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# Indefinites and the Operators they Depend on: From Japanese to Salish

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## 6.1 Towards a typology of indefinites

It is hard to imagine what contemporary theories of indefinites might look like if Barbara Partee had never organized that famous Amherst workshop on indefinites in November 1978. In the preface of her dissertation, Irene Heim quotes Partee's description of the workshop topic as follows:

One standard view among logicians is that indefinite noun phrases like 'a tall man' are not referring expressions, but quantifier phrases, like 'every man', 'no man', and 'most men'. Yet in many respects, indefinite noun phrases seem to function in ordinary language much like definite noun phrases or proper names, particularly with respect to the use

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*Reference and Quantification: The Partee Effect.*  
 Gregory N. Carlson and Francis Jeffrey Pelletier (eds.).  
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of pronouns in discourse. This may be simply a matter of sorting out semantics from pragmatics, but there is not to our knowledge any currently available theory that simultaneously characterizes the logical or truth-functional properties of indefinite noun phrases and accounts for their 'discourse-reference' properties. . . (Heim (1982), quoted from Heim (1988), preface. No page number.).

Heim (1982) and Kamp (1981) took up Partee's challenge and proposed theories that simultaneously accounted for the quantificational and discourse reference properties of indefinites. They argued that the quantificational behavior of indefinites was an illusion. It derived from overt or non-overt operators present in semantic representations, or alternatively, from the mechanics of the semantic interpretation procedure itself. According to Heim and Kamp, indefinites introduced mere variables with conditions attached to them into semantic representations. Much of the discussion that followed centered around the question whether indefinites did or did not have quantificational force. The dynamic theories of Groenendijk and Stokhof (1990) and Dekker (1993) maintained that they did, but argued for an unorthodox way of extending their binding domain. Berman (1987) observed that within a situation semantics, a standard quantificational theory of indefinites did not conflict with their discourse reference properties, since donkey pronouns could now again be analyzed as disguised definite descriptions, as Cooper (1979) had originally proposed. This idea was further developed in Heim (1990), in the course of discussing E-type pronouns and donkey anaphora. At that point, it looked like a standard quantificational analysis of indefinites was right after all.

In the midst of a lively debate about 'the one true nature' of indefinites, Partee (1986) started to pursue the idea that indefinites might be of several types: they might be referential, predicative, or quantificational, even within a single language. The possibility that indefinites might be ambiguous between referential and quantificational readings had already been raised by Janet Fodor and Ivan Sag in a landmark article (Fodor and Sag (1982)). The novel aspect of Partee's suggestion of type ambiguity was that it came with a principled explanation for why there should be such type variability. She proposed a system of type shifts 'for predicting from the generalized quantifier interpretation of a given NP what possible e-type and/or < e,t >-type interpretations it will have.' (Partee (1986), quoted from Partee (2002), 357.) The hypothesis that indefinites are associated with multiple types in some way or other has since been supported by scholars working on a wide range of languages, including Diesing (1992), DeHoop (1992), Chierchia (1998), Matthewson (1999), Matthewson (2001), Herburger (2001), and Chung

and Ladusaw (2004).<sup>1</sup>

Partee (1986) marks the beginning of cross-linguistic investigations within the tradition of formal semantics. For the first time, there was mention of possible parameters producing variation with respect to the interpretation of noun phrases. And for the first time, there were semantic explanations in sight telling us, for example, why certain determiner meanings, but not others, might be expected to be constructional in natural languages. Partee's type-shifting paper set the standards for how to do explanatory semantic typology.

## 6.2 Indefinites and the Operators they Depend on

Since the original proposal that indefinites have no quantificational force of their own was mainly motivated by their behavior as antecedents of pronouns, it was challenged by dynamic theories of binding and E-type analyses of donkey anaphora<sup>2</sup>. Interestingly, though, the idea that at least certain kinds of indefinites bear a special relation to sentential operators has since been invoked in accounts of negative concord, negative polarity, and free choice indefinites (Kadmon and Landman (1993), Ladusaw (1992), Ladusaw (1996), Lee and Horn (1994), Giannakidou (2001), Lahiri (1998), Chierchia (2004), Kratzer and Shimoyama (2002)), and has thus been supported quite independently of donkey anaphora. What are those sentential operators? Negation is one, but there seem to be others that might not be so easy to detect. There are sentences that have a quantificational interpretation without any quantifier in sight. Partee (1995) conjectures that

... What appears to account for the quantificational interpretation of such sentences is the existence of various "default" or unmarked operators with interpretations such as "universal", "modalized universal", and "generic", alongside other possibilities such as implicit existential quantification... The theoretical challenge is then to discover and describe the universal and the language-particular principles which determine what range of such meanings is available under what conditions; ... since neither the operator nor the structure is explicit, it must

<sup>1</sup>I deliberately used the phrase "are associated with multiple types in some way or other" so as to stay neutral with respect to different ways of implementing multiple type proposals for indefinites and other kinds of NPs. In Chung and Ladusaw (2004), for example, a type shift from type  $\langle e, t \rangle$  to type  $e$  is part of the composition operation they call 'Specify'.

<sup>2</sup>Kratzer (1995) argued that unselective binding and E-type anaphora are both needed to account for the full range of donkey pronouns. Chierchia (1995) used a similar array of facts to argue for the availability of both dynamic binding and E-type anaphora. For Chinese, Cheng and Huang (1996) confirmed the existence of two types of donkey pronouns.

either be limited to a rather small set of unmarked or default operators... , or else be subject to massive ambiguity or indeterminacy; as far as I know, the universal choice is to limit the available interpretations to a small number of operators. (Partee (1995), 567)

In my contribution to this volume, I will discuss certain properties of the German *irgendein* series from a typological point of view, starting out with the Japanese perspective taken in Kratzer and Shimoyama (2002). *Irgendein* indefinites are interesting in that they show no quantificational variability at all, but can nevertheless be argued to lack their own quantificational force. I will suggest that the relation between *irgendein* noun phrases and the closure operators that are the true source of their apparent existential interpretation can be seen as a species of existential concord. Existential concord can then emerge as a member of a class of concord phenomena that include negative concord as one special case. The existential concord argument presented in Section 5 is part of a growing family of arguments that supports Kamp and Heim's general approach to indefinites (as well as the more recent instantiations in Kamp and Bende-Farkas (2001) and Farkas (2002)) with evidence that is independent of quantificational variability or donkey anaphora. In the last section I will go a step further and speculate that, possibly, natural language determiners of whatever kind are never quantificational, but might merely be carriers of type shifting operators of the kind proposed in Partee (1986).

Japanese is a language that offers a unique window into the possible relations between indefinites and the quantificational operators they might depend on, since in that language, at least some of those operators seem to be overt. In Japanese, quantifier phrases are built using so-called 'indeterminate pronouns' (Kuroda (1965), cf Table 1).

TABLE 1 Indeterminate Pronouns in Japanese

Pronoun	Translation	Pronoun	Translation
<i>dare</i>	'who'	<i>doko</i>	'where'
<i>nani</i>	'what'	<i>itu</i>	'when'
<i>dore</i>	'which (one)'	<i>naze</i>	'why'
<i>dono</i>	'which (Det)'	<i>doo</i>	'how'

Depending on the operator they appear with, the indeterminate phrases in Table 1 take on existential, universal, negative polarity, free choice or interrogative interpretations. The operators that are the carriers of quantificational force do not have to be adjacent to the indeterminate phrases they 'quantify'. Quantification is often at a distance. This is

illustrated by (2a), an example of universal quantification, and (2b), a constituent question.

- (1) a. [[**Dono hon-o** yonda] kodomo] -mo yoku nemutta  
 which book-ACC read child -MO well slept  
 'For every book x, the child who read x slept well.'  
 (Shimoyama (2001), 2)
- b. Taro-wa [[**dare-ga** katta] mochi]-o tabemasita ka?  
 Taro-TOP who-NOM bought rice cake-ACC ate Q  
 'Who is the x such that Taro ate rice cakes that x bought?'  
 (Shimoyama (2001), 4)

Nishigauchi (1986, 1990) argued that operators of the kind we see in (2a) and (2b) are adverbial quantifiers that can unselectively bind variables made available by indeterminate phrases and bare noun phrases, as proposed in Heim (1982). Nishigauchi's analysis was criticized by Ohno (1989) and von Stechow (1996). Von Stechow showed that Nishigauchi derived incorrect interpretations for questions. Ohno raised an analogous objection to Nishigauchi's analysis of universal quantification structures.<sup>3</sup> Nevertheless, Nishigauchi's program of trying to give a unified interpretation to all quantificational structures with indeterminate pronouns looks very plausible from a typological point of view. In his survey of indefinite pronouns and determiners Haspelmath (1997) demonstrates that indeterminate pronouns in the Japanese sense constitute a unified class cross-linguistically. An arbitrarily picked example is Latvian (cf. Table 2, from Haspelmath (1997), 277, diacritics omitted).

TABLE 2 Indeterminate pronouns in Latvian

	Interrogative	kaut-series	ne-series	jeb-series
person	kas	kaut kas, kads	ne-viens	jeb-kads
thing	kas	kaut kas	ne-kas	jeb-kas
place	kur	kaut kur	ne-kur	jeb-kur
time	kad	kaut kad	ne-kad	jeb-kad
manner	ka	kaut ka	ne-ka	
determiner	kads, kurs	kaut kads	ne-kads	jeb-kads jeb-kurs

The Latvian 'bare' series has interrogatives. The *kaut*-series has existentials. The pronouns and determiners of the *ne*-series need to be in the direct scope of negation, and those of the *jeb*-series appear in in-

<sup>3</sup>See Shimoyama (2001) for extensive discussion of this point.

direct negation contexts and comparatives, and also have a free choice interpretation. Cross-linguistically, interrogatives are the heart of many paradigms of indefinites, and consequently, interrogatives should figure prominently in accounts of indefinites, as Nishigauchi had suggested. Berman (1991) developed a semantically viable unselective binding analysis for *wh*-questions in English, hence established that a unified analysis of interrogative and existential indefinites in the spirit of Kamp and Heim was a realistic possibility. Shimoyama (1999, 2001) extended Berman's unselective binding analysis for interrogatives to universal quantification structures in Japanese, moving closer to a unified analysis of all Japanese indeterminate pronouns. Kratzer and Shimoyama (2002) recast Shimoyama's analysis within a standard Hamblin semantics<sup>4</sup>, and thereby eliminated any stipulations about binding relations between indeterminate phrases and 'their' operators.

In a Hamblin semantics, indeterminate pronouns introduce alternatives that keep expanding until they find an operator that selects them. The semantic behavior of indeterminate pronouns crucially depends on their location with respect to operators linked to existential closure, negation, universality, genericity, and interrogative force, just as in unselective binding approaches. The crucial difference is that in a Hamblin semantics, there is no binding relation between an indeterminate pronoun and 'its' operator. Moreover, if indefinites are as truly unselective as Japanese indeterminate phrases are, there is not even a syntactic agreement relation. The association of indeterminate phrases with their operators is only indirect and follows from the very architecture of the semantic interpretation system in interaction with a syntactically fixed line-up of quantificational operators. I will present the formal and empirical essentials of a Hamblin semantics in the following section, largely repeating material from Kratzer and Shimoyama (2002).

### 6.3 A Hamblin Semantics and the Consequences

Charles Hamblin's analysis of questions was originally published in *Foundations of Language* (1973), and would probably be forgotten by now if it hadn't been reprinted in Partee's volume on Montague Gram-

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<sup>4</sup>See Ramchand (1997), Hagstrom (1998). Ramchand proposed a Hamblin semantics for Bengali indeterminate pronouns. Hagstrom extended Hamblin's semantics for questions to existential indefinites in Japanese. Related approaches are Krifka (1994, 1995) and Jayaseelan (2001). Krifka used an alternative-based semantics for negative polarity items. Jayaseelan investigated the Malayalam strategy to build quantifier structures from interrogative pronouns and particles that denote disjunction or conjunction operators.

mar. Hamblin's major innovation was a semantics based on alternatives, a tool that eventually resurfaced in Mats Rooth's semantics for focus (Rooth (1985), Rooth (1992)). Here is the idea in a nutshell:

...although we are inclined to class 'who' and 'what' with proper names we cannot by any stretch regard them as denoting individuals. But there is a simple alternative: they can be regarded as denoting sets of individuals, namely the set of humans and the set of non-humans respectively. This does not mean, of course, that the formula 'who walks' asserts that the set of human individuals walks: we must modify other stipulations in sympathy. We shall need to regard 'who walks' as itself denoting a set, namely, the set whose members are the propositions denoted by 'Mary walks', 'John walks', ... and so on for all individuals. Pragmatically speaking a question sets up a choice-situation between a set of propositions, namely, those propositions that count as answers to it. (Hamblin (1973), quoted from Hamblin (1976), 254)

In the Hamblin semantics of Kratzer and Shimoyama (2002), Japanese indeterminate pronouns introduce sets of alternatives that keep growing until they run into an operator that selects alternatives. The alternatives can be of different semantic types, and we thus expect quantifiers to operate over alternatives of different types as well. If the alternatives are individuals, the resulting quantifiers are the usual generalized quantifiers.

Before presenting formal details, let me illustrate the interpretation of a simple Japanese sentence like **dare(-ga) nemutta** and pursue some immediate empirical consequences. Within a Hamblin semantics, all expressions denote sets. Most lexical items denote singleton sets of traditional denotations, however. The main conceptual shift comes with indeterminate pronouns and phrases. Those now denote sets of individuals. We should not think of those sets as properties, though. They are individual alternatives, alternatives of type *e*, that is. Alternatives 'expand' via pointwise functional application. For all possible worlds *w* and variable assignments *g* we have:

$$\begin{aligned} [[\mathbf{dare}]]^{w,g} &= \{ x: \text{human}(x)(w) \} \\ [[\mathbf{nemutta}]]^{w,g} &= \{ \lambda x \lambda w'. \text{slept}(x)(w') \} \\ [[\mathbf{dare\ nemutta}]]^{w,g} &= \{ p: \exists x \text{human}(x)(w) \\ &\quad \& p = \lambda w'. \text{slept}(x)(w') \} \end{aligned}$$

*Dare* ('who') denotes the set of humans in the evaluation world. The denotation of the verb *nemutta* ('slept') is a singleton set containing the property 'sleep', which is construed as a Schönfinkelled relation between individuals and worlds. The sentence *Dare(-ga) nemutta* denotes a set of propositions of the form 'Shigeto slept', 'Mariko slept', 'Taka slept', etc..



The simple example above illustrated how the alternative set introduced by the indeterminate pronoun *dare* grows into a set of propositional alternatives via pointwise functional application at the stage where the denotations of subject and VP combine. Expanding Hamblin sets allow for apparent quantification ‘at a distance’. Via Hamblin set expansion, for example, even the Japanese universal quantifier *mo* in 2a (repeated from above) can be analyzed as a standard generalized quantifier, an account originally developed in Shimoyama (1999, 2001). Shimoyama’s guiding idea is sketched in (3).

- (1) a. [[**Dono hon-o** yonda] kodomo] **-mo** yoku nemutta.  
           which book-ACC read child -MO well slept.  
           ‘For every book x, the child who read x slept well.’  
           (Shimoyama (2001), 2)
- (2) All members of A slept well: A = {the child who read book a, the child who read book b, the child who read book c, ....}

The strongest argument in favor of a Hamblin analysis for Japanese indeterminate phrases is that it automatically derives the locality conditions for the association between indeterminate phrases and quantificational operators. Japanese indeterminate phrases typically ‘associate’ with the closest operator:

- (3) \*                    [... [...**ind** .... **-ka/-mo**] .... ] **-ka/-mo**
- └──────────────────────────┘

On a Hamblin analysis, the alternatives introduced by indeterminate phrases can expand across syntactic islands, as in (2), but they are automatically caught by the first quantificational operator in their way. In (3), for example, the alternatives created by the indeterminate pronoun must ‘associate’ with the lower *ka/mo*. This kind of traditional ‘intervention effect’ falls out from the architecture of the Hamblin semantics. No special semantic or syntactic relation – like a binding or movement relation – between the indeterminate phrase and ‘its’ operator has to be posited. If there had to be a movement relation, it would have to be one that violates islands. If there had to be a binding relation, the locality properties of that relation would have to be stipulated. They wouldn’t follow from the very way the semantic system interacts with syntactic structure.


Another characteristic property of the Japanese quantification system is that multiple indeterminate phrases might be related to a single operator, as illustrated in (5):

- (4) **Dare-ga dare-ni nani-o age-mais-ta ka ?**  
 Who-Nom who-dat what-acc gave Q  
 'Who gave what to whom?'  
 (Nishigauchi (1990a), 7)

In (4), three indeterminate phrases are 'quantified' by a single question operator. This is a configuration that is compatible with an unselective binding approach, of course, but the properties of the required binding relations would again have to be stipulated. The better known cases of binding relationships only allow quantifiers to bind possibly multiple occurrences of a single variable. Within a Hamblin semantics, nothing special has to be said about configurations like (5). They are expected. Each of the three indeterminate phrases in (5) introduces a set of individual alternatives. Three successive instances of Hamblin Functional Application create a set of propositional alternatives that *ka* can operate over.

The attraction of the Hamblin approach is that rather specific properties concerning the relation between indeterminate pronouns and the operators they depend on are hard-wired into the semantic interpretation system. If Japanese indeterminate pronouns provide a model of how indefinites might relate to the operators they depend on, we expect indefinites to obligatorily 'associate' with the closest relevant operator. Only movement should free an indefinite from the pull of such an operator. But since 'association' between an indefinite and 'its' operator all by itself does not necessitate movement, cases of quantification at a distance like (2) above, no longer force us to assume that in Japanese and similar languages, there are covert *wh*-movement or quantifier raising operations that can violate islands. With the poster examples for the existence of island violations removed, it might now be possible to maintain that movement operations are generally subject to island constraints, without exception. This is the most important result of Shimoyama (2001).

What would happen if Japanese indeterminate phrases were allowed to move under certain conditions, but had to obey the usual island constraints if they did? An indeterminate phrase could now escape the grip of an interrogative *ka* occupying a near-by complementizer position, for example, by moving into its specifier position:

- (5) [...[... ind .... -ka]<sub>C'</sub>]<sub>CP</sub>...-ka  


That move alone, which is local and thus doesn't violate any island constraints, has the effect that the alternatives created by the moved

indeterminate phrase are caught by the higher, rather than the lower *ka*. Interestingly, the interpretation that is produced by this kind of movement in a Hamblin semantics is available in Tokyo Japanese and has usually been seen as a violation of the *wh*-island constraint:

- (6) [[John-wa Mary-ga nani-o katta **ka**] kikimasita **ka**]  
 John-TOP Mary-NOM what-ACC bought-Q asked-Q  
 ‘Did John ask what Mary bought?’  
 ‘What did John ask whether Mary bought?’  
 Hirotani (2003)

Under a Hamblin perspective, the interpretation (6) is expected, as long as *nani-o* is able to move into the specifier position of the lower question operator *Q*. Skipping over details for reasons of space, the alternative set corresponding to the question (6) might look as in (8), which is the intuitively correct result.

- (7) {John asked of thing a whether Mary bought it, John asked of thing b whether Mary bought it, John asked of thing c whether Mary bought it, ...etc.}

As pointed out by Hirotani (2003), the availability of the interpretation in 6 is linked to certain prosodic conditions. Those conditions are likely to be tied to special discourse requirements licensing movement of an indeterminate phrase to the left periphery. The important point for our current discussion is that the very architecture of a Hamblin semantics seems to predict a fairly complex array of possible readings for Japanese quantifier constructions with indeterminate phrases without there having to be any special semantic or syntactic relation – like a binding or movement relation – between the indeterminate phrase and its operator. In so far as there is movement of indeterminate phrases to the left periphery, it would have to be triggered by other factors, factors related to discourse notions, for example.

After illustrating the explanatory value of a Hamblin semantics, I will now present some of the formal details of Kratzer and Shimoyama’s version of it. In line with much recent work in semantics, I am assuming that semantic composition is largely type-driven. Composition principles apply freely whenever they can. The main features of a Hamblin interpretation system for binary branching trees might now look as follows:

**Definition 1** Hamblin Functional Application

If  $\alpha$  is a branching node with daughters  $\beta$  and  $\gamma$ , and  $[[\beta]]^{w,g} \subseteq D_\sigma$  and  $[[\gamma]]^{w,g} \subseteq D_{\langle \sigma, \tau \rangle}$ , then

$$[[\alpha]]^{w,g} = \{ \alpha : \exists b \exists c [b \in [[\beta]]^{w,g} \ \& \ c \in [[\gamma]]^{w,g} \ \& \ a = c(b)] \}.$$

**Definition 2** Sentential Quantifiers<sup>5</sup>

1.  $[[\exists\alpha]]^{w,g} = \{\lambda w'. \exists p[p \in [[\alpha]]^{w,g} \ \& \ p(w') = 1]\}$
2.  $[[\forall\alpha]]^{w,g} = \{\lambda w'. \forall p[p \in [[\alpha]]^{w,g} \rightarrow p(w') = 1]\}$
3.  $[[\text{Neg}\alpha]]^{w,g} = \{\lambda w'. \neg \exists p[p \in [[\alpha]]^{w,g} \ \& \ p(w') = 1]\}$
4.  $[[Q\alpha]]^{w,g} = \{\lambda w'. \forall p[p \in [[\alpha]]^{w,g}] \rightarrow [p(w) = 1 \leftrightarrow p(w') = 1]\}$

Groenendijk and Stokhof (1984)

**Definition 3** Generalized Quantifiers

For  $[[\alpha]]^{w,g} \subseteq D_e$ :

1.  $[[\exists\alpha]]^{w,g} = \{\lambda P \lambda w'. \exists a[a \in [[\alpha]]^{w,g} \ \& \ P(a)(w') = 1]\}$
2.  $[[\forall\alpha]]^{w,g} = \{\lambda P \lambda w'. \forall a[a \in [[\alpha]]^{w,g} \rightarrow P(a)(w') = 1]\}$
3.  $[[\text{Neg}\alpha]]^{w,g} = \{\lambda P \lambda w'. \neg \exists a[a \in [[\alpha]]^{w,g} \ \& \ P(a)(w') = 1]\}$

**Definition 4** Predicate Abstraction

If  $\alpha$  is a branching node whose daughters are an index  $i$  and  $\beta$ , where  $[[\beta]]^{w,g} \subseteq D_\sigma$ , then  $[[\alpha]]^{w,g} = \{f : f \in D_{\langle\sigma\rangle} \ \& \ \forall a[f(a) \in [[\beta]]^{w,g[a/i]}]\}$ .<sup>6</sup>

**Definition 5** Pronouns and Traces

For any index  $i$ ,  $[[i]]^{w,g} = \{g(i)\}$ .

The system presented above assumes that there are (at least) propositional and generalized quantifiers. We might or might not need generalized quantifiers for quantificational DPs like those headed by English *each* or *every*, for example (see Section 6 for some doubts about this). But if Shimoyama is right, we would still need generalized quantifiers for certain apparent cases of quantification at a distance, as in the Japanese sentence (2a) above.<sup>7</sup> What about propositional quantifiers? Japanese interrogative *ka* is an overt example of such an operator.

<sup>5</sup>There should be a choice for the world index with respect to which  $\alpha$  is to be evaluated in 1 to 4, an issue I will neglect.

<sup>6</sup>There is a question about the correctness of the definition for Predicate Abstraction. It does not quite deliver the expected set of functions. As far as I can see, however, no wrong predictions are actually made, as long as we only use the definition for generating propositional alternatives. There may in fact be interesting constraints to explore. Shan (2003) shows, for example, that Kratzer and Shimoyama's Hamblin semantics would produce the wrong alternative set for sentences like *Who<sub>i</sub> thought everyone<sub>j</sub> showed which paper by his<sub>i</sub> advisor to her<sub>j</sub> mother*. Shan's sentence is a classical example of an intervention effect (Beck (1996)), however, and we would want to rule it out as ungrammatical. On Kratzer and Shimoyama's account it would be ruled out on the assumption that the nuclear scope of quantifiers like *everyone* is existentially closed Heim (1982), hence the lower *wh*-phrase is stuck within the scope of a non-matching operator.

<sup>7</sup>In their contribution to the 2004 conference *Strategies of Quantification* at York University, Tancredi and Yamashina (2004) argued that *mo* is not quantificational, but denotes an operator that maps a set of individuals to their sum. It would thus correspond to the type-shifting operation *link* (see footnote 15). If Tancredi and Yamashina are right, a case against the existence of a generalized quantifier strategy

Kratzer and Shimoyama (2002) argued that German *irgendein* phrases are Hamblin indefinites that expand into propositional alternatives that are eventually quantified by propositional  $\exists$ . Alonso-Ovalle and Menéndez-Benito (2003) presented a similar analysis for the Spanish *algún* series.

How can we detect the presence of propositional quantifiers? Kratzer and Shimoyama (2002)'s and Alonso-Ovalle and Menéndez-Benito (2003)'s claims that even unambiguously existential determiners like *irgendein* or *algún* are not carriers of quantificational force is in fact quite surprising. We need to see good arguments to believe it. My goal in the following sections is to strengthen the existing arguments for propositional operators by arguing that they create well-known and not so well-known concord phenomena.

## 6.4 From Japanese to Indo-European

Consider again the paradigm of Japanese indeterminate pronouns given in Table 1 above, and compare it to, say, the Latvian paradigm from Haskelmath (1997) in Table 2. There is a difference that jumps out. In contrast to Japanese indeterminate pronouns, many of the Indo-European indefinites are morphologically complex. They are built from a common core and additional material. In the best of all possible worlds, the differences between Japanese and Indo-European indefinites should derive from that visible morphological difference.

Suppose we imported the Japanese perspective and assumed that Indo-European indefinites, too, associated with independent quantificational operators. Their distinctive morphology might then tell us something about the nature of those operators. It might indicate syntactic agreement with matching non-overt propositional operators, as proposed in Beghelli and Stowell (1997),<sup>8</sup> and thus create syntactic behavior not found with Japanese indeterminate pronouns. That speakers of Latvian, German, or Spanish, for example, perceive the pronouns and determiners of the *kaut*-, *irgendein* or *algún* series as existentials would now no longer mean that those expressions are themselves existentials. Their existential look would be the overt expression of syntactic agree-

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in natural languages might begin to emerge, and we might have to consider seriously the possibility that all true natural language quantification might be propositional, a view that (Butler (2004a)) defended during the York quantification conference. See also (Butler (2001, 2004b)) and section 6 below.

<sup>8</sup>Beghelli and Stowell (1997), and other work reported in Szabolcsi (1997). Beghelli and Stowell proposed that nominal quantifier phrases have quantificational features that are matched by corresponding features in the hierarchy of verbal inflectional heads. They are not entirely explicit about the exact semantic division of labor between nominal and verbal quantificational features, though.

ment with propositional [ $\exists$ ], the true carrier of existential force. Those indefinites might have an uninterpretable but pronounced [ $\exists$ ] feature, then, that must enter an agreement relation with a matching interpretable feature that happens to be unpronounced. Japanese indeterminate pronouns, on the other hand, would lack such features, and this would be why they are truly unselective. The same pronouns can 'associate' with the full range of quantificational operators without producing a feature clash.

Apart from opening up the possibility of a unified account of quantification, what does the Japanese perspective give us in the way of explaining properties of Indo-European indefinites? An immediate consequence is that a phenomenon like negative concord is now expected. Take the following example from non-standard German:

- (8) Ich hab' **keine** Fehler **nicht** gemacht.  
 I have no mistake not made.  
 'I didn't make any mistakes.'

In (9), as in other negative concord constructions, what looks like a negative quantifier appears in the scope of negation, but without producing a double negation reading. Ladusaw (1992, 1996) assesses the phenomenon as follows:

The other alternative is to abandon the assumption that any of the *n*-words in these sentences directly express negation. Rather the expression of negation is associated with an abstract element of clause structure. . . . the argument *n*-words are treated as nonnegative indefinites which are obligatorily to be associated with this abstract expressor of clausal negation. . . . (Ladusaw (1996), 340)

In (9), the negative look of *keine Fehler* (and possibly even that of *nicht*), would be the expression of agreement with an abstract element of clausal structure, propositional [Neg]. As in Japanese quantifier constructions, multiple indefinites are able to 'associate' with a single operator in negative concord constructions:

- (9) Ich hab' **keinem** Mensch **kein** Wort **nicht** gesagt.  
 I have no-dat person no word not said.  
 'I didn't say anything to anybody.'

Apart from negative concord, we would expect to find other types of concords in Indo-European languages. In fact, each propositional operator should produce a concord phenomenon. We do not usually talk about interrogative concord when we discuss so-called 'multiple questions', as in (10):

(10) **What** did you give to **whom**?

But from a Hamblin perspective, (10) is a case of interrogative concord. The *wh*-words themselves are indefinites that introduce sets of individual alternatives. Their *wh*-features are uninterpretable, then, and only indicate agreement with an abstract element of clause structure, in this case propositional [*Q*], residing somewhere in the left periphery of the sentence. The idea that *wh*-words are interpreted in situ and are related to a single abstract question morpheme was explicitly proposed in Baker (1970).

There are also counterparts of the Japanese intervention effects, as shown in (11), an instance of the so-called 'Beck effect' (Beck (1996)):

- (11) a. \***Was** hat sie **nicht wem** gezeigt?  
           What has she not               who-dat shown  
           'What didn't she show to whom?'

- b. **Was** hat sie **wem nicht** gezeigt?  
           What has she to-whom not shown

If multiple questions are instances of interrogative concord, we understand why (11a) is ungrammatical. In (11a) the interrogative pronoun is trapped behind *nicht*, and is thus in the scope of [*Neg*]. If the pronoun *wem* carries an uninterpretable [*Q*] feature, no agreement with the closest c-commanding operator is possible in (11a) because of a feature clash. In (11b), on the other hand, the interrogative pronoun moved to the left of *nicht*, and is thus no longer in the scope of [*Neg*]. It can now agree with sentential [*Q*]. Since their interrogative look makes them selective, German interrogative pronouns stuck in the scope of non-matching operators produce ungrammaticality. Overt leftward movement rescues the structure, as shown in (11b).

There is evidence for interrogative concord, then. But what about other types of concord? Negative concord is easy to detect. The interpretation of (9), for example, tells you in no uncertain terms that not all pieces of negative morphology are interpreted. As for interrogative concord, it is a direct consequence of a Hamblin-style analysis of questions, and gives us an instant account of multiple questions. But what about universal or existential concord? If there were such things, how could we even tell? I think we can, but we might have to look at rather subtle facts. In the next section, I will make a case for existential concord, using the German *irgendein* series.

## 6.5 The Case for Existential Concord

My goal in this section is to show that there is such a thing as existential concord, and that we find it with indefinites that are always existential. The demonstration provides support for the idea that even indefinites that show no quantificational variability at all may derive their quantificational force from an independent operator. I will make my case with the help of the German *irgendein* indefinites. Here are some typical uses.

Assertions, questions, commands:

- (12) a. Hans hat irgendwas gesagt.  
           Hans has irgend+what said.  
           'There was something particular Hans said – the speaker doesn't know or care what it was.'  
           'Hans said something or other – he didn't care what it was.'
- b. Wer hat irgendwas gesagt?  
           Who has irgend+what said?  
           'Who said anything at all?'
- c. Sag irgendwas!  
           Say irgend+what!  
           'Say something or other, it doesn't matter what!'

Negation and negative quantifiers:

- (13) a. \* Hans hat nicht irgendwas gesagt.  
           Hans has not irgend+what said.
- b. Niemand hat irgendwas gesagt.  
           Nobody has irgend+what said.  
           'Nobody said anything at all.'
- c. Niemand hat einfach (nur) irgendwas gesagt.  
           Nobody has simply (only) irgend+what said.  
           'Nobody said just anything.'

Interaction with modals:

- (14) a. Irgendein Kind kann sprechen.  
           Irgend+one can talk.  
           'Some particular child is able/allowed to talk – the speaker doesn't remember or care about which one.'  
           'Some child or other is permitted to talk – any child is a permitted option.'



- b. Wenn Hans wollte, könnte er irgendwas tun.  
 If Hans wanted to, could he irgend+what do.  
 'If Hans wanted to, he could do something or other.'

As illustrated by the data above, *irgendein* produces an ambiguity in assertive sentences. In (15), for example, the indefinite may take wide scope over the modal, and in this case, we get a subtle epistemic effect. There is a suggestion that the speaker doesn't know who the child is that is able to or allowed to speak. A similar epistemic effect appears in one of the readings of (13a). All of the non-assertive sentences above are unambiguous. Epistemic effects of this kind have been discussed for Spanish *algún* by Alonso-Ovalle and Menéndez-Benito (2003). For reasons of space, I will have to neglect those readings in what follows. Whatever their correct analysis will eventually turn out to be, the *irgendein* indefinites involved are always existential. That *irgendein* indefinites are quite generally existentials is most clearly suggested by (15b). (15b) says that Hans could do something or other if he wanted to. There is no reading corresponding to the English sentence *he could do anything if he wanted to*. Likewise, an *irgendein* indefinite could not be used to translate *anybody* in *They arrested anybody who spoke up*. Using an *irgendein* indefinite in this context, would result in a reading corresponding to *They arrested somebody who spoke up*. Like all German indefinites (unstressed) *irgendein* indefinites are ungrammatical in the direct scope of sentential negation, as illustrated in (14). In the scope of negative quantifiers (as in (14)) and other downward entailing operators, *irgendein* indefinites behave like negative polarity *any*, except if they carry contrastive stress and/or combine with the affective particle *einfach* (*nur*) (as in (13c)). In that case, a free choice *any* reading emerges. I will obviously not be able to do justice to all of the important issues raised by *irgendein* indefinites in this chapter. Kratzer and Shimoyama's paper addresses some of them, but a complete account will have to wait for another occasion.

For the current plot, we need to look at a modal case. Take (16), for example:

- (15) a. Mary musste **irgendeinen** Arzt heiraten.  
 Mary had to irgend+one doctor marry.  
 b. Wide-scope: There was some doctor Mary had to marry – the speaker doesn't know who it was.  
 c. Narrow-scope: Mary had to marry some doctor or other – any doctor was a permitted option.

Let us neglect the wide-scope reading (16a), which is likely to come

about via standard (island obeying!) scope shifts, and zoom-in on the reading where the indefinite takes narrow scope. On that reading, there is a suggestion that any doctor was a permitted marriage option for Mary. There is a strong feeling, for example, that (16) couldn't describe a situation where there were just two doctors that Mary was allowed to marry. In that respect, (16) contrasts with (16), which has the simpler determiner *ein*:

(16) Mary musste einen Arzt heiraten.

Mary had to a doctor marry.

Mary had to marry a doctor.

Like its English counterpart, (16) can truthfully describe a scenario where Mary was only given two marriage options. What is the difference between *ein* and *irgendein*, then? Kratzer and Shimoyama (2002) propose that the *irgend*- part of *irgendein* induces domain widening, as Kadmon and Landman (1993) have suggested for English *any*.

In a Hamblin semantics, we would say, then, that the indefinite *ein Arzt* denotes a contextually restricted subset of the set of all doctors in the evaluation world. In certain contexts that set may very well contain just one or two doctors. Not so for *irgendein Arzt*. *Irgend*- induces maximal domain widening, and consequently, the denotation of *irgendein Arzt* has to be the set of all doctors in the evaluation world.

We now have to show how the domain widening induced by *irgend*- can be put to work so as to derive the difference between (16) and (16). Assuming a standard semantics for modals, (16b) is predicted to be true as long as Mary marries in every permitted world and the man she marries is a member of the set of alternatives introduced by *irgendein Arzt* in the evaluation world. Unfortunately, domain widening doesn't seem to do a thing for us here. The truth-conditions for (16b) are satisfied even if Mary marries the same doctor in all permitted worlds. What we would like *irgendein Arzt* to do in (16b) is introduce a condition requesting that for every doctor in the evaluation world, there be a permitted world in which Mary marries that doctor. Let's call that condition the 'free choice condition'. We have just convinced ourselves that we can't derive that condition from domain widening in interaction with the standard semantics for modality. Something else is still needed.

It is easy to establish that the free choice condition attached to *irgendein* is a conversational implicature, not an implication: it completely disappears in negative and other downward entailing contexts, thus passing the most reliable test for diagnosing conversational implicatures (Gazdar (1979), Horn (1989)).

- (17) Niemand musste **irgendjemand** heiraten.  
 Nobody had to irg- body marry.  
 'Nobody had to marry anybody.'

(18) says that nobody had to marry anybody, not that nobody had to marry just anybody. Being a conversational implicature, the free choice condition for (16) should come into being via Gricean reasoning. Here is (roughly) how Kratzer and Shimoyama derive it for cases with necessity modals.<sup>9</sup> The indefinite *irgendein Arzt* introduces a set of individual alternatives, the set of all doctors in the evaluation world. Via Hamblin Functional Application, those individual alternatives expand into a set of propositional alternatives A of the following form:

- (18) { 'Mary marry Dr. Arzt', 'Mary marry Dr. Betz', 'Mary marry Dr. Curtz', 'Mary marry Dr. Dietz', 'Mary marry Dr. Heintz', ... etc. }

Since *irgendein* indefinites have no quantificational force of their own, but are lexically specified as existentials, they need to agree with a matching  $[\exists]$  operator. Following the spirit of Heim (1982), we might assume that  $[\exists]$  is introduced together with modal and certain other operators as a result of what she refers to as 'existential closure of nuclear scopes'. We would have a logical form of the kind given in (20), then:

- (19) (Muss +  $[\exists]$  (Mary **irgendeinen** Arzt heiraten))

The truth-conditions for (20) require that in every permitted world some proposition in A be true. The semantics for *muss* +  $[\exists]$  should then look as follows:

- (20) For  $[[\alpha]]^{w,g} \subseteq D_{(st)} : [[muss + [\exists]\alpha]]^{w,g} =$   
 $\{\lambda w'. \forall w'' [w'' \text{ is accessible from } w' \rightarrow \exists p [p \in [[\alpha]]^{w',g} \& p(w'') = 1]] =$   
 $1\} =$

Our task is to use Gricean reasoning to derive the inverse requirement that every proposition in A be true in some permitted world. More generally, the implicature to be derived in connection with (20) would be (21):

- (21)  $\{\lambda w'. \forall p [p \in [[\alpha]]^{w',g} \rightarrow \exists w'' [w'' \text{ is accessible from } w' \& p(w'') = 1]]\}$

In German, *irgendein* indefinites contrast systematically with the morphologically less complex *ein* indefinites. *Irgendein* indefinites force do-

<sup>9</sup>For possibility modals, consult Kratzer and Shimoyama's paper. The first use of an alternative semantics to derive conversational implicatures is Krifka (1994, 1995).

main widening. *Ein* indefinites are compatible with narrow or wide domains. Why would a speaker use the more complicated *irgendein* form if she could convey the same message using a simple *ein*-indefinite? Why would a language have both *ein* and *irgendein* indefinites? Unlike *ein* indefinites, *irgendein* indefinites convey domain information. We expect a speaker to use an *irgendein* indefinite, then, in cases where she wants to make sure the hearer knows that the domain is as wide as it can possibly be. In downward entailing contexts domain widening for an existential generally leads to a stronger claim, and therefore the information that the domain is as wide as it can possibly be conveys the information that the claim made is as strong as it can possibly be, given the relevant alternatives. Strengthening the claim to be made cannot be the reason for choosing the widest possible domain for the existential in (16b), however. In that context, claims get weaker when domains for existentials widen. Simplifying slightly<sup>10</sup>, a hearer could reason as follows: since strengthening the claim to be made cannot possibly have been the motivation for picking the widest possible domain for the existential in (16b), there must have been another reason, and the most likely reason here is avoidance of a false claim. What other motivation could there be for picking the weakest claim among the possible alternatives? If having a maximally wide domain mattered in that context, it must have mattered because it was necessary to say something true, hence to obey Gricean Quality. Any smaller set of alternatives would have led to a false claim, then. Consequently, there can't be a proposition in the set of alternatives A we looked at above for which there is no permitted world in which it is true. If there was, a smaller alternative set would have been sufficient. We have derived the Free Choice effect for our example, then.

In deriving the free choice implicature for sentences like (16b), I relied on a semantics where *irgendein* indefinites do not have quantificational force. While the propositional alternatives provided by the Hamblin semantics were convenient for deriving the implicature, they were arguably not necessary yet. As long as we are dealing with a single indefinite, a standard generalized quantifier analysis, too, would have allowed us to track the effects of domain expansion on the proposition embedded under the modal in (20).<sup>11</sup> To produce a convincing argument for existential concord, we have to take one further step and consider cases with multiple indefinites:

<sup>10</sup>See Kratzer and Shimoyama (2002) for a more complete story.

<sup>11</sup>This point was made by Gennaro Chierchia in a colloquium at UMass on September 27, 2003.

- (22) Du musst irgendwem      irgendwas      schenken.  
 You must irgend-one-dat irgend-thing give  
 'You must give something or other to somebody or other as a gift.'

The free choice condition for (22) requires that for every pair consisting of a thing *x* and a person *y* there be a permitted world in which you give *x* to *y*. To derive the condition, we seem to need a compositional mechanism that allows us to combine the alternatives introduced by multiple occurrences of *irgendein* into a single set of propositional alternatives. The architecture of a Hamblin semantics gives us precisely the mechanism we need, assuming that the true carrier of existential force in (22) is sentential [3]. It is hard to see how we could derive the implicature for (22) if the two *irgendein* indefinites denoted generalized quantifiers, with one having to scope over the other. There would never be a point where the semantic interpretation process could simultaneously look at the domains of both quantifiers.<sup>12</sup>

We seem to have the evidence for existential concord that we have been looking for. True, that evidence came from the computation of a mere conversational implicature. You may simply deny that the computation of conversational implicatures proceeds in a fully compositional manner, and thus that the process that calculates the implicature has to be able to simultaneously monitor the domains of multiple quantifiers. However, appealing to the pragmatic wastepaper basket won't help in the long run. You only have to throw in a few particles, and the implicature is part of the semantics:

- (23) Du kannst nicht einfach nur irgendwem      irgendwas      schenken.  
 You can      not      simply only irgend-one-Dat irgend-thing give.  
 'You can't just give any-old-thing to any-old-body as a gift.'

---

<sup>12</sup>Higginbotham and May (1981) propose an absorption mechanism that combines multiple quantifiers into a single polyadic quantifier. One of their motivations for such quantifiers are uniqueness presuppositions associated with multiple questions like *Which man saw which woman*. The data are not very clear, though, and for that reason, other authors, e.g. Groenendijk and Stokhof, do not incorporate uniqueness presuppositions into the semantics of *wh*-phrases. See Groenendijk and Stokhof (1997), 1104. If *Which man saw which woman* did presuppose that every man saw exactly one woman and every woman was seen by exactly one man, this would be a problem for us, since it is not clear how this presupposition could be stated as a requirement on propositional alternatives. Branching quantifiers are another phenomenon that would have to be looked into, since they have been argued to involve polyadic quantifiers. Beghelli et al. (1997) argue that branching quantification might be an illusion, and polyadic quantification might not be needed to account for the phenomenon.

(24) denies the free choice implicature of (22). It says that it is not true that for every thing  $x$  and person  $y$  there is a permitted world in which you give  $x$  to  $y$ . You have to be more discriminatory. As before, to state the free choice condition, the alternatives provided by the two *irgendein* indefinites have to be combined into a single set of propositional alternatives that must be visible at the point when the free choice condition is calculated. (24) only has two existentials for convenience. Parallel examples can be constructed that have three or more *irgendein* indefinites under the scope of a modal. There is full-fledged existential concord, then. The two indefinites in (24) look like existentials and seem to have existential force, yet the true source for their existential interpretation is elsewhere.

To summarize this section, I have examined the clusters of Indo-European indefinites described in Haspelmath (1997) in the light of the account of Japanese indeterminate phrases given by Shimoyama (2001), Kratzer and Shimoyama (2002). The Japanese perspective made us expect a whole family of concord phenomena, one for each sentential quantifier. It thus forced us to search for yet unknown types of quantifier concord. We found evidence for one such type, existential concord, by experimenting with German *irgendein* indefinites. We have seen, then, that even indefinites that are always existentials do not have any quantificational force of their own. Their existential look is a mere matter of outward appearance. This is support for any theory where existential closure operations or their counterparts provide indefinites of all kinds with quantificational force. The particular concord phenomenon we looked at in this section requires a single quantificational operator to be able to simultaneously monitor the domains of several indefinites in its scope. Technically, this can be done within an unselective binding approach, of course. A Hamblin semantics can do the same job more elegantly, though, since its operators can keep an eye on those domains without there having to be any binding relationship between the operators and the indefinites whose domains are being monitored. It is a very good thing not to have to assume a binding relationship between a quantifier and one or more indefinite DPs. Indefinite DPs cannot usually be bound by quantifiers. Within a Hamblin semantics, we can get rid of this anomaly while preserving all the essential insights of the unselective binding approach. What is emerging, then, is a grammar where movement obeys island constraints, and where binders bind pronouns and variables – one at a time.

## 6.6 From *irgendein* to Salish

Like many Indo-European indefinites, those of the *irgendein* series have elaborate determiners. What do those determiners mean? What kind of possible meanings are available for them? I have argued that *irgendein* determiners are not quantificational themselves, but carry an uninterpretable  $[\exists]$ -feature that has to agree with a matching sentential operator. I also mentioned that *irgendein* carries information affecting the individual alternatives introduced by the DPs they head. *Irgendein Arzt*, for example, picks out the whole set of doctors in the evaluation world, while *ein Arzt* might pick out a contextually determined smaller set. 'Specific' indefinites could create singleton alternatives, possibly with the help of choice functions. Generalizing from this sample, it seems that, quite generally, indefinite determiners might be domain shifters, operations on quantification domains.<sup>13</sup>

Before going any further, let me reflect on the terms I have been using. What is a determiner? It seems clear by now that we have to distinguish between quantifiers proper and the lexical items that shift quantification domains. I want to reserve the term 'determiner' for the latter, and use 'quantifier' for the true quantifiers – those I introduced in section 3, for example. We have already seen that quantifiers might come in different semantic types, and might therefore surface in different syntactic categories. Alternatively, they might be mere features (interpretable ones) that do not belong to any syntactic category at all. They could then combine with nominal or verbal inflection and thereby qualify as heads for nominal or verbal projections.

Even though there are divergences in detail, the general picture of quantification that has emerged fits well with that advocated in Matthewson (2001). Matthewson argues that, quite generally, the creation of a nominal quantifier phrase must proceed in two steps. NPs first combine with determiners, and it is the resulting DPs that quantifiers operate over:

(24)  $[_{QP} Q [_{DP} \text{Det NP}]]$

Matthewson's proposal says that mere NPs are never enough to supply a quantifier with its domain. There always has to be a determiner as

<sup>13</sup> von Fintel (1994, 1999). Farkas (2002) presents an interesting related proposal within a file change semantics. According to Farkas, determiners may be lexically marked for particular constraints on the variables they introduce. The constraints may require that a variable be new in the file, for example, but they could also be constraints on the value set for the variable. In addition, Farkas considers functional constraints, which are constraints on assignment functions, and output context constraints. A major open question for both approaches at this point is what a theory of possible determiner meanings might look like in the end.

well, whether you see it or not. According to Matthewson, (25) is not only the right structure for nominal quantifier phrases in the Salish language St'át'imcets, but also for English.

- (25) *tákem* [i                    *smelhmúlhats-a*]  
       all     DET.PL woman(PL)-DET]  
       'all the women'  
       Matthewson (2001), 146

In St'át'imcets every quantifier construction has the general format shown in (26). If all nominal quantifier constructions contain DPs, they have determiners in addition to the quantifiers themselves. Determiners can shift domains in various ways. They might shrink or widen them. They may reduce them all the way down to singletons with the help of choice functions, the iota-operator, or Partee's *link* operation. An analogue of Partee's *delink* shift might also be available, as well as counterparts of Chierchia's nominalization operators.<sup>14</sup> All those shifts might be possible determiner meanings. Note that we do not have to think of those operations as freely available type-shifts. True, in the contemporary semantic literature, principles of this kind are often assumed to be last resort principles that apply freely and can rescue semantic computations that would otherwise crash because of a type mismatch. Partee herself has a broader vision for her principles, however, that does not exclude the possibility that they might be carried by determiners. In her (1986) paper, she emphasizes that her proposal leaves "room for considerable diversity in how natural languages make use of such type-shifting principles, encoding them with lexical items... , via lexical rules... , syntactic rules... , or not encoding them at all" (Partee (1986), quoted from Partee (2002), 363).

The availability of a variety of domain shifts should produce a variety of different determiners, some of which would have to be unpronounced if (25) is to be maintained. As for the true quantifiers, they might be a rather dull bunch. There might not be many of them at all. If DPs are part of QPs, however, there could be many different kinds of QPs, even if there were just a few quantifiers to head them, and no variation whatsoever in the syntactic structures they project.

How useful is (25) as a parsing tool for actual quantifier construc-

<sup>14</sup> *link* maps a set of individuals to its sum, *delink* maps a plural individual to the set of its atoms. Chierchia's nominalization operators map properties to kinds and the other way round. Chierchia (1984, 1998), Carlson (1977). All type-shifts would have to be adjusted to the Hamblin semantics we are assuming. For  $[[\alpha]]^{w,g} \subseteq D_e$ , we would have, for example,  $[[link\alpha]]^{w,g} = \{\sigma x [x \in [[\alpha]]^{w,g}]\}$ ,  $[[\cap\alpha]]^{w,g} = \{\lambda w.\sigma x [x \in [[\alpha]]^{w,g}]\}$ , neglecting definedness conditions.



tions? How sure can we be that we would recognize a true nominal quantifier when we see one? Adverbs modifying DPs can easily be confused with true quantifiers. English *all* might be a case in question, as pointed out in Partee (1995), 583, who mentions *all the men*, *all my books*, *all that work*, *all wet*, *all along the road*, among others, and also adds the important observation that when *all* occurs with just a bare noun, it tends to have a generic interpretation, and is not acceptable in contexts where bare plurals or mass nouns are interpreted as existentials. Here are her examples (Partee (1995), 583):

- (26) a. Desks are brown.  
 b. All desks are brown. (hard to construe as non-generic)  
 c. Every desk is brown. (easy to construe as non-generic)  
 d. # Pages in this book are torn. (anomalous as generic)  
 e. # All pages in this book are torn.  
 f. Every page in this book is torn.

Partee concludes from those examples, that *all* might not be itself a determiner, but a modifier that adds an “exhaustiveness” meaning to the usual meaning of a bare plural, a suggestion that was taken up in Brisson (1998).

In the nominal domain, quantifiers have now lost some of their luster. It seems that it is the DPs and their modifiers that are running the show. In fact, it may not be an entirely trivial matter to even find a single nominal quantifier construction. In addition to modifiers of DPs dressing up as quantifiers, we also cannot completely exclude the possibility that items that look like distributive quantifiers might not really be distributive after all. The true source of distributivity could be a non-overt adverbial operator that obligatorily co-occurs with the apparent quantifier. An overt version of such a quantification strategy exists in Chinese (Lin (1998)), and Matthewson suggests that a parallel structure with a non-overt distributivity operator might be the right configuration for English *every*.

- (27) Meige ren \*(dou) mai-le shu.  
 Every man all buy-ASP book.  
 ‘Everyone bought a book’.  
 Lin (1998), 219.

It should now be very difficult, if not impossible, to establish in any language that a particular nominal construction is a QP. It came already as a surprise to me that *irgendein* indefinites are not quantificational. I had to learn that inherent quantificational force is an elusive property. If there are non-overt distributivity operators, inherent distributivity

would be elusive, too. Inherent quantificational force and distributivity have always been the key diagnostics for essentially quantificational nominal constituents. If neither one of those properties can be diagnosed reliably, are we sure that there even are nominal QPs? If *we* can't seem to identify them with any confidence, how could a child?

Given the facts about concord I discussed in the previous section, I feel on safer ground with sentential quantification. We would have structures of the following kind:

(28) [FPQ...[VP V [DPDet NP]]]

Sentential quantifiers might also be mere features (interpretable ones, of course), and should then be able to combine with verbal, rather than nominal inflection.

My discussion of nominal quantification ended with a disturbing learnability problem. According to the proposal reflected in (25) and (29), nominal and sentential quantification structures would be so similar that you might not be able to distinguish them with the ear or eye alone. Who would have thought, for example, that *irgendein* indefinites use (29) instead of (25)? A very remote set of facts had to be considered to establish (29) as the correct configuration for quantification with *irgendein* indefinites. If nominal QPs were not an option for any language, we would have a way out of dilemma<sup>15</sup>. Exploring that possibility would require a very detailed investigation, though.<sup>16</sup>

Whatever the final verdict on nominal quantification might be, in sentential quantification structures, too, the movers and shakers are the determiners. Domain shifts carried by determiners seem to be at the very heart of quantifier constructions, then, be they nominal or sentential. It is thus very important to think about possible and impossible domain shifts. Are there such things as 'simple' or 'natural' operations

<sup>15</sup>See Jonny Butler's 2001 MA thesis for a proposal along those lines, as well as his 2004 Ph. D. dissertation (Butler (2001, 2004b)). Butler presented his version of the propositional strategy at the 2004 conference *Strategies of Quantification* in York University (Butler (2004a)).

<sup>16</sup>Beghelli and Stowell's proposal can be considered as providing the ingredients for unifying the two strategies, at least syntactically. If QPs have quantificational force, they carry an interpretable quantifier feature. On Beghelli and Stowell's account, those features would have to be matched by uninterpretable verbal inflectional features. DPs without quantificational force can have uninterpretable quantifier features. Those have to be matched by interpretable verbal inflectional features. In both cases, the same kind of syntactic structure is projected. The difference between the two strategies would boil down to the difference between interpretable and uninterpretable quantifier features, a difference that would be hard - if not impossible - to detect. We would face a learnability problem here, too, hence might be forced to assume that only one of the two strategies is available. It would have to be the propositional one.

on quantification domains, for example? Which ones of those have to be lexicalized overtly? Which ones can be constructional or carried by zero-morphology? We do not have to go far to find models for possible answers. Questions of this nature were asked and dealt with for the first time in Partee's type-shifting paper (Partee (1986), quoted from Partee (2002), 376 f):<sup>17</sup>

Wherever one can uncover richly structured domains and evidence of an important role being played by mappings between them, it should be possible to investigate the relative cognitive 'naturalness' of various such mappings, and such studies should in principle help to advance our understanding of the contribution our 'hardwired' predilections make to the way we make sense of the world we find ourselves in.

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<sup>17</sup>Chierchia (1998) is probably the most worked-out recent cross-linguistic investigation within the program of Partee (1986).

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