Bäuerle (1983) argues against the Scope Theory of Intensionality (STI), proposing instead a system that divorces the relative scope of quantifiers from their intensional status (de re or de dicto). One convincing argument Bäuerle presents involves sentences like the following (translated loosely from German), which create a paradox for the STI:

(1) George thinks every Red Sox player is staying in some five-star hotel downtown.

Imagine that George believes a group of men to all be staying at the same five-star hotel—perhaps he overhears the men comparing notes on their luxurious accommodations. This group of men happens to be the Boston Red Sox baseball team, but George does not know this. Furthermore, George does not know which hotel they are staying at; he is only of the opinion that they are all staying together in a five-star establishment. In fact, there may not even be any five-star hotels downtown; the sentence can be true even if the players’ hotel actually has only four stars.

In this context, the quantificational force of the existential quantifier some five-star hotel takes wider scope than that of the universal quantifier every Red Sox player, since there is only one hotel in which all of the players are staying. Therefore, under standard assumptions about quantifiers, the existential quantifier should take wider scope than the universal quantifier. However, the universal quantifier is de re and the existential quantifier is de dicto. Therefore, under the STI, the universal quantifier should take scope over the intensional verb think and the existential quantifier should take scope below think. The universal quantifier should therefore take wider scope than the existential quantifier.

Thanks are due to Kai von Fintel and Alan Bale for their invaluable assistance in the preparation of this squib.
existential quantifier. So the predictions of the STI contradict the standard theory of quantifiers.

Authors since Bäuerle (1983) (Cresswell (1985), von Fintel and Heim (2008), Schlenker (2003), and von Stechow (1984), among others) have cited this type of example as evidence that the STI is incorrect. However, in this squib I will propose an alternative explanation for the data in (1) involving the exceptional scopal properties of indefinites. Under this analysis, the example in (1) no longer poses a paradox for the STI. My analysis also correctly predicts the Bäuerle-type readings to disappear when there are no indefinites in such sentences.

1 Wide Scope Indefinites

1.1 Data

Researchers since Fodor and Sag (1982) have noted that indefinites inside positions that are islands for other operators can take scope above these positions. For instance, consider the following sentences:

(2) Each professor overheard the rumor that a student of mine was called before the dean. (Fodor and Sag 1982:(69))

(3) If two uncles of mine die, I will be rich. (after Ruys 1992)

An NP complement is an island for movement (Ross 1967), and thus most quantifiers inside an NP complement cannot take scope above it. For instance, consider the following variation on (2):

(4) At least one professor overheard the rumor that every student of mine was called before the dean.

Example (4) only has the reading where at least one professor takes wider scope than every student of mine; it cannot mean that for each of my students, at least one (possibly different) professor overheard the rumor that he or she was called before the dean. This is presumably since the complement to the noun rumor is an island, and the quantifier every student of mine cannot escape this island to take scope over at least one professor. The situation is quite different for (2), however. Example (2) does indeed have a reading where the embedded DP, a student of mine in this case, takes scope over the subject DP, each professor. It can mean that there is a single rumor about a single student, and each professor has heard this very rumor.

If-clauses are also islands for movement and also restrict the scopal possibilities for quantifiers within them. Consider, for instance, the following example:

(5) If each/every uncle of mine dies, I will be rich.

Example (5) only has a reading where my uncles must all die before I can get an inheritance. If the quantifier every uncle of mine could take scope above the if-clause, the sentence would have a reading where if any of my uncles dies, I will be rich. However, this reading is unavailable. Once again, though, the reading is available for the
corresponding sentence with an indefinite in (3). This sentence can mean that there are two particular uncles of mine who, if they both die, will leave me a fortune. This sentence can be true even if there are two other uncles of mine whose death will not provide such a windfall.

1.2 Analysis

Several explanations of this phenomenon have been proposed. Although, in the end, I do not believe that the choice between these explanations will affect my argument, for the purposes of this squib I will adopt the existentially closed choice function analysis (Reinhart 1992, 1997, Winter 1997). Under this analysis, indefinite determiners such as those in sentences (2) and (3) denote choice functions, which are bound by a freely occurring existential closure operator. When this operator takes widest scope, at the top of the sentence, such indefinites appear to take wider scope than any other element in the sentence. For instance, the meanings for (2) and (3) in this system would be as follows:

(6) $\exists f$ such that each professor overheard the rumor that $f(stu-$

(7) $\exists f$ such that if $f(two$ uncles of mine) die, I will be rich

Given the same set, a choice function will always return the same individual. Therefore, in the reading represented in (6), it is the same student about whom each professor heard a rumor. Similarly, the choice function in (7) always returns the same two uncles. Thus, even though the NP complement and the if-clause are islands for movement, the indefinites can seem to take wider scope.

In certain cases, indefinites inside an island can seem to take scope above this island, but below another quantifier in the sentence. For instance, consider the following example:

(8) Each professor rewarded every student who read some book he had recommended. (after Abusch's (1993) (10))

1 An anonymous reviewer points out that Schwarz (2001) discusses an overgeneration problem for choice function analyses of wide scope indefinites. Schwarz shows that such analyses predict that sentences like (i) should have readings like (ii), which in fact they lack.

(i) No linguist submitted a paper he had written.

(ii) No linguist submitted every paper he had written.

He argues that since a choice function analysis would require a stipulation to rule this reading out, such an analysis loses any advantage over one where indefinites take wide scope as a result of (exceptional) QR. Although I agree that this problem must be solved, I disagree with the conclusion that it invalidates the choice function approach. Without independent evidence, the stipulation made by the choice function approach seems no worse than the stipulation made by the QR approach. Also, see Reinhart 1997 and Winter 1997 for arguments against the QR analysis.
The sentence in (8) can have a meaning where each professor chose a different book he had recommended and rewarded students who read that book. This reading, where the apparent scope of the indefinite is above the DP *every student who* . . . but below the subject DP *each professor*, can be achieved under this analysis as well, by having the existential operator take scope between the two other quantifiers.

\[
(9) \left[ \exists f \left[ x \text{ rewarded every student who read } f(\text{book he had recommended}) \right] \right]
\]

### 1.3 Intensional Contexts

Consider the following sentence:

(10) Mary thinks that if two uncles of hers die, she will be rich.

(10a)\[
\exists f \left[ \begin{array}{c}
\text{Mary thinks that} \\
\text{if } f(\text{two uncles of hers}) \text{ die,} \\
\text{she will be rich}
\end{array} \right]
\]

(10b)\[
\exists f \left[ \begin{array}{c}
\text{Mary thinks that} \\
\text{if } f(\text{two uncles of hers}) \text{ die,} \\
\text{she will be rich}
\end{array} \right]
\]

Now, imagine a scenario where Mary believes she has four uncles—say, Alan, Bob, Charlie, and Doug. She believes that Alan and Bob are rich, and if they die, she will inherit a fortune. Finally, imagine that Mary has been horribly misled, and she actually has no uncles whatsoever. These men she thinks are her uncles are not even relatives by adoption. This scenario verifies the meaning of the structure in (10a). A choice function analysis is needed for this sentence, because the quantificational force of the indefinite takes scope outside of an *if*-clause island. In this structure, the existential closure of the choice function takes wider scope than the verb *think*. The bound choice function is applied to the indefinite *two uncles of hers*, which is evaluated in the intensional context created by the verb *think*. (Since Mary has no real uncles, the indefinite must be evaluated in her thought worlds.) The set of Mary’s uncles is the same in all her thought worlds: Alan, Bob, Charlie, and Doug. Therefore, the choice function will return the same two uncles for each thought world (Alan and Bob, if the sentence is to be true).

Next, imagine instead that Mary believes that two of her supposed uncles are poor, but that two are rich; and if the two rich ones die, she will inherit a fortune. However, this time she does not know which are poor and which are rich. Even under this scenario, (10) can be

\[2\] This is a change from Reinhart’s (1997) system.
true, given the structure in (10b). Once again, the indefinite is evaluated in the intensional context and the existential operator takes scope outside the if-clause. However, this time, the existential operator takes scope below the verb think, allowing a different choice function, and hence a different pair of uncles, to apply in each thought world. This is analogous to the use of the structure in (9) for the sentence in (8).

2 Bäuerle 1983 Revisited

2.1 Proposal

We now have all the machinery needed to explain Bäuerle’s (1983) example without posing a paradox for the STI. Consider a structure such as the following for the sentence in (1):

\[
(11) \exists f \left[ \left[ \left[ \text{every Red Sox player}\right]_x \right] \left[ \text{George thinks that } x \text{ is staying at } f(\text{five-star hotel downtown}) \right] \right] \]
\]

For (11) to be true, George need not have a particular five-star hotel downtown in mind. In fact, such a hotel may not even exist. For every one of George’s thought worlds \( w \), though, the choice function \( f \) will pick out a single hotel from the set of hotels that have five stars in \( w \). Therefore, even though the universal quantifier every Red Sox player takes wider scope than the indefinite, owing to the exceptional wide scope properties arising from the choice function analysis, the indefinite can appear to take wider scope than the universal quantifier. Furthermore, the indefinite can do so without actually moving to a position higher in the structure than the universal quantifier. Therefore, under this independently motivated structure for the indefinite, the sentence no longer provides an argument against the STI.

Bäuerle also discusses instances of his paradox for operators over times instead of possible worlds. Consider the following such example from Keshet 2008:

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3 An anonymous reviewer asks whether further embeddings act as expected. For instance, consider the following sentence:

(i) Every fan thinks that George believes that every Red Sox player is staying in some five-star hotel.

To the extent that I have intuitions about such a sentence, there do seem to be readings corresponding to different placements of an existential operator. For instance, I can understand (i) to mean that a group of fans (and George) all believe in the same set of (nonexistent) five-star hotels and yet each fan thinks that George believes the whole Red Sox team to be staying in a different such hotel. Alternatively, (i) could mean that all the fans are thinking of the same such hotel, or that they know there are no five-star hotels, but believe George thinks there is one such that the Red Sox players are staying there.
In 2001, a 14-year-old boy interviewed every most-wanted fugitive in America.

The sentence in (12) can describe the following scenario: in 2001, a boy who was 14 years old at the time interviewed 10 prisoners at a maximum-security penitentiary for his school newspaper. Recently, all 10 broke out of prison and are now America’s 10 most-wanted fugitives. The current analysis works for these examples, too, assuming the following structure:

\[
(13) \exists f \left[ \left[ \text{f might have interviewed } x \right] \land \left[ \text{f might have interviewed every } x \right] \right]
\]

In (13), the universal every most-wanted fugitive takes scope outside of the past tense operator and the indefinite a 14-year-old boy takes scope within, but the indefinite is bound by an existential operator at the top of the sentence. Once again, this simulates widest scope for the indefinite even while its descriptive content remains within the relevant intensional context.

2.2 Predictions

Only a small number of DPs have wide scope properties. As seen in (4) and (5), DPs headed by each, every, or at least one do not share the wide scope properties of those headed by a, some, or a number. Hence, if my new analysis of Bäuerle’s (1983) sentence is correct, then sentences similar to Bäuerle’s where the indefinites have been replaced by items without exceptional scope properties should lose the readings that Bäuerle describes. Preliminarily, this seems true. Consider the following variation on sentence (1) that contains no simple indefinites:

(14) George thinks every Red Sox player ate at at least one five-star restaurant downtown.

Imagine a scenario where George hears a group of men comparing different luxurious restaurants. Once again, this group is the Red Sox, unbeknownst to George. Also, once again, there are possibly no such restaurants downtown—George could be mistaken. Sentence (14) is much less clearly acceptable than (1) in the relevant scenario. However, it is hard to keep the scenario in mind long enough to make a very clear judgment: you must remember that the men are really the Red Sox, but George does not know this, and also that they went to...

Note that this past tense operator cannot be a true existential operator; if it were, the sentence would have a meaning where each interview took place at a different time. If there were separate interviews, the set of 14-year-old boys could be different at the time of each interview and hence f(14-year-old boy) could also potentially be different, invalidating the analysis. So, I assume a pronominal past tense operator as discussed in Partee 1973.
some eating establishments that are not five-star restaurants, although George thinks they are.

Therefore, I will present a pair of sentences where the judgments are much clearer. The first sentence, (15), has an indefinite and exhibits the readings that Bäuerle discusses. The second, (16) below, has no indefinites and clearly lacks such readings. Consider the following:

(15) John told me some relative of his in the area gave him at least two shirts he bought for himself.

Imagine that your friend John has some crazy Hawaiian shirts in his closet that he is embarrassed about having bought. He therefore lies about them, saying that one particular relative of his in the area bought him some of the shirts. As you later find out, though, he does not even have any relatives in the area. In this scenario, sentence (15) is a real Bäuerle-type sentence. The DP some relative of his in the area takes wider scope than the DP at least two shirts he bought for himself, since there is only one putative relative who alone bought at least two of the objectionable shirts. However, the DP some relative of his in the area must be de dicto, since there is no such relative; and the DP at least two shirts he bought for himself must be de re, since John certainly did not divulge the fact that he bought the shirts himself. The judgment is very clear here that this DP is de re since John cannot have bought for himself the same shirt that a relative gave him.

Now, consider a small change to the scenario that will allow us to write a minimal-pair counterpart to sentence (15). Imagine that John instead claims (falsely again) that he has several relatives in the area and each of these relatives gave him a few of the shirts in question. We might try to use the following sentence to describe this amended scenario:

(16) John told me each relative of his in the area gave him at least two shirts he bought for himself.

Unlike (15), though, sentence (16) is very hard to make sense of in the given scenario. The only way it could make sense would be if the DP each relative of his in the area was de re: John is not making up the relatives; he is only lying about the fact that they gave him the shirts. Perhaps he went relative by relative: ‘‘Aunt Edna gave me these two shirts,’’ ‘‘Uncle Charlie gave me these three,’’ and so on. Then, you later found out that he had bought each shirt he told you about. However, this sentence without an indefinite lacks the reading that might have disproved the STI, where the two DPs’ relative quantificational scope conflicts with their relative intensional status.

2.3 Remaining Issues

Next, let us examine the following sentence, which Bäuerle (1983) also discusses:

(17) George thinks that unicorns exist and that none of these unicorns has read every book by Chomsky.
Bäuerle claims that (17) has a reading where the negative quantifier none of these unicorns is de dicto and the universal quantifier every book by Chomsky is de re, but the quantificational force of the negative quantifier still takes wider scope than that of the universal quantifier—a counterexample to the STI. Once again, though, judgments here are very tricky: it is hard to keep in mind the fact that we are talking about actual books by Chomsky, as differentiated from books George thinks are by Chomsky. Also, it seems possible that the definite these unicorns could mean, or at least refer to, something like these unicorns that George thinks exist. If so, the phrase could be de re without any contradiction for the scope theory in a structure like the following for the second clause:

\[(18) \left[ \left[ \text{none of these unicorns} \right)_x \left[ \left[ \text{every book by Chomsky} \right)_y \left[ \text{George thinks that } x \text{ has read } y \right] \right] \right] \notag\]

Therefore, I propose the following example, which sharpens the judgments and contains no definites inside the quantifiers in question:

(19) The Nazis believed that no Allied scientist working in Wyoming knew every technique that Oppenheimer knew.

Imagine that during World War II, the Nazis mistakenly believed that Oppenheimer’s secret nuclear lab was in Wyoming instead of New Mexico. At the time, suppose that the Nazis also believed they were ahead of the Allies in that they knew more bomb-making techniques. However, Oppenheimer and his laboratory (in New Mexico) actually knew all the techniques that the Nazis did. Even in this scenario, sentence (19) sounds like a contradiction, since the Nazis believe that Oppenheimer is an Allied scientist in Wyoming on the one hand, and yet they believe that no such scientist knows everything that Oppenheimer knows on the other. Contrary to Bäuerle’s claims, therefore, there is no reading where the quantificational force of the de dicto negative quantifier no Allied scientist . . . takes wider scope than that of the de re universal quantifier every technique . . . .

Interestingly, the following very similar sentences sound fine in this scenario:

(20) The Nazis believed that no Allied scientist working in Wyoming knew . . .
   a. . . . the techniques that Oppenheimer knew.
   b. . . . all (of) the techniques that Oppenheimer knew.

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5 In his paper, Bäuerle (1983) intermixes discussion of definite descriptions with discussion of quantified DPs. I take these phrases to function quite differently from one another (see Keshet 2008).
In (20a), since the DP *the techniques that Oppenheimer knew* is a definite, it no longer has any scopal interaction with the quantifier *no Allied scientist*. It seems as though the phrase *all the techniques* in (20b) patterns with the definite in (20a) rather than the quantifier in (19). This last fact might be explained if there is a hidden partitive in (20b), as suggested by the possibility (in English) of adding the word *of*. If there were such a partitive, perhaps the DP *the techniques* . . . could move (in an STI analysis) to become *de re* independently of the quantifier *all of* . . . . This may explain examples like Bäuerle’s (17). Because of this potential confusion, I have been very careful in the discussion above to avoid any quantifiers that might have hidden partitive structures.

### 3 Conclusion

Bäuerle (1983) presents a perplexing scope paradox for the STI, pitting an indefinite phrase’s quantificational force against its intensional status. However, this squib has shown how exceptional scope properties of indefinites can explain the paradox, especially once the interaction between the scope of indefinites and intensionality is more fully explored.

### References


Standard neo-Davidsonian approaches to the semantics of sentences like (1a) assign them representations like (1b), where the verb is analyzed as a unary predicate of events with its arguments and adjuncts related to it by means of binary thematic relations (Parsons 1991).

(1) a. John wrote Mary that letter for Bill.
   b. \( e[\text{writing}(e) \& \text{Agent}(e, \text{John}) \& \text{Theme}(e, \text{that}_x \text{letter}) \& \text{Goal}(e, \text{Mary}) \& \text{Beneficiary}(e, \text{Bill}) \& \text{Past}(e)] \)

Such radical “separation,” resulting in the arguments of a predicate being related to each other only through the event in which they commonly participate, has been argued to be necessary for a correct semantics of plurality and conjunction (Schein 1993, to appear, Pietroski 2005) and to yield an attractive account of focus (Herburger 2000).

Pylkkänen (2002, 2008) offers an alternative analysis in developing an account of what she terms “high” and “low” applicative constructions. In brief, high applicatives, counterpart to the for-PP in (1a), are analyzed in the neo-Davidsonian way: as expressing relations between events and individuals (\( \lambda x \lambda y \text{Beneficiary}(e, y) \)). However, low applicatives, counterpart to the indirect object (Mary) in (1a), receive a radically different treatment. In Pylkkänen’s words, “Low applied arguments bear no semantic relation to the verb whatsoever: they bear only a transfer-of-possession relation to the direct object” (2008:14).

(2b) displays the semantic analysis that Pylkkänen recommends for (2a) (ignoring irrelevant details).

(2) a. John wrote Mary that letter.
   b. \( e[\text{writing}(e) \& \text{Agent}(e, \text{John}) \& \text{Theme}(e, \text{that}_x \text{letter}) \& \text{to-the-possession-of}(\text{that}_x \text{letter}, \text{Mary})] \)

As advertised, the referent of Mary is not related to the event quantification by means of any binary thematic relation such as Goal; rather,