On *No*

BART GEURTS
University of Osnabrück

Abstract

Since Jacobs (1980) it has been generally assumed that German *kein* 'no' requires a decomposi-
tional analysis. On this analysis, *kein* means 'not some', which in itself is plausible enough, but
furthermore it is claimed that the negative element of *kein* may be construed as having scope
over an expression that, in its turn, outscopes the quantifying element. I propose an alternative
to this decompositional theory which explains the same range of data not in terms of scope, but
in terms of the kind of objects involved in the interpretation of *kein*-NPs. Specifically, it is
shown that the problematic facts may be accounted for on the assumption that such NPs may
refer not only to concrete but also to abstract, or generic, individuals.

Lexical decomposition is one of the less respectable denizens of the modern
semanticist's tool kit. But the term 'decomposition' can be construed in at least
two ways. On the one hand, it has a weak construal, which merely implies a
commitment to the claim that lexical meanings are definable in terms of a
finite, but not necessarily small, inventory of primitives. This commitment is an
innocuous one, and is shared by many if not most workers in the field of
natural-language semantics. On the other hand, there is a strong construal of
'lexical decomposition', which entails the view that rules of interpretation may
be sensitive to the internal structure of a word's meaning, and may operate
selectively on only some of its parts. It is this notion which is controversial, and
for good reason. For one thing, adopting this strong version of decomposition
greatly enhances the predictive force of a semantic theory, and reduces its
explanatory power in proportion. For another, there does not seem to be a
serious body of evidence to prove that the strong notion of lexical decomposi-
tion deserves a place in the theory of grammar. Such evidence as is available is
restricted to minor areas of the lexicon, and none of it is uncontested.

In this paper I want to examine a small part of the quantificational system
which would seem to call for a strongly decompositional analysis. Precisely
such an analysis has been advocated by all authors on the subject, and it receives
support from speakers' intuitions as well as the etymological record. Neverthe-
less, I shall argue that there is a perfectly viable alternative to the decom-
positional account, and in fact the explanation that I propose follows directly
from some natural, and quite uncontroversial, observations on the nature of
quantification.

In the following discussion I concentrate my attention on German data, because the facts that I am concerned with show themselves more clearly in German than in standard English. But to some extent the same phenomenon may be observed in English and, presumably, many other languages as well.

The counterpart in German to the English determiner *no* is *kein*, but *kein* is more prevalent than *no*, and is often employed where speakers of English would prefer to use predicate negation. NPs with *kein* are therefore less restricted in their distribution than their English cousins. They quite freely occur as objects, for example, and it is with this use that I shall be mainly concerned in this paper; some other uses will be considered along the way. Intuitively as well as etymologically, *kein* is an indefinite determiner which incorporates a negation, its unnegated counterpart being *ein* 'a'. Like the other determiners, *kein* inflects for gender, number, and case, but since they are irrelevant to our present purposes, these various endings will simply be ignored.

(1) a. Ich habe keine Sekretärin.
      I have no secretary
   b. Ich rieche keinen Fisch.
      I smell no fish
   c. Ich mag keine Feigen.
      I like no figs

In German, the unmarked way of negating a sentence with an indefinite object is by replacing the object with a *kein*-NP. It is somewhat remarkable that this should be the unmarked option because German *nicht* 'not' is otherwise quite versatile. For example, although in its normal function as a predicate negation *nicht* immediately precedes the non-finite verb cluster, if one is present, as in (2a), it may also be prefixed to a definite NP, as in (2b), or a prepositional phrase, as in (2c):

(2) a. Dieses Jahr wird der Weihnachtsmann nicht kommen.
      this year will Santa Claus not come
   b. Nicht der Kellner hat die Erdbeeren gegessen.
      not the waiter has the strawberries eaten
   c. Nicht ohne Widerwille gestand er.
      not without reluctance confessed he

Occasionally, *nicht* does turn up in front of an indefinite NP, but such uses are highly marked and must always be interpreted contrastively:

(3) a. Sie hat nicht Banánen gegessen, sondern Melónen.
      she has not bananas eaten but melons
   b. Sie hat nicht dréi Melonen gegessen, sondern víer.
      she has not three melons eaten but four

It appears, therefore, that there is a negative principle which forbids the juxtaposition of a non-contrastive *nicht* and an indefinite NP. The examples in (4) confirm this diagnosis.

(4) a. Der Schiedsrichter ist ein Idiot.
the umpire is an idiot
b. Der Schiedsrichter ist kein Idiot.
the umpire is no idiot
c. Der Schiedsrichter ist keineswegs ein Idiot.
the umpire is not-at-all an idiot
d. Ein Idiot ist der Schiedsrichter nicht.
an idiot is the umpire not

(4b)–(4d) represent three different ways of negating (4a), and carry more or less the same meaning, namely 'The umpire is not an idiot'. (4c) is allowed because we have replaced *nicht* with the more emphatic *keineswegs*. In (4d) the predicate nominal has been divorced from the negative element via topicalization, as a result of which *nicht* can be used. These observations reinforce the suspicion that *kein* is semantically equivalent to *nicht* + indefinite NP, which combination is prevented from materializing as such by some rather superficial quirk of the language.

With these preliminaries out of the way, let me now turn to the main subject of this paper, which is exemplified by the following sentence (from Jacobs 1980: 125):

(5) Alle Ärzte haben kein Auto.
all doctors have no car

This sentence has at least two readings, one of which is unproblematic:[1]

(6) [all x: doctor x]([no y: car y](x owns y))

On the 'logical' reading represented by (6), (5) means that no doctor owns a car. Note that this construal can be represented with the quantifier *no*. This is not possible with the second construal, which is the problematic one:[2]

(7) ~[all x: doctor x]([some y: car y](x owns y))

This says that at least some doctors don't own a car. The reading in (7) is not hard to obtain, but the concomitant intonation pattern is marked, stressing *alle* and, optionally, *kein*; as a rule, the 'normal' declarative intonation contour would accompany the reading in (6). In this respect, there is no difference between (5) and (8):

(8) Alle Gäste waren nicht betrunken.
all guests were not drunk

Generally speaking, this would be a somewhat circumstantial way of conveying that none of the guests were drunk. But with the appropriate intonation contour, the not-all reading becomes available.[3]

On its not-all reading, (8) is construed with *nicht* having wide scope. This means that, on this reading, there is a mild discrepancy between the sentence's structure and its intended interpretation, but such tensions are nothing out of the ordinary. However, if (5) is to be read as in (7), this tension is exacerbated by the fact that, apparently, the interpretation of *kein* must be split into two halves, one of which takes scope over the universal quantifier, whereas the other remains *in situ*. The purpose of this paper is to show that this split construal can be accounted for in a principled fashion, without resorting to lexical decomposition in the strong sense of the word.

Split construals of *kein* not only occur in admittedly unusual constructions like (5). The following are perfectly normal sentences (which are taken from Jacobs 1991: 594), and both strongly prefer a split reading—as a matter of fact, in both cases a split reading is the only sensible option:

(9) a. Ich suche keine Putzfrau.
    I seek no cleaning woman
 b. An diesem Grenzübergang muss man keinen Pass vorzeigen.
    at this checkpoint must one no passport show

By default, both sentences will receive a reading which in all relevant respects is analogous to the one in (7). That is to say, (9a) will be taken to mean that the speaker is not looking for a cleaning woman, while (9b) will convey that it is not required that a passport is produced. In the latter case, this preference correlates with the general tendency of the negation to outscope the modal *müssen* 'must'. For example, (10a) is preferably interpreted as indicated by the bracketing in (10b) rather than (10c), although the latter reading is available in principle.

(10) a. Du musst nicht angeln gehen.
     you must not fish go
  b. You [must not] go fishing.
  c. You must [not go fishing].

Thus far I have focused my attention on NPs with *kein*. Are there other expressions that exhibit the same behaviour? My impression is that, strictly speaking, the answer must be that the matter is not quite clear. Like English, German sports several lexical entries which fuse a negation and an indefinite: *niemand* 'nobody', *nichts* 'nothing', *nie* 'never', *nirgendwo* 'nowhere', etc. The first two items on this list, in particular, have been claimed to behave like *kein*, but for various reasons the evidence is inconclusive. For example, Lerner & Sternefeld (1984: 187, 189) contend that the following favour a split reading:

(11) a. Ich sehe niemanden kommen.
    I see nobody come
   b. Ich darf mit niemandem darüber reden.
    I may with nobody about-that speak

They suggest that (11a) means 'It is not the case that I see somebody coming', and (11b), 'It is not the case that I am allowed to discuss this matter with anybody.' On the other hand, if we construe *niemanden* as having wide scope we get: 'Nobody is such that I see him coming', and 'Nobody is such that I am allowed to discuss this matter with him'. The problem is, of course, that in the first case it makes no semantic difference at all whether we give wide scope to a negative sentence operator or to *nobody*, while in the second case the difference is so slight that, intuitively speaking, it is negligible.

Problems of a rather different nature beset Jacobs' (1980: 130) contention that a split construal is available for the following sentence:

(12) Beiden Ärzten hat Luise nichts vermacht.
    to-both doctors has Luise nothing bequeathed

Jacobs maintains that, like (5), this sentence allows both a reading on which *nichts* has narrow scope and one on which the negation that it incorporates takes wide scope, while an existential quantifier remains within the scope of *beiden Ärzten*. However, my own findings indicate that native speakers' judgements don't match Jacobs'. Only some of my informants were able to get a split reading for this sentence at all, and none of them obtained it without having been prompted. In contrast, the reading on which *nichts* takes narrow scope is unproblematic.

To sum up, while speakers' judgements about (12) are insecure at best, it is intuitively plausible but hard to prove that the negative NPs in (11) have split readings. For these reasons, I will in the first instance confine my attention to split readings with *kein*, but I will return to examples like (11a) and (11b) in due course.

Examples like (5) and (9) are widely held to imply that *kein*, or at least certain occurrences of *kein*, should receive a decompositional analysis in the strong sense of the word. This position is implicit in many traditional grammars, which typically issue a warning to the effect that what appears to be an instance of constituent negation may in fact turn out to be just a special form of sentence negation; thus, for example, Behaghel (1924: 65 ff.). The first one to explicitly argue in favour of a decompositional analysis (Bech 1955 being a notable forerunner) was Jacobs (1980), and his position has since been adopted by Lerner & Sternefeld (1984) and Kiss (1993), among others; Dahl (1993) somewhat tentatively suggests that a strongly decompositional analysis is required for the Swedish equivalent of *no*.

It is irrelevant to my purposes what the exact details of a decompositional analysis of *kein* should look like. Jacobs himself employs Montague's quantifying-in method to give the negation wide scope, but obviously the same effect could be obtained with a raising transformation, a modified form of Cooper storage, or, perhaps, with some version of the type-shifting method proposed by Hendriks (1993). The differences between these approaches are considerable, but they don't matter here, and in the following I adopt the transformational metaphor merely for ease of exposition.

Formulated in transformational terms, the decompositional analysis comes down to this. We assume that, at some suitable level of representation, the following analysis is associated with (5):

(13) [all x: doctor x](~[some y: car y](x owns y))

Of course, this is equivalent to (6), but in this representation *kein* has been decomposed into a negation operator and an existential quantifier. Furthermore, we assume that a raising transformation may lift the negation out of its embedded position and associate it with the structure as a whole, thus giving it wide scope. This transformation applies optionally, so either the logical form in (13) remains as it is, or it is mapped into (7). Thus the two readings of (5) are accounted for. Obviously, the same story applies to the pair of examples in (9), and it will also work for cases like (8).

This is a strongly decompositional analysis: it is assumed that the meaning of *kein* is complex structure, part of which may be affected by the raising transformation. For reasons indicated at the beginning of this paper, I take it that, *ceteris paribus*, an alternative account that didn't require this assumption would be more attractive. But are there alternatives to the strongly decompositional analysis of *kein*? One option, discussed and criticized by Jacobs (1980), is to let the semantics of *kein* take care of the split reading. For example, it is possible to translate *kein* in such a way that the interpretation of *kein Auto* comes out as follows:

(14) $\lambda R \lambda T(\sim T(\lambda x[\text{some y: car y}](x\ R\ y)))$

Here R is variable of the type corresponding to the category of transitive verbs, and T is a variable of the type corresponding to NP. (14) will combine with the interpretations of *haben* and *alle Ärzte* to produce the reading in (7). So we have set up the interpretation of *kein* in such a way that it controls the interpretation of the whole sentence, thus enabling it to deposit a negation sign to the left and an existential quantifier to the right of the subject NP's denotation.

This strategy is problematic for a number of reasons. First, as Jacobs observes, it implies that *kein* is multiply ambiguous. For example, whereas in the example given T must be of the NP type, it would have to be of a different type in order to be able to deal with (9b). Jacobs apparently thinks (1980: 132 f., 1991: 594) that

this is enough to discredit the account, but it is not, provided that the ambiguity is systematic. If it is, a type-shifting mechanism might be called up to generate the required readings in a principled manner (see e.g. Hendriks 1993). A more serious problem, in my view, is the assumption that *kein* should be ambiguous between a reading which keeps together the negation and the existential quantifier and one which does not. Finally, it should be noted that this account will only work if the type of R in (14) is allowed to vary, too (and concomitant changes are made in the remainder of the meaning of *kein*). Thus far we have only seen examples of *kein*-NPs which occurred as direct objects, but the following may have a split reading, too:

(15) Du musst den Brief keinem Polizisten zeigen.
       you must the letter to-no policeman show

In order to account for this example, R would have to be of the type corresponding to ditransitive verbs. If we put together this point with the previous two it should be obvious that this lexicalist approach, even if it can be made to work, is blatantly *ad hoc*.

A more serious alternative to the decomposition analysis might be to assume that, although syntactically it functions as an ordinary article, semantically speaking *kein* simply means 'not'. This implies that, on one reading at least, *kein* is not a quantifier and doesn't contain a quantifier either. Consequently, since existential quantification is not part of the meaning of *kein*, the quantifying force of an NP with *kein* must come from a different source. This is defensible when such an NP is plural, as the following examples illustrate:

(16) a. Alle Professoren haben Knallfrösche gekauft.
          all professors have firecrackers bought
     b. Alle Professoren haben keineswegs Knallfrösche gekauft.
     c. Alle Professoren haben keine Knallfrösche gekauft.

In German, as in English, a bare plural may be construed as containing an inaudible existential quantifier, and in (16a) this quantifier lies in the scope of *alle Professoren*:

(17) [all x: professor x]([some y: firecracker y](x bought y))

In (16b), this sentence is negated simply by means of the adverbial particle *keineswegs* 'not at all', which is an emphatic form of *nicht* (cf. (4c)). This sentence has two readings: one in which the negation operator is within the scope of the universal quantifier, and one in which it is the other way round.

(18) a. [all x: professor x](~[some y: firecracker y](x bought y))
     b. ~[all x: professor x]([some y: firecracker y](x bought y))

According to the proposal under consideration, exactly the same account applies to (16c), at least semantically speaking. The only difference between (16b) and (16c) is a syntactic one: whereas in the former case the negation associates with an adverbial element, in the latter it is represented by an article. Thus what we have dubbed the 'split' reading of (16c), i.e. (18b), does not involve a split in any way.

One potential problem which this analysis faces is that it isn't clear whether it can be extended to singular *kein*-NPs without too much strain. Plural (or mass) nouns may stand on their own and don't require an article in order to acquire existential import. Singular count nouns, in contrast, hardly ever occur without an article, so we cannot simply assume that in the singular case the existential quantifier will somehow be taken care of. I am not convinced that this problem is serious enough to dismiss the proposal out of hand, for it might well be argued, I believe, that the article *ein* 'a' is semantically inane, which would support our hypothesis about *kein*. But a serious discussion of this matter would take us too far afield. Besides, there is a further problem which I find more worrying.

It is clear that there is no way in which the proposed analysis of *kein*-NPs could be extended to lexical NPs such as *nichts* 'nothing' and *niemand* 'nobody'. Now I have argued above that the evidence on which it has been assumed that these items allow for split readings, too, is not quite convincing, but it can hardly be denied that there is something to these arguments. Consider, e.g., the following examples:

(19) a. Ich suche nichts.
 I seek nothing
 b. Ich suche niemanden.
 I seek nobody

(19a) may be an answer to 'What are you looking for?' and (19b) to 'Are you looking for an electrician?' and both of these questions may be argued to be ambiguous between a *de re* and a *de dicto* interpretation. Moreover, it is remarkable that a similar distinction is not observed with neg-incorporating adverbials like *nie* 'never' or *nirgendwo* 'nowhere'. This contrast suggests, too, that there is some truth in the claim that sentences like the above are ambiguous, although the ambiguity is difficult to pin down precisely.

To sum up, our first stab at a non-decompositional analysis of negative NPs leaves open one important question and entails that only *kein*-NPs may have split readings. It is possible that this hypothesis may turn out to be tenable after all, but there is another explanation which I find more promising, because it allows us to maintain that all negative NPs are perfectly ordinary quantifier expressions. It is to this alternative that we now turn.

My second, and definitive, proposal covers all sorts of indefinites with

incorporated negations. According to this proposal these NPs are normal quantifying expressions.[4] However, it is well known that the domain of a quantifier is not always a set of concrete individuals, and whenever quantified expressions like *kein N*, *nichts*, *niemand*, etc. range over something other than concrete individuals, split readings may result. The main attraction of this position is that it requires no special assumptions to account for split readings (such as: lexical decomposition, an exotic semantics which will wrap itself around practically anything, or a mismatch between the syntax and semantics of neg-incorporating items). Split readings are simply an unexpected consequence of the standard system of quantification.

In general one conceives of quantificational domains as sets of concrete individuals, but there is nothing in the notion of a quantifier that requires this assumption. A quantifier may range over any set—i.e. any collection of things that can be counted (and some quantifying expressions even seem to apply to non-countables as well). Concrete individuals are our countable entities *par excellence*, but they are not the only ones to be recognized as such by the metaphysics of natural language. The following examples, which I have taken from Carlson (1977: 438), illustrate this point:

(20) a. Every featherless bird is now extinct.
    b. No reptiles are indigenous to the Philippines.
    c. Many mechanical devices were invented by mistake.

In these sentences, it is clear that the quantificational domain of *every*, *many*, and *no* must consist of kinds rather than concrete individuals. Concrete individuals may die but not become extinct; it is species not concrete individuals which may or may not be indigenous to the Philippines; and an invention brings into life a new type of thing not, or not necessarily, a concrete individual. Carlson uses the term 'abstract individual' to refer to whatever it is that these sentences quantify over, and I shall adopt this usage, too.

Carlson's examples suffice to prove that abstract individuals must be accepted as a fact of life, but in a way these examples are misleading, too, because they might be mistaken for evidence that quantification over abstract individuals is something special. After all, *be extinct*, *be indigenous to*, and *invent* aren't ordinary predicates. I believe that this impression is simply false: quantification over abstract individuals is rife, but we tend not to notice it for two reasons. First, as a rule abstract talk is not formally distinguishable from concrete talk. Secondly, the statements we make about abstract individuals often entail analogous statements about concrete individuals, and conversely. The following examples illustrate these observations.

I point at a copy of *Lolita* and volunteer the following:

(21) I have read this book.

In uttering this sentence, I may have meant at least two things: that I have read *Lolita* or that I have read the particular copy of *Lolita* at which I am pointing. The former reading is entailed by the latter, but not vice versa. If I had the second meaning in mind, I have claimed to stand in the 'have read' relation to a concrete individual, and by implication, to the abstract individual which is instantiated by this particular copy of *Lolita*. If I had the first meaning in mind, then my claim was merely that I have read the book, not that I have read this particular instance of it. The same type of polysemy may arise when we quantify over books. In an advertisement, a bookshop boasts:

(22) We have more than 10,000 books in stock.

This may mean either that they have more than 10,000 copies or more than 10,000 titles, and the sentence's truth may depend on what one counts. In this example, too, one reading entails the other but the two are not equivalent.

Abstract individuals are useful to us because they may be, and generally are, instantiated by concrete individuals. But abstract individuals may also, in their turn, instantiate other, more general, abstract individuals: this concrete book instantiates *Lolita*, which in turn instantiates 'novel by Nabokov'. In general, if we predicate something of an abstract individual, claims about its instances, abstract or concrete, are implied, and conversely. Such implications are systematic, but they depend on the predicates employed. If someone has *read* a concrete copy of *Lolita*, then he has read *Lolita* as well as Nabokov. Coming from the opposite direction, if he has read Nabokov, he has read at least one of *Lolita*, *Ada*, *Pnin*, etc., and at least one copy of either *Pnin*, *Ada*, *Lolita*, and so on. But if he *dislikes* a particular copy of *Lolita*, he may actually be fond of 'the book'.

Our first specimen of a sentence with a split reading (reproduced below as (26)) was about cars, which is a happy coincidence because the structure of this particular domain is a fairly transparent one. It should be uncontroversial to assume that the abstract individual CAR is instantiated by the models Peugeot 205, 305, . . ., Citroën AX, BX . . ., and so on, which in turn are instantiated by concrete cars. Admittedly, the domain is amenable to a more elaborate classification, but this amount of detail will suffice for our purposes. I shall use the letter M to denote the set of car models. So we have a three-layered hierarchy with the abstract individual CAR at the top, concrete individual cars at the base, and the members of M in the middle, and the same expression may be employed to pick out any of these levels, as the following examples illustrate:

(23) a. A car stopped in front of the house.
    b. The jury was impressed most by a French car—namely, the Citroën ZX.
    c. A car is a vehicle.

(23a) is most likely to be used to convey information about a concrete individual; (23b) is about car models, i.e. it picks out one of the members of the set M; and (23c) is about the generic car, i.e. about CAR.

Now consider the following sentence:

(24) Leo owns a car.

Let us suppose that in this example, *car* may refer to the top element of the car hierarchy, i.e. to CAR, to some x ∈ M, or to a concrete individual. Consequently, (24) may mean that Leo is a car owner, that is an x-owner, x ∈ M, or that there is a concrete car which he owns. Now somebody utters this sentence, and we ask ourselves which interpretation the speaker has in mind. The answer is fairly obvious: it doesn't matter in the least which particular meaning prompted the speaker to say what he said. For instance, if Leo owns a concrete car, then he is a car owner and for at least one x ∈ M, he is an x-owner—and similarly if we take one of the other construals of (24) to be primary. Given the meaning of *own* and the structure of the domain under consideration, each 'reading' of (24) entails the others.

Ownership certainly is a relation between concrete individuals. But if someone owns a given, concrete, object x he is *ipso facto* related to any abstract individual instantiated by x, and this relation is also denoted by the verb *own*. Actually, it is not even necessary to assume that this verb is polysemous between various 'levels of ownership'. Suppose that the relation of instantiation is a partial order on a given domain of individuals, which may be either concrete or abstract. So technically speaking each individual instantiates itself. Then we might say that the verb *own* denotes the relation which is periphrastically expressed by 'own a concrete instance of', from which it would already follow that it doesn't matter whether we construe the indefinite in (24) as being about abstract or concrete cars.

Almost the same observations apply if we negate (24):

(25) a. Leo doesn't own a car.
    b. ~[some x: car x](Leo owns x)
    c. [some x: car x](~(Leo owns x))

In (25a) the negation may take scope over the indefinite or conversely, the corresponding logical forms being (25b) and (25c), respectively. In both representations, the variable x may range either over the set of concrete cars, the set M of car models, or the singleton set {CAR}.[5] If the negation has wide scope, it doesn't matter which of these sets we choose, but if it has narrow scope, it may make a difference what the indefinite quantifies over. If in (25c) x ranges over M or the set of concrete cars, we get two equally unlikely readings: 'There is at least one x ∈ M such that Leo is not an x-owner', and: 'There is at least one concrete car that Leo doesn't own.' Either reading may be forced with some help from

the context or, if that doesn't work, by choosing a different predicate. If, on the other hand, x ranges over {CAR}, (25a) is construed as 'Leo is not a car owner'—or in other words: (25b) and (25c) become truth-conditionally equivalent.

These observations illustrate an important point. The notion that natural-language quantifiers may, and often do, range over abstract individuals is by no means new. But the example in (25) suggests that, once we take this fact seriously, it becomes clear that the notion of scope should perhaps be wielded with more care than it has sometimes received. For we have seen that, if we construe x as ranging over the set {CAR}, it doesn't matter whether we give the negation wide or narrow scope. Furthermore, the reading on which the quantifier ranges over {CAR} and has wide scope is truth-conditionally equivalent to the reading on which it has narrow scope and ranges over concrete individuals. Such facts urge us to exert some caution in our judgements on scope relations, but it is also in facts like these that, in my view, the key to the riddle of *kein* lies.

Let me now return to the main theme of this paper and to Jacobs' example (26) (=(5)).

(26) Alle Ärzte haben kein Auto.
      all doctors have no car

Assuming that *kein* is an ordinary quantifier, we would expect to get (at least) two different logical forms for this sentence:

(27) a. [all x: doctor x]([no y: car y](x owns y))
      b. [no y: car y]([all x: doctor x](x owns y))

Any of the standard methods for scope assignment will produce these two forms. But what do they mean? That question can only be answered after we have fixed the domains of the variables x and y. Since we are only interested in the second variable, let us agree that x must take its value from a contextually given set of (concrete) doctors. As in the previous examples, y may range either over a set of concrete individuals, or over the set M, or over the singleton set consisting of the abstract individual CAR. Now if we construe (26) as (27a), it doesn't matter from which of these three sets y must pick its values. In this respect the example is exactly like (25a) on its (25b) reading. If for each x there is no concrete car that he owns, then no x is either a y-owner, for any y ∈ M, or a car owner. And so on. However, if we construe (26) as (27b), it does make a difference whether y ranges over a set of concrete cars, the set M, or the set {CAR}. Suppose that y ranges over concrete cars. Then we obtain a reading which is weird and should probably be excluded on pragmatic grounds as being too unlikely. If y ranges over M, we get an interpretation which says that for no y ∈ M, all doctors are y-owners. Hence it is not the case that all doctors are Peugeot 205 owners, or that all doctors are Citroën XM owners, etc.

Apparently, this reading is not readily available in this particular case, but analogous examples can be constructed where precisely such a reading is intended. For example, the outcome of the German Ambulance of the Year Contest might be reported as follows:

(28) Mehr als 12 Ärzte stimmten für kein Auto.
    more than 12 doctors voted for no car

In the context indicated, this would very likely be interpreted with *kein Auto* having wide scope and ranging over M or some subset thereof.

    Finally, the variable y in (27b) may range over the set {CAR}. Thus construed, (26) claims that for no y ∈ {CAR}, it is true that all doctors are y-owners. Which is to say that not all doctors are car owners. Given what we observed earlier this is equivalent to (29) (=(7)), where both x and y range over concrete individuals.

(29) ~[all x: doctor x]([some y: car y](x owns y))

So the split reading of (26) is accounted for despite the fact we have analysed *kein* as an ordinary quantifier.

    If we want to make explicit the chain of reasoning running from (27b) to (29), two premisses must be brought out that have hitherto remained implicit. (As a matter of fact, I believe that there are various ways to secure this inference, but it is sufficient for our present purposes if at least one plausible account can be given.) First, we must rule out the possibility that (27b) is made true because the restrictor of *no* is empty, and therefore we must assume that the abstract individual we have referred to as CAR actually exists, and is in the extension of the predicate *car*. Secondly, as I have indicated already, we have to make an assumption about the property $\lambda y(x \text{ owns } y)$, with x standing for an arbitrary doctor. We want this property (and many others) to be projecting in the sense that, if it applies to a concrete individual b, it also applies to all abstract individuals a that are instantiated by b. In short, using ≤ for the instantiation relation and v and u as variables over concrete and abstract individuals, respectively:

(30) P is a projecting property iff [all u: [some v: v ≤ u](Pv)](Pu)

To summarize, we need two premisses: (i) that the predicate *car* applies to the abstract individual CAR, and (ii) that for every doctor, x, $\lambda y(x \text{ owns } y)$ is a projecting property. Now since y in (27b) ranges over {car}, we obtain:

(31) ~[all x: doctor x](x owns CAR)

The split reading of (26) follows from (31) and our second premiss: if (32) were true,

(32) [all x: doctor x]([some z: car z & z ≤ CAR](x owns z))

(where z ranges over concrete individuals), then (31) would have to be false. But since it isn't, the negation of (32) must be true, and thus we have obtained the split reading of (26).

This analysis can easily be extended so as to deal with Jacobs' example (33a) (=(9b)):

(33) a. An diesem Grenzübergang muss man keinen Pass vorzeigen.
          at this checkpoint must one no passport show
     b. □[no x: passport x](x is shown)
     c. [no x: passport x]□(x is shown)

Ignoring the locative PP, which is irrelevant to our purposes, (33b) and (33c) are the two logical forms associated with (33a); they parallel (27a) and (27b), respectively. In these representations, the box operator stands for deontic necessity. (33b) represents one possible set of readings of (33a), but there is no need to discuss these in detail. (33c) allows for at least two readings, depending on whether x ranges over concrete passports or over the singleton set inhabited by the abstract individual PASSPORT. The former reading is pragmatically unlikely, but the latter is not. It says, in effect, that at this checkpoint is not (deontically) necessary to be a passport producer—more idiomatically: it is not required that one shows a passport.

If we want to account for this in more detail, one additional premiss is needed, which is due to the fact that this is not an extensional context. The premiss is that not only does the abstract individual PASSPORT lie in the extension of the predicate *passport*, but in addition PASSPORT exists in all worlds that the interpretation of '□' needs to have access to, and it is always in the extension of *passport* (since PASSPORT is an abstract individual, this is not the same as assuming that there are (concrete) passports in all pertinent possible worlds). The second premiss, as in the previous example, is that λx(x is shown) is a projecting property. With these two premisses, (34a) is derivable from (33c), and from (34a), (34b) follows, which is in effect the split reading that we wanted to obtain (as before, z ranges over concrete individuals):

(34) a. ~□(PASSPORT is shown)
     b. ~□[some z: passport z & z ⩽ PASSPORT](z is shown)

Finally, I want to indicate how this proposal might deal with the interaction between *kein*-NPs and attitude contexts. Given our enriched ontology which comprises abstract as well as concrete individuals, it is plausible to assume that on its so-called *de dicto* reading, a sentence like

(35) Julius is looking for a car.

should be interpreted in terms of a relation between Julius and the abstract individual CAR. Thus construed, we can give the quantifier corresponding to *a car* wide scope:

(36) [some x: car x](Julius is looking for x)

where x ranges over {CAR}. But the same structure may be employed to represent the *de re* reading, as well as an intermediate reading, which it is not generally recognized in this connection, but which is available, as the following thought experiment shows. Suppose that, having uttered (35), the speaker is asked whether Julius has any particular car in mind. Here are some of the answers that he might give:

(37) a. No.
    b. Yes, a Citroën XM.
    c. Yes, his neighbour's.

(37a) implies that any car will do, (37b) that he is looking for a particular model, and (37c) that he is looking for a concrete car. The first answer indicates a *de dicto* reading, the third one a *de re* reading, and the second answer suggests a meaning that lies somewhere in between. In terms of quantification it is perfectly obvious what this means: in a sense all three readings are *de re* construals, but the objects that are quantified over are different in each case.

    Now let us look again at Jacobs' example (38a) (=(9a)):

(38) a. Ich suche keine Putzfrau.
       I seek no cleaning woman.
    b. [no x: cleaning woman x](I seek x)

The logical form of (38a) that we are interested in is (38b). Supposing that the quantifier may range either over concrete individuals or the abstract individual CLEANING WOMAN, this sentence will have two readings: the former means that there is no concrete cleaning woman that the speaker is looking for, the latter that he is not a cleaning-woman seeker. Which is the reading that we wanted to account for.

    I have outlined a proposal which allows us to maintain the position that German *kein*-NPs are unambiguous quantifying expressions, which occasionally produce interpretative effects that may be unexpected but are not, in fact, something out of the ordinary. Before I proceed to argue that *kein*-NPs are not normal quantifiers, after all, I want to briefly return to other expressions that have been claimed to give rise to similar effects. We have seen that these effects are somewhat difficult to pin down exactly, and I believe that the analysis I have proposed may help us to see why this should be so. An example like (39a) (=(19a)) would be represented as in (39b):

(39) a. Ich suche nichts.
       I seek nothing
    b. [no x: A x](I seek x)

Here A stands for a restriction on the values of x which is provided by the context (and which may be empty, of course). We observed earlier that, although intuitively there is some difference between the '*de re*' and the '*de dicto*' reading of (39a), this difference is hard to make explicit. But meanwhile we have examined several examples which display the same characteristics, and our analysis has given a general explanation of what is going on in cases like this. Like the examples discussed in the foregoing, (39a) exhibits what is sometimes called a primitive ambiguity (e.g. Horn 1989): the variable x may range either over abstract or concrete individuals, and the interpretation which results in the former case entails the one that results in the latter case—but not vice versa.

The keystone of my proposal is that abstract individuals are involved in the construal of *kein*-NPs with split readings.[6] However, the actual implementation of this idea as presented in the foregoing requires a premiss which is problematic, namely that in split readings, *kein N* ranges over a singleton set containing just one abstract individual. Not only is this assumption intuitively implausible, it also causes problems with examples like the following:

(40) Kein dodo ist ausgestorben.
       no dodo is extinct

Be extinct is a predicate that only applies to abstract individuals (cf. (20) above), and therefore we would be led to expect that at least one of the interpretations of (40) is that *the* dodo is not extinct. But this is not what we find: the only possible reading of this sentence is that, among the various species of genus dodo, none is extinct.

These problems are caused, I believe, by the assumption that NPs are uniformly construed as generalized quantifiers. This assumption is untenable for quite independent reasons, and if we trade it in for a more refined account of NP interpretation, the problems mentioned in the previous paragraph dissolve automatically. If all NPs are treated as generalized quantifiers, three classes of NPs are lumped together that exhibit clear differences.[7] Adopting Löbner's (1987) terminology, I propose to distinguish between definite, quantificational (in a narrower sense than I have used the term thus far), and indefinite NPs. These classes differ most strikingly with respect to their presuppositional properties, although there are other differences as well. First, definite NPs are presuppositional expressions *tout court*: an NP of the form *the N* triggers the presupposition that there is an N, and it may be argued that this is all there is to the semantics of the definite article. Secondly, quantificational NPs are presupposition triggers, too, but they involve further, non-presuppositional, elements as well. For example, (41a) presupposes that there is a (contextually given) set of elephants, and it asserts that a majority of them were drunk:

(41) a. Most elephants were drunk.
   b. Perhaps most elephants were drunk.
   c. If there were elephants present, then most elephants were drunk.

Obviously, (41a) entails that there were elephants. That this is a presupposi-
tional inference appears from the fact that it displays the projection behaviour
that is characteristic of presuppositions, as (41b) and (41c) illustrate. In (41b),
sentence (41a) is embedded in a non-entailed position, but none the less the
matrix sentence licences the inference that there were elphants. In (41c), by
contrast, this inference is 'blocked', which is precisely what we would expect
from a presupposition (see e.g. Geurts 1995 for further discussion). All proper
quantifiers behave like this.

Thirdly, indefinite NPs may trigger presuppositions, but their primary use is
non-presuppositional. Thus, if a speaker volunteers (42a), he obviously does not
presuppose that there are children in anything like the way in which (41a)
presupposes that there are elephants:

(42) Walter has two children.

However, with the appropriate intonation contour, *two children* may be used to
trigger the presupposition that there is a contextually given set of children. (I
suspect that this presupposition isn't triggered by the indefinite itself, and that,
accordingly, the indefinite determiner is neither semantically nor prag-
matically ambiguous, but I will not defend that position here.) For example,

(43) Two children are playing in the garden.

This sentence has two interpretations. If the indefinite is read without any
presuppositions, (43) simply asserts that there are two children playing in the
garden. But the sentence may also be construed as presupposing, in addition,
that the two children in the garden belong to a contextually given set of
individuals. The latter reading is preferred in this particular case, notwithstand-
ing the fact that indefinite NPs are primarily non-presuppositional expressions,
because the indefinite occurs in subject position, and in the vast majority of
cases subjects are presupposition triggers (cf. e.g. Prince 1981).

Formulated in terms of a discourse semantic theory like DRT (Kamp 1981;
Kamp & Reyle 1993; Geurts 1995), these observations come down to the
following. First, the semantic correlate of a definite NP is a discourse entity
which is presupposed, i.e. taken as given. Secondly, the semantic correlate of a
quantificational NP is a pair of such entities, one of which is presupposed. For
example, the intepretation of (41a) involves two collections of elephants, one of
which is presupposed and contains the other. Thirdly, an indefinite NP simply
introduces a new discourse entity, which is not presupposed, but which is
sometimes signalled to be part of a collection that is presupposed.

How does *kein* (or *no*, for that matter) fit into this picture? Having originated from the fusion of *ein* 'a' with a negative element, *kein* evidently is an indefinite determiner, and therefore it introduces a new discourse entity, albeit within the scope of a negation operator, which may but need not be part of a presupposed collection. Thus construed, we would expect *kein* to pattern with *ein*, to a significant extent at least, and that is what we find (as will be illustrated in the following).

It remains to be shown that the problems we encountered with the initial version of our theory dissolve when we adopt the analysis of *kein* that I have outlined in the preceding paragraphs. To begin with, we no longer require the somewhat awkward premiss that in split readings, *kein N* quantifies over a set that happens to contain just one abstract individual. For, just like the singular indefinite (and unlike an NP with, say, *most* or *some*), *kein N* introduces an *individual* discourse entity, which may or may not be abstract. Furthermore, it can now be seen that there are two factors that conspire to enforce the reading we observed for (40). First, in German as in English, generic predicates that only apply to kinds, like *be extinct*, do not combine with the singular indefinite, although the singular indefinite may be used generically, as (44b) illustrates. That is, (40) cannot be used to convey that the dodo isn't extinct for the same reason that (44a) cannot convey this message:

(44) a. Ein Dodo ist nicht ausgestorben.
          a dodo is not extinct
      b. Ein Dodo ist ein Säugetier.
          a dodo is a mammal

The second factor is that, as we have seen, subject terms in general strongly favour a presuppositional reading. Therefore, the hearer will want to interpret the subject NP of (40) as meaning, in effect, 'none of a given collection of dodos', and since the predicate only applies to generic entities, this will have to be a collection of generic dodos—or species of dodo. Predictably, the only way to make sense of (44a) must be in the same vein: this sentence can only mean that one of a presupposed collection of dodo species is not extinct.

What we end up with, then, is a decompositional analysis in the weak sense of the word. *Kein* is parsed, in effect, as the semantic collocation of the negative operator and the singular indefinite. But mine is not a strongly decompositional account, because it doesn't require the assumption that certain rules of interpretation are sensitive to the internal structures of the word, and may operate on one of its semantic parts to the exclusion of others.

Acknowledgements

BART GEURTS
Universität Osnabrück
FB7
49069 Osnabrück
Germany
e-mail: geurts@hal.cl-ki.uni-osnabrueck.de

NOTES

1 The intended meaning of this notation will not be hard to fathom, but lest any mis-understandings should arise, I give here the standard definitions of the quantifiers *all*, *some*, and *no*, which are the only ones that I shall be needing. Let x be a variable that is free in φ and ψ; then:

[all x: φ](ψ) is true iff $\{x: \varphi\} \subseteq \{x: \psi\}$
[some x: φ](φ) is true iff $\{x: \varphi\} \cap \{x: \psi\} \neq \varnothing$
[no x: φ](ψ) is true iff $\{x: \varphi\} \cap \{x: \psi\} = \varnothing$

2 It may be argued that, grammatically speaking at least, (5) has a third reading, in which the quantifier *kein Auto* takes wide scope, i.e.

[no y: car y]([al x: doctor x](x owns y))

Although (5) doesn't seem to have this reading, it is crucial to my enterprise that this structure be available. See below.

3 This reading is harder to obtain than for corresponding sentences in English or French, for example, and one of my informants claims that he doesn't get it at all. See Horn (1989: 226 ff.) for further discussion.

4 For the time being, I will assume that *kein-* NPs are ordinary quantified expressions in the sense of the theory of generalized quantifiers. This assumption will allow me to present the gist of my proposal without too much fuss. But eventually, I will come down in favour of a different view, because the analysis is *kein* as a quantifier turns out to cause some complications. This alternative construal is motivated entirely on independent grounds, as we will see.

5 The assumption that an indefinite may quantify over a singleton set is admittedly not a very intuitive one, and accordingly this aspect of the theory will be revised later on.

6 The following discussion was prompted by a remark by an anonymous referee for the *Journal of Semantics*, who pointed out the problem with (40).

7 This position is consonant with the spirit, though not necessarily the letter, of Fodor & Sag (1982), Löbner (1987), and Kamp & Reyle (1993), among others.

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