt'*, as illustrated by the following "equivalences," the nature of which will be discussed in what follows.

(5) a. Otveta   ne   prišlo   =
        Answer-GEN-m-sg NEG arrived-n-sg =
        Otveta   ne   bylo
        Answer-GEN-m-sg NEG was-n-sg
        'No answer came.' = 'There was no answer.'
    b. Moroza   ne   ..uvstvovalos' (Babby 1980, p.59) =
        Frost-GEN-m-sg NEG be-felt-n-sg   =
        Moroza   ne   bylo
        Frost-GEN-m-sg NEG was-n-sg
        'No frost was felt.' = 'There was no frost.'
    c. Posudy   na stole   ne   stojalo
        Dishes-GEN-f-sg on table-LOC-m-sg NEG stood-n-sg   = Posudy   na stole
                                                                                        ne   bylo

= Dishes-GEN-f-sg on table-LOC-m-sg NEG were-n-sg
'No   dishes   stood   on   the   table.'   =   'There   were   no   dishes   on   the   table.'

We believe with more careful attention to the interpretation of "existence" in "existential sentences," sentence (4) can indeed be interpreted as an existential sentence, and Babby's analysis can work for existential sentences with *byt'* as well as for existential sentences with lexical verbs.

2.3 "Being" and the roles of "thing" and "location"
We understand existence, or "being," in the sense relevant to NES's, as a potentially temporary relation between some "thing" and some "location." We may accept Jackendoff's (1972) metaphorical-structural extensions of "being in a location" to include "being in some state," "occurring in some spatiotemporal region," "being in someone's possession," extending also to "being in the speaker's (or an observer's) perceptual field" (Padu.eva 1992, 1997). We will treat "thing" and "location" as basic *roles* of verbs of being, or better, as roles of the *situations* denoted by existential sentences: *BE(THING,LOC)*.[1] Theme-Rheme differences, the subject of Section 3, distinguish ES's, in which the "location" is the Theme, from DS's, in which the "thing" is the Theme.

In "existential sentences," then, some "location" is given (Thematic Location) or contextually presupposed (implicit Thematic Location), and it is asserted that in that location there is ("exists") some "thing" of some sort.

(6)   **"EXISTENCE IS RELATIVE" PRINCIPLE:**
         Existence (in the sense relevant to AES's and NES's) is always relative to a "location."

The principles that determine which "location" is the one relative to which an existence claim is being made (if any) in a given sentence are related to Theme-Rheme structure. We believe that these principles make the analysis of sentences with *byt'* consistent with Babby's analysis of sentences with lexical verbs. We discuss these principles in Section 3 below, and their interaction with existence presuppositions and their location roles.

3   Theme-Rheme structure, presupposition, and locations
3.1 Conditions for Genitive of Negation: Babby's basic scheme Babby's final formulation of his rule of genitive marking in NES's (his (160)) is given in (7) below.

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[1] Our "Thing" role may well be Jackendoff's (1972) thematic role Theme (not to be confused with Theme vs. Rheme), which would fit analyses of the relevant NPs as "underlying objects" of Unaccusative verbs (Pesetsky 1982 and others), and might predict non-obliqueness. Hana Filip (p.c.) suggests that our Thing and Loc roles probably have a status between conceptual structure and syntax, as argued for by Fillmore and as found in Dowty's work on lexical meaning.

(7) [_{Rheme} V NP]
                 NEG
                 Y   [ne V NP_{gen}]

    Conditions:

    (a) NP is indefinite   [we disagree – BHP and VB]

    (b) V is semantically empty [discussed in Section 4 below]

We agree with Babby, and with Prague school linguists such as Haji..ová and Sgall, that scope of negation is directly correlated with Theme-Rheme structure. In "existential sentences," the location is Thematic, and both the "thing" and the verb are Rhematic and hence fall within the scope of negation; so negation in NES's negates existence in the Thematic location. In "Declarative" sentences, the "thing" is Theme, and "its existence" stays outside the scope of negation; the Verb Phrase is Rheme and is negated. (When NP subject alone is Rheme, negating gives constituent negation.)

In our terms, the minimal difference between pairs such as Babby's and Arutjunova's examples (8a,b) below would be schema-tized as follows:

Existential S's: Location = Theme; 'Thing-being-in-it' = Rheme.

Declarative S's, including "Locative S's": Thing = Theme; 'Being-in-location' [or other predicate] = Rheme.

(8) a. [_{Theme} Na   stole]   [_{Rheme} byli   knigi   i

            On   table-LOC-m-sg were-m-pl book-NOM-f-pl and

         ñurnaly]

         magazine-NOM-m-pl

         'On the table there were books and magazines.'

     b. [_{Theme} Knigi   i   ñurnaly]

            Book-NOM-f-pl and magazine-NOM-m-pl

          [_{Rheme} byli   na stole]

            were-m-pl on table-LOC-m-sg

          '(The) books and magazines were on the table.'

The negation of (8a) would use genitive, that of (8b) nominative.

We disagree with Babby's claim that the NP subject in an NES must be indefinite; Babby's text itself includes a number of counterexamples, and we have argued that there are many NES's with *byt'* that provide further counterexamples. Rhematic NPs are typically indefinite, but definite NPs may also be Rhematic and may show up in genitive of negation in NES's.

3.2 Theme-Rheme, presuppositions and assertions

We follow Haji..ová (1973,1984) and Peregrin (1995) in the analysis of the connection between Theme-

Rheme structure and presuppositions (and assertions) corresponding to this structure.[2] For simplicity, we limit our discussion to presuppositions and assertions of existence. On their analysis, an NP like *knigi* 'books/the books' will carry an existence presupposition when it occurs in the Theme but not when it occurs in the Rheme; this is related to the function of the Theme in anchoring the sentence to the conversational background.

But existence, including the existence relevant for existence presuppositions, is always existence in some location. Let us informally label the different "locations" relevant to NES's and NDS's according to their roles in different "being-situations."

Thematic location: the "location" of the "being-situation" of the sentence when that "location" is the Theme of the sentence; this includes both explicit Thematic location as in the NES's (4) and (5c) and implicit Thematic location as in the NES's (2) and (5a,b).

Rhematic location: the "location" of the "being-situation" of the sentence when that "location" is the Rheme of the sentence: (11a).

Reference location: (or "Anchor location"): the "location" of the "being-situation" of the existence presupposition associated with the Theme of the sentence. For a sentence expressing a "being-situation," if the "thing" (typically the subject) is Theme (as in NDS's), then Reference location will be the "location" contextually associated with that "thing" – a part of the conversational background, analogous to "Reference time." Existence in the Reference location is what we often informally describe as existence in the "universe of discourse." If the "location" is Theme, as in (4), the associated existence presupposition guarantees the existence of that location (see 3.4). In that presupposition, the lecture plays the role of "thing," and *its* location is the Reference location; in that case Thematic location is identical to or within Reference location.

Resource location: "location" associated with a presupposition of existence of a thing denoted by a referential NP like *Maša* 'Masha' in (9); where a Resource location is depends on the knowledge source, not on the structure of the sentence. This term is modeled on Barwise and Perry's (1981) *resource situations*.

These distinctions are what enable us to subsume *byt'* under the verbs covered by Babby's analysis. Sentence (4) illustrates the distinction between the situation of existing in the Thematic location and a backgrounded situation of existence in a Resource situation. Sentence (4) asserts that Ivan did not exist in the Thematic location "at the lecture," while presupposing he does exist in a Resource location "in the world."

The "Thematic location" is sometimes a speaker's (or observer's) "point of view" location (see Padu..eva 1992, 1997). This "Thematic location" may be implicit, as in (2) and (5a,b). And we believe that a perceptual verb always has a "location" role, explicit or implicit, which can be Thematic; we offer this as a possible reason behind Padu..eva's observation that perception verbs can always be used as "existential verbs" supporting a genitive of negation, as in (9).

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[2] A few of our colleagues disagree with our (and Babby's) claim that the genitive NP is always rhematic regardless of word order, but agree with our claims about what is presupposed. If these presuppositions do not follow from Theme-Rheme structure in the way sketched here, we do not know how to derive them.

(9) Maši ne vidno
  Masha-GEN-f-sg NEG seen-n-sg
  'Masha isn't to be seen.'

Sentence (9) asserts the nonexistence of Masha within the speaker's perceptual field (the implicit Thematic location) without denying her existence "in the world" (the Resource location for the proper name).

3.3 NES's and NDS's: their assertions and presuppositions
An informal statement of the assertion made by an NES is given in the NES Principle below; it will be expanded upon in the discussion of the Presupposed Equivalence in Section 4.

  NES PRINCIPLE: An NES denies the existence of the thing(s) described by the subject NP *in the "Thematic location."*

  We have seen examples with implicit Thematic locations associated with implicit observers. There are also cases, like (10), in which the implicit Thematic location is simply "the actual world," yielding a literal denial of existence.

(10) Edinorogov ne suš**..**estvuet.
  Unicorns-GEN-m-pl NEG exist-sg
  'Unicorns do not exist.'

  In an NDS, the NP subject or "thing" is always in the Theme, so it carries a presupposition of existence in the Reference location.
  Just as the "Reference location" is associated with material in the Theme, so is "Reference time." In (11a), from Apresjan (1980), the contextually specified past time is associated with the Theme "*Otec*"; the conversation must have been about "where Father was/ has been," perhaps today, perhaps in his life. In (11b), the reference time must be some given seaside occasion, since "at the sea" is the Theme.

(11)a. Otec ne byl na more.
    Father-NOM-m-sg NEG was-m-sg at sea.
    Father was not at the sea.
  b. Otca ne bylo na more.
    Father-GEN-m-sg NEG was-n-sg at sea.
    Father was not at the sea. ("There was no Father there.")

  In example (1) above, *Otvet* is in the Theme and it is presupposed that it exists in the "Reference location" or "universe of discourse." The sentence asserts that it did not arrive. Sentence (2) asserts non-existence of the answer in "Thematic location" but says nothing about whether it exists in any other location,

including the "universe of discourse." This leaves the sentence open to pragmatic influences that may support or inhibit the "insinuation" (Padu**.**eva 1997) that perhaps no answer exists at all.

3.4 Existence presuppositions for Thematic vs. Rhematic locations
Although most locative expressions are normally understood as involving locations which are presupposed to exist, it is predicted that a Rhematic location might in principle not be presupposed to exist, while a Thematic location must be presupposed to exist. This prediction seems to be confirmed by the difference between the somewhat awkward (12a) and the totally impossible (12b).

(12) a. ?Ivan   [$_{Rheme}$ ne   byl   na lekcii.]
        Ivan-NOM-m-sg   NEG was-m-sg at lecture.
        Lekcii   ne   bylo.
        lecture-GEN-f-sg NEG was-n-sg
        'Ivan was not at the/a/his lecture. There wasn't any lecture.'
    b. *Ivana   ne   bylo   [$_{Theme}$ na lekcii.]
        Ivan-GEN-m-sg NEG was-n-sg   at lecture.
        Lekcii   ne   bylo.
        lecture-GEN-f-sg NEG was-n-sg
        'Ivan was not at the/a/his lecture. There wasn't any lecture.'

3.5 Summary scheme from a speaker's perspective
We may summarize the analysis presented so far from a speaker's perspective as follows: Suppose the speaker's intentions are as sketched in (13).

(13) Theme = Loc, Message = NEG(BE(Thing, [Loc]))[3]

Then according to our analysis, the existence of Loc is presupposed, and the assertion is the negation of the being of Thing in that Loc.

    The realization of these intentions, assuming that "Thing" is expressed by an NP that meets the relevant syntactic requirements (such as non-oblique case), will involve (i) putting the NP expressing the Thing into Genitive case, and (ii) optionally substituting a lexical V for *byt'* to express BE, if there exist axioms (see Section 4) supporting the equivalence of V and *byt'*.

4 Weak verbs and the sources of their existential "axioms"
From the NES PRINCIPLE in 3.3 it follows that an NES presupposes the equivalence (in the context of

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[3] We enclose "Loc" in square brackets as an informal indication that Loc, as Theme, is outside the scope of negation; see Peregrin (1995) for formalization and discussion.

the given S) of the "existence predicate" and the predicate "literally" corresponding to the verb of this S or, roughly speaking, of the verb *byt'* and this verb. That is, NES's such as those in (5) above have the same truth and falsity conditions as their counterparts with *byt'*. (We ignore the subclass of verbs of "appearing" to avoid aspectual complications.) We state this presupposed equivalence in (14) below; its source is discussed in Section 4.7.

(14) **PRESUPPOSED EQUIVALENCE:**
      V (THING, LOC) <==> BE (THING, LOC)

But how is this equivalence possible with verbs whose literal meaning is clearly not simply "exist" or "be"? The usual answer is that in NES's, "weak" verbs are used: verbs which have become semantically empty, at least when occurring in combination with the given subject NP.

   In the framework of our paper the question concerning properties of these verbs and reasons for their "weakness" can be approached in the following way: Suppose we assume that the lexical verbs have their normal meanings, whatever those are, so that it is not the case that they are simply semantically equivalent to *byt'* in these sentences. Then we ask: what types of further axioms can we find holding for the given S in the given context (i.e., contained in the theory of the given S in the given context), whose presence could contribute to making this equivalence a "locally valid" theorem? What is the nature and what are the sources of such axioms?

   Such a question is in principle open-ended, but let us list a few cases. Some are discussed in the literature, some can be found lying on the surface; we are trying to offer a slightly different perspective to help integrate existing insights.

   For each case below, we give an example NES followed by the equivalence statement presupposed by the NES PRINCIPLE; then we show what sorts of supplementary axioms might be operative in the given context to yield the equivalence.

4.1 Dictionary axioms
(15) a. NES: Ne   belelo   parusov   na gorizonte.
              NEG shone-white-n-sg sails-GEN-m-pl on horizon
              'No sails were shining white on the horizon.'
     b. Presupposed Equivalence:
          Na gorizonte belel   parus   <==>
          On horizon   shone-white-m-sg sail-NOM-m-sg <==>
          Na gorizonte byl   parus
          On horizon   was-m-sg sail-NOM-m-sg
          'A sail shone white on the horizon.' <==> 'There was a   sail on the horizon.'
     c.   'Dictionary axiom' (part of lexical semantics):
          belet'   <==> byt' belym (in the field of vision)

to shine-white <==> to be white
d. Dictionary or encyclopedic axiom; 'common knowledge':
Parus   kak pravilo belyj.
Sail-NOM-m-sg as   a rule   white-NOM-m-sg
'Sails as a rule are white.'

With (15c) and (15d) we can almost satisfy the presupposition of equivalence in (15b); the equivalence only holds under further conditions such as the existence of a potential or actual observer whose field of vision includes the relevant location. In a context in which such further conditions can be consistently assumed to be met, (15c-d) together support the equivalence in (15b). Since (15c-d) are common knowledge, (15b) is entailed in normal contexts, and genitive of negation is therefore a normal choice with that combination of verb and subject.

4.2 Dictionary + contextual axioms
Modification of the previous example:

(16) a. NES: Ne   belelo   domov   na gorizonte..
           NEG shone-white-n-sg houses-GEN-m-pl on horizon
           'No houses were shining white on the horizon.'
  b. Presupposed Equivalence:
     Na gorizonte beleli   doma   <==>
     On horizon   shone-white-m-pl houses-NOM-m-pl <==> Na gorizonte byli   doma
     On horizon   were-m-pl houses-NOM-m-pl
     'Houses shone white on the horizon.' <==> 'There were   houses on the horizon.'
  c. 'Dictionary axiom' (part of lexical semantics):
     belet'   <==> byt' belym (in the field of vision)
     to shine-white <==> to be white
  d. Doma   kak pravilo belye. (Normally FALSE)
     house-NOM-m-pl as   a rule   white-NOM-m-pl
     'Houses as a rule are white.'

In contrast to the case above, houses normally come in a great variety of colors and are not normally presumed to be white. But if the context includes the information that in this region, (16d) holds, then the dictionary axiom (16c) together with the contextual axiom (16d) will play the same role as the axioms (15c-d) in the previous example; together they entail the equivalence (16b).
    Note: From the speaker's point of view, the axioms generate the equivalence (16b), thereby "bleaching" the verb *belet'* and licensing the use of the genitive of negation.

From the hearer's point of view, the use of genitive of negation signals that there must be some axioms besides (16c) accessible in the context to support the equivalence (16b).

4.3 Axioms of "free choice"

Example (17), a "free choice" case, illustrates similar patterns of reasoning with different sources of axioms. If we hear the NES (17a), we are required to presuppose the equivalence (17b) (involving an implicit Thematic location), and we can easily accommodate supporting contextual assumptions. With a corresponding NDS like (17c), we must assume the contrary, since in (17c) the existence of the frost (the Theme) in the "Reference location" is presupposed. A non-contradictory interpretation of (17c) therefore requires the assumption, or "axiom," that frost can exist without being felt, and that assumption is also easy to accommodate.

(17) a. Moroza   ne   **č**uvstvovalos'. (Babby 1980, p.59)
        Frost-GEN-m-sg NEG was-felt-n-sg
        'No frost was felt/ There was no frost.'

    b. Presupposed Equivalence:
        Moroz   **č**uvstvovalsja <==>.
        Frost-NOM-m-sg was-felt-m-sg <==>
        Moroz   byl
        Frost-NOM-m-sg was-m-sg
        'Frost was felt.' <==> 'There was frost.'
    c. Moroz   ne   **č**uvstvovalsja.
        Frost-NOM-m-sg NEG was-felt-m-sg
        'The frost was not felt.'

4.5 Lexical functions

The notion of 'lexical functions' was introduced by **Ž**olkovsky and Mel'**č**uk (1967) for fixed cooccurrences of various types, and Babby (1980) discusses the applicability of this notion in explaining why the classification of given verbs as "weak" or not is often highly dependent on the choice of subject. The lexical function **Func$_0$** is illustrated by such pairs as the following, in which the choice of verb is a function of the choice of subject noun:

(18)   problema stoit 'the/a problem stands'
        gazeta vyxodit 'the/a newspaper comes out'
        zapax isxodit   'the/a smell issues from'

    The lexical function **Oper$_1$**, involving transitive verb – object pairs such as *nanosit' udar* 'to strike a blow', *okazyvat' pomoš...* 'to render help', also plays a role in derived intransitive constructions.

ðolkovsky and Mel'**..**uk claimed that the verbs in such expressions are "empty," and have to be listed in the dictionary with the associated nouns, as values of the given functions for those nouns. It may be that this claim is too strong in an absolute form and that the usage of verbs in such expressions depends at any rate partly on the semantic structure of the corresponding verbs and nouns and of the construction in which they occur. But from the point of view of the present discussion we agree with Babby that these functions, which we view as lexical axioms, govern the usage of verbs in the corresponding AES's and NES's.

4.6 "Genitive" verbs
Let us return to the issue of which verbs can be "genitive" and the nature of their "weakness." What we conclude is that NES's may contain any verb which in a given context for one reason or another may be considered equivalent to *be* (or *appear* - "begin to be," etc.). Since the axioms supporting this equivalence may come in part from the context in which the sentence is used, a "list" of such verbs is impossible, as noted by Babby and others. When such axioms cannot be reasonably assumed, the NES construction is impossible: its presupposed equivalence is inconsistent with presuppositions of the verb or of other parts of the sentence, or with our representation of reality, or with our suppositions about the given context.

4.7 Deriving the Presupposed Equivalence.
For probably all verbs which can be used in ES's, there is a lexical axiom giving one half of the "Presupposed Equivalence" (14).

(19) **LEXICAL 'EXISTENCE' AXIOM:**
   V(THING, LOC) ==> BE (THING, LOC)

   The other half we tentatively regard as a specific presupposition of the construction itself. (This is also our interpretation of Padu**..**eva's (1997) remarks that the genitive is used only when this "component of meaning" is already present in the contextualized semantics of the negated verb.) We do not have a compositional derivation of this presupposition. It may arise as an implicature resulting from the use of the marked genitive construction to signal non-thematic status, and hence lack of existence presupposition, of the Thing; but this is so far just a speculation.

(20) **PRESUPPOSITION OF NES:**
   ¬ V (THING, LOC) ==> ¬ BE (THING, LOC)
   or equivalently: BE (THING, LOC) ==> V(THING, LOC)

The Presupposition of the NES together with the Lexical 'Existence' Axiom together give the "Presupposed Equivalence" (14) of the predicate V with the existence predicate.

5   Scheme of a "theory of an existential sentence"
In the previous sections, we have described or alluded to a number of components of the "theory" (in the

sense of Section 1.1) corresponding to an ES (NES or AES), and some aspects of the "theory" of an ADS or a NDS. The main parts of a theory corresponding to an ES include:

1. Compositional semantic interpretation of the AES or NES construction. For an NES, we represent this as (21).

(21) **ASSERTION OF NES:**
   ¬ V (THING, [LOC])

2. Presuppositions derived from the Theme-Rheme structure of the ES. We have stated these informally (and contrasting presuppositions for DS's) in Section 3. In an optimal semantic framework, 1 and 2 undoubtedly belong together in a single articulated whole, as would be done in a dynamic semantic framework, or in the framework of Peregrin (1995) or Haji..ová, Partee and Sgall (in press).

3. Presuppositions derived from other sources, such as the existence of the referents of proper names in some Resource location.

4. "Dictionary" and "encyclopedic" axioms, associated with lexemes used in ES's and with concepts of various realia (things, action-types, etc.) described by these lexemes. We see the investigation of such axioms, which may be an open class, as the content of much of the extensive work in lexical semantics in the Moscow school. We have mentioned in Section 4 a small sample of the relevant axioms that play a crucial role in the interpretation of ES's.

5. Contextual, situational, perspectival, and maybe other kinds of axioms used by the speaker/hearer/writer/reader in the context of a given occurrence of an ES. These were also illustrated in Section 4.

We have discussed each of these briefly in earlier sections. One of our main concerns in this investigation has been to understand the integration of axioms that come from different sources, and some of these interactions have been illustrated in Section 4 above.

In conclusion, we reiterate our admiration for the pioneering and extremely insightful work of Babby, which we have largely followed, integrating syntax, semantics, lexicon, and context, and for the insights of Paducheva which were a starting point for the present work. Here we have offered just a modest addition, some progress in the semantic analysis, unifying lexical verbs and *byt'*, and using this domain as a testing ground for exploring our proposed means for the integration of formal and lexical semantics.

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