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A Pragmatic View upon Indefinites

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Klaus von Heusinger & Ruth Kempson & Wilfried Meyer-Viol (eds.).

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A Pragmatic View upon Indefinites

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Abstract

This paper sets out to give a natural pragmatic explanation of several aspects of the interpretation of singular indefinite noun phrases. Focusing on pragmatic aspects of the use of indefinites I develop a uniform account of characteristic features of the interpretation of indefinites which previously have been dealt with (only partly) by different semantic paradigms (in particular, the dynamic and the choice function paradigm). I first present intuitive motivation for the familiar discourse dynamic features of the use of these expressions, and next extend this to their behaviour in conditional, quantified, and intensional contexts.

It is generally agreed upon that pronouns and other definite terms may be coreferential with antecedent indefinite noun phrases. There is no general consensus, however, about how this is possible. If, as we have been taught by Frege, Russell and Montague, among many others, indefinite noun phrases behave like existentially quantified terms, then these phrases may be ‘denoting’ expressions, but they are not referential. So how can a pronoun then be coreferential?

In the modern tradition this issue has first been discussed by Peter Geach in the early sixties.¹ Geach in a sense did away with the problem, assuming that, whereas an indefinite noun phrase indeed is like an existential quantifier, the associated quantifier is taken to bind the pronoun. According to (Geach 1968), in a sentence like:

(1) Socrates owned a dog, and it bit Socrates.

the conjunctive ‘and’ is not the main operator, but the restrictive term ‘a dog’ and the sentence, thus analyzed, states that there is some dog x such that Socrates owned x and x bit Socrates.

Geach’s analysis has been criticized on two points, which are closely related but which have given rise to two different families of alternatives. Gareth Evans has forcefully argued against the idea that pronouns, like the one we find in example (1), are like bound variables. Rather, they are referential expressions

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1. But see, e.g., (Egli 2000) for what has gone before.

and they should be assigned a reference of their own (Evans 1977). Thus:

(2) John owns some sheep and Harry vaccinates them.

should not be taken to state that there are some sheep which John owns and Harry vaccinates, rather, it states that, first, John owns some sheep, and, second, that Harry vaccinates (all) the sheep that John owns. According to Evans, the pronouns in (2) and in quite a few other examples (which he called ‘E-type pronouns’) really are disguised definite descriptions, which must be interpreted by first reconstructing the description with the help of the context of use, and next interpreting the description in a more or less standard fashion. Evans work, together with (Cooper 1979), has inspired a lot of work, notably in the early nineties, which tries to pin down what descriptions pronouns ought to be associated with, and how these in their turn ought to be interpreted.

Another research tradition has agreed with the E-type tradition that (1) is a plain conjunction, but it rejects the idea that pronouns as in (1) are referential expressions. In various versions of discourse representation theory (Kamp and Reyle 1993), file change semantics (Heim 1982) and dynamic predicate logic (Groenendijk and Stokhof 1991), the pronoun in (1) is taken to be like a variable, as assumed by Geach, but it is not directly bound. Syntactically it is a free variable, which eventually is bound, semantically, using either an intermediary process of discourse representation construction or of dynamic interpretation. All of these and related systems build upon the observation by Lauri Karttunen that indefinite noun phrases as in (1) in some sense introduce or set up discourse referents, which stand in for possible witnesses, and which can be subsequently picked up by pronouns (Karttunen 1968).

I finally have to mention a family of approaches which share features with both the E-type and the dynamic approaches to sentences like (1), the choice function approaches. (Early references are Ballmer 1978, p. 122ff and p. 307ff and Slater 1986.) Basically the idea is that an indefinite term like ‘a dog’ is associated with an ε -term, and that it denotes an individual chosen from the set of dogs. The pronoun ‘he’ in (1) then can be taken to refer to the same dog. Example (1) is held true iff there is a choice function by means of which both conjuncts in (1) can be seen to be true, that is, a choice function Φ which selects an element from any non-empty set of individuals and such that $\Phi(dog)$ is a dog d such that Socrates owns d and d bit Socrates. Choice functions have also been used more in particular to deal with a local or in situ interpretation of indefinites, an issue which will be picked up later in this paper.

In this paper I will argue for a specific way of understanding the dynamic semantic notion of interpretation, which, like the E-type approaches, is more consistent with classical, referentially based theories of meaning. This way of understanding a dynamic semantics is based on ideas exposed earlier in (Kamp 1990; van Rooy 1997; Stalnaker 1998; Zimmermann 1999), and worked out explicitly in (Dekker 2001b, more formally, Dekker 200xb, more linguistically, Dekker 200xa, more

philosophically).

With the E-type and choice function theorists, I agree that examples like (1) are conjunctions of sentences which have their ordinary, classical meanings. That is, the first sentence is an existentially closed one, and the second is functional upon what is the possibly intended referent of the pronoun. It is furthermore assumed, however, that indefinite noun phrases like we found in the first conjunct of (1) are generally used with referential intentions. The basic idea then is that whatever individual can be the intended referent associated with the indefinite noun phrase can, equally generally, serve as the referent of the pronoun. Without shifting our notion of meaning, this can be easily accounted for by extending the semantic information expressed by the first conjunct of (1) with pragmatic information about what are the possibly intended referents associated with the uses of the indefinite. A dynamic semantics thus can be seen to be the result of simply extending a classical notion of meaning with quite general pragmatic features of the use of indefinites in a systematic way.²

I will proceed as follows. I will first show how exactly some of the basic features of anaphoric relationships with indefinite noun phrases can be accounted for on the basis of an intuitive pragmatic understanding of the use of these terms (section 1). I will next sketch an equally pragmatic explanation of the ‘fact’ that indefinite noun phrases in certain configurations (most in particular, in the scope of a negation) tend to lose their anaphoric potential (section 2). Then I will discuss two natural generalizations dealing, first, with the anaphoric potential of indefinites in ‘derived’ or dependent contexts (section 3) and, second, with wide and so-called ‘intermediate’ interpretations of indefinites in conditional sentences (section 4). Finally I will summarize the results (section 5).

1 Surface Indefinites

In this section I will concisely review the understanding of indefinites and pronouns as it is worked out in (Dekker 2001b; Dekker 200xa), and sketch the outlines of a formal pragmatic interpretation of them. The guiding ideas can be summed up as follows:

- first, we want to stick to a classical (say, possible worlds) notion of meaning; semantically, indefinite noun phrases can be equated with existentially quantified terms, and pronouns with a special kind of free variables
- second, we want to take to heart Stalnaker’s observation that (surface) indefinite noun phrases can and generally are used with referential intentions

2. It may be noticed that such a pragmatic understanding of the anaphoric relationship can as well be cashed out in E-type terms. For the pronoun could as well be interpreted as ‘the individual which the previously used term was intended to refer to,’ i.e., as the individual denoted by a referentially understood definite description. Notice that this definite description, besides being referential, is also highly indexical and intensional.

- third, we assume that anaphoric pronouns may pick up the individuals which previously used indefinites may have been intended to refer to

I believe this to be a coherent set of ideas which can be used to motivate a formal toy system of interpretation (on top of a classical meaning assignment), and which implements the observations about the use of indefinites and anaphoric pronouns in a systematic manner. At this point, however, I have to state two convenient simplifications.

In order to distinguish anaphoric pronouns from actually bound ones I will introduce them as a separate category in my formal language, and in order to make them unambiguous I assume they carry indices. So, apart from constants and variables, our language contains a set of pronouns p_1, p_2, \dots as terms, and basically such a pronoun p_i will be interpreted as the intended referent of an indefinite, viz., the i -th indefinite found when looking back in the discourse.³

Somewhat less intuitively, maybe, I also assume that the descriptions under which the possible referents of indefinites are introduced carry the same cognitive or communicative value as those later attributed to them, and, moreover, I simply assume them to actually have the associated properties.

Building on the stated assumptions, it is now fairly easy to specify an enriched system of interpretation for a predicate logic with anaphora (*PLA*). The core notion is that of satisfaction, which, in a certain model M , is stated in terms of the usual worlds w and variable assignments g , and in addition in terms of sequences of individuals \vec{e} . If the satisfaction relation holds I will write this as $w\vec{e} \models_{M,g} \phi$. For any formula ϕ , a satisfying sequence \vec{e} of individuals consists of the possibly intended referents of (sequences of) indefinites used in (or before!) ϕ . This already should suffice to see how indefinites and pronouns can be dealt with in the system of *PLA*. In that system, indeed, the following two formulas turn out to be equivalent:

$$(3) \exists x(D(x) \wedge O(s, x)) \wedge B(p_1, s)$$

$$(4) \exists x(D(x) \wedge O(s, x) \wedge B(x, s))$$

Actually, we can take the first formula to be the natural formal rendering of our example (1) above, and from the equivalence with the second we can see it gets interpreted correctly. An individual satisfies formula (3) if it is a dog which Socrates owns, and if it, that same dog, bit Socrates. Precisely the same satisfaction conditions hold for formula (4).

Before we proceed to inspect more fancy examples, it is useful to agree upon some further terminology, with supporting motivation. Conforming to quite general practice, I will refer to satisfying individuals as ‘witnesses’, to satisfying sequences of individuals as ‘cases’, and to sets of pairs consisting of a world and a case as ‘information states’. Actually, such states can be taken to present the combined semantic and pragmatic ‘content’ of our formulas. Relative to a model

3. Thus, p_1 is coreferential with the indefinite used last, the most prominent one, so to speak; p_2 with the one but last, etc.

and a variable assignment the content of a formula is simply the set of worlds and sequences which satisfy that formula.⁴

The contents of two formulas can be merged in a sophisticated fashion whereby anaphoric pronouns may get resolved by previous indefinite noun phrase. I will not go into the details of that here (cf., e.g., the papers mentioned above), but a similar notion of merging can be used to define two other pragmatically crucial notions: the ‘update’ which a hearer may get from accepting an utterance, and the ‘support’ which a speaker can be required to have for it.

We can think of the information states of a hearer and a speaker as sets of world sequence pairs. For a hearer such a state may serve to embody the information about ‘discourse referents’ which he has obtained from previous discourse. For a speaker such a state is required to embody the information about discourse referents which she herself introduces, and which she is supposed to associate with some defining characterization.⁵

The ensuing notions of update and support have some nice formal features. As is shown in detail in (Dekker 2001b), satisfaction, content, update and support are interdefinable, so this gives us the pleasant theoretical freedom to take any one of these notions as basic. Moreover, properly resolved and supported updates never generate information which the involved agents together did not already have before the update. This is a highly desirable soundness result, which means, basically, that information does not get corrupted in an exchange. If speaker and hearer have true information, and they exchange some of it, their information is still true.⁶

There is one final point about the support relation which will become relevant later in the paper. For a speaker’s state to support a formula it must be true in all the possible worlds in that state, in all possibilities which the speaker has not excluded as not being actual. But there is more. Like I said, discourse referents introduced by a speaker must themselves be associated with specific ‘belief objects’ in her state, representatives of individuals which she believes to be uniquely specifiable. To model this I use a linking relation, which associates discourse referents with the intended belief objects. In this way we can say that a speaker has support for an assertion if the things she attributes to discourse referents are really properties of the associated belief objects in her information state.

4. For those interested, these contents can really be conceived of as the interpretations of Hans Kamp’s discourse representation structures, or simply as Irene Heim’s satisfaction sets. The difference is that these contents are taken to be independently specified here, and that they are not obtained by ‘updating’ a previously given information state.

5. For the present purposes we can skip the question what such defining characterizations are.

6. Notice that this type of soundness cannot be preserved when we start using a more expressive language. Asserting “You do not know it, but Carl will cook tonight.” is self-corrupting in a sense.

2 Background Indefinites

So far we have only been discussing what I called ‘surface’ indefinites, indefinite noun phrases which do not occur in the scope of other operators, like a negation, an implication, or, if we extend the language, quantifiers and mood indicators other than the affirmative.

It seems to belong to the received wisdom, however, that non-surface indefinites have a very limited anaphoric potential, or even none. Consider:

- (5) Onno doesn’t run a sushibar.
- (6) Is there a doctor in the audience?
- (7) Give me a screwdriver, please.

In the first example (adapted from Kamp and Reyle 1993) the indefinite noun phrase ‘a sushibar’ is in the scope of a negation, and somehow it does not seem to license any anaphoric pick up. That is, if one were to continue with “It’s in Soho.” our responder would most probably ask something like: “What? What’s in Soho? What are you talking about?” From my point of view this means that in a regular utterance of (5), or upon a regular understanding of it, no referential intentions are associated with the indefinite noun phrase.

Similarly, asking (6) does not seem to make much sense if one has a particular doctor in mind and if one wants to know whether he is in the audience. (Think how odd it would be if somebody stood up and responded: “Do you mean me? You want to know if I am in the audience?”) Furthermore, as a request for a very particular screwdriver uttering (7) would be quite beyond the point. One can not, indeed, comply with a request if it is not (fully) specified.

So it seems, quite generally, that certain non-surface indefinites come without referential intentions, and in the case of (6) and (7) indeed some partial pragmatic explanation can be given for this fact. For a question about or a request for a particular thing to make sense the thing itself must be specified. Still, the question remains, if indefinite noun phrases are generally associated with referential intentions then why should these at all vanish in certain constructions? And do they, really? Let us consider some more examples:

- (8) If Merl throws a party tonight, I’ll be there!
- (9) Many boyscouts who keep a pet develop into animal liberators later.
- (10) If a client comes in, I’ll give her a folder.

There is clearly something odd about continuing (8) with “It starts at 21.00.” What could be supposed to start at 21.00? Not Merl’s party, since (8) at least implicates that maybe there is not going to be such a thing. But a speaker may have something special in mind with asserting such a sentence. For it is really natural to continue (8) with “It will be fun!” If we then ask what is going to be fun, the straightforward answer, of course, is “The party, if any, which Merl is going to give.” It is a hypothetical entity, but it is very clearly circumscribed.

Example (9) can hardly be construed as being about a particular pet. Par-

ticular pets cannot be kept by any significant number of boy scouts. Intuitively, such a sentence may serve to assert something about boy scouts, about pet-owning boy scouts, or about the relation between boy scouts and pets. Example (10) deserves our special attention because examples of this form have made their way in the literature under the label ‘donkey sentences’. In this conditional assertion the indefinite ‘a client’ in the antecedent clause is picked up by a pronoun in the consequent clause. But is this, therefore, about a particular client? Obviously not, since it would be quite odd again to try and pick up the indefinite later with: “She is from Oklahoma.” Nevertheless, the sentence can again be read as being about clients in general. “What do you do when a client comes in?” “I’ll give her a folder.”

The above observations, which are not at all new, suggest the following two generalizations. First, non-surface indefinites can after all relate to specific individuals, and I will discuss more examples which have popped up in the literature in section 4. But second, also when they do not relate to specific individuals, they can relate to classes of individuals, which the assertions can be conceived of as being about. That is to say, these assertions can be assigned a so-called information structure, part of which is a ground, which in a sense can be assumed to be given, and another part which can be called its focus. Indefinites in the ground are not associated with referential intentions, because they are not part of the speaker’s own contribution (which is laid down in the focus part) but part of the, presumed given, ground. (In the next section I will come to indefinites which are themselves in the focal part of an utterance.)

Consider again a statement made by means of (5). Typically, but not inflexibly, a negation ‘Not S’ may serve to answer the issue—raised explicitly or implicitly—whether ‘S’ is true or not. An utterance of (5) may serve to state—possibly in answer to the question whether Onno runs a sushibar—that he doesn’t, that is, that there is no such bar which Onno runs. (Alternative interpretations are easily made available, of course by emphasizing, e.g., ‘Onno’, or ‘run’. I here assume the utterance to carry what may be called a neutral intonation.) A speaker need, in other words, not have a particular sushibar in mind when uttering (5), because the existence of such a sushibar is not part of what she claims to have evidence for. Rather, the existence of such a bar is part of the issue which the speaker addresses—negatively, with (5)—, or even part of what the hearer might have claimed just before. So actually, when somebody utters (5), she is normally not coming up with a sushibar herself, but she is claiming to have evidence against the existence of such a bar, were anybody else thinking of the possibility of there being one. And although the indefinite is clearly part of the string of words which the speaker utters, it is not part of what she asserts, or of what she can be required to (be able to) support.

Something analogous, but slightly more complicated, can be seen to hold for the following four donkey sentences:

- (11) { Only if , If } a farmer leases a donkey he beats it.
(12) A farmer beats a donkey { only if , if } he leases it.

As is argued more extensively in (Dekker 2001c, see also von Stechow 1994), these sentences pose a major challenge even for dynamic theories of interpretation which are designed for the treatment of anaphoric relationships between indefinite noun phrases and anaphoric pronouns. However, much of the mystery around these sentences is cleared if we assume them to be addressing a domain of farmers and donkeys under discussion. Relative to such a domain of pairs of farmers x and donkeys y , these sentences can be used to state that: (only) if x leases y , x beats y , and: x beats y (only) if x leases y .

An analysis along these lines can be obtained if we adopt a partition of the contents of assertions into a ground and a focal part, as in most theories of focus and information structure, and if we furthermore allow for structural relations between these ground and focus parts. Suitable frameworks seem to be those of (van der Sandt 1989; Geurts 1999; Gawron 1996; Aloni et al. 1999). See (Dekker 2001c) for the sketch of an arguably more conservative treatment.

More in general, we can wind up the findings of this section as follows. Typically—that is, if context or intonation do not imply otherwise—one can say that e.g., the contents of negated sentences, of questions and commands, but also the antecedents of conditional sentences, and the restrictions on quantifiers, all constitute or relate to a background or topic. Topics are assumed to be given in some sense and they do not belong or contribute to the conversational commitments which a participant takes upon herself by making a certain statement. A speaker can be taken to have support for what the focal part of her utterance contributes to the ground, but not to the ground. Hence, she is not required to have any referential commitments associated with indefinites used in the ground.

3 Dependent Indefinites

So far I have tried to sketch why some non-surface indefinite noun phrases do not get associated with referential intentions. But of course this is only half of the story. I already mentioned indefinites which figure in the focal part of an assertion. If a speaker can be held conversationally responsible for what the focal part of her utterance contributes to a ground, then we would indeed expect indefinites there to be associated with referential intentions again. Interestingly, this seems to be precisely what we find in a couple of examples familiar from the literature. And although these examples are arguably somewhat marginal, something which eventually has to be explained, I think they provide strong support for the pragmatic kind of analysis I am pursuing in this paper. Before we turn to the examples, however, it is useful to inspect the notion of implication which naturally suggests itself in the system of *PLA*.

If an implication $\phi \rightarrow \psi$ is defined, in a fairly usual way, as $\neg(\phi \wedge \neg\psi)$, it turns out that support for stating such an implication boils down to having support for ψ after one has updated one's information with ϕ . One could reformulate this as follows. I have epistemic support for *If A then B* if, and only if, if you were to tell me that *A*, or if I find out otherwise that *A*, then I have sufficient evidence for *B*. This sounds pretty fair, and close to the interpretation of conditional sentences in systems of game theoretical semantics. But notice that an utterance of *If A then B*, thus, does not commit a speaker to having support for *B*, but only for *B* in functional dependence upon (learning that) *A*. So if there are referential intentions to be associated with indefinites in *B*, we can assume them to be functionally dependent upon whatever is contributed by the ground in *A*.

Actually, such functional readings of noun phrases (*Wh*-phrases, definite and indefinite noun phrases) are familiar from the literature from the eighties and the nineties. (See Jacobson 1999 for a recent overview.) Typical examples include:

- (13) Whom does every Englishman admire? His mother.
- (14) Every Englishman loves, but no man wants to marry his mother.

And we can add one with an indefinite and a pronoun:

- (15) Every Englishman loves some woman, but no man wants to marry her.

In this section I will more in particular look at the following examples:

- (16) If a book is printed with Kluwer it has an index.
It can always be found at the end. (after Heim)
- (17) Harvey courts a girl at every convention.
She always comes to the banquet with him. (Karttunen)
- (18) Most men had a gun, but only a few used it. (Sandu)
- (19) Mary believes there is a burglar in the house.
She thinks he came in through the chimney. (Landman)

In Heim's example we find an indefinite noun phrase 'an index' in the consequent clause of a conditional sentence. If it is associated with referential intentions, the speaker can be assumed to have a specific index in mind (like 'the index of a book printed with Kluwer') which, however, is not one particular index, but functional upon Kluwer books. Assuming the speaker to have such a function in mind, we can also assume that it is that function which is picked up by the pronoun. That is, the second sentence of Heim's example can be taken to state that always, that is, in every Kluwer book, the index of that book can be found at the end of the book. Similarly, Karttunen's girl can be thought of as a function associating every convention which Harvey visits with a girl he courts there, Sandu's gun with a function from gun owning men to their guns and Landman's burglar with a function from the alternatives which Mary believes to be possible to burglars which are there in the house.

Like I said, this is precisely what we would expect upon the analysis defended here. Focal indefinites are associated with referential intentions, and since they are functionally dependent on some ground, so are the entities which the speaker can be said or required to have in mind. That is to say, my notion of support and the way in which it is supposed to work, naturally suggests an analysis of these examples.

Of course, such an analysis does not come from nothing because we do not yet have a general enough notion of a case. In order to account for the examples above our satisfying sequences should not only consist of individuals, but also of functions from individuals, cases and worlds to individuals. This can be done by means of a recursive definition of (i) a class of type t of sets of satisfying cases of type c , (ii) a class of type c of sequences of witnesses of type w , and (iii) a class of type w of individuals of type e , individual concepts of type $\langle s, w \rangle$, and Skolem functions of type $\langle c, w \rangle$.

I will skip, here, the clauses defining satisfaction and support for conditionals, quantified statements and belief attributions. Basically they do nothing more than allowing possible witnesses to be functionally dependent upon cases, individuals and worlds, respectively. (Properly understood, this involves nothing more than a suitable generalization of Geach's so-called rule of 'division'.) The net effect is that they generate Skolem equivalences of the following form, and they do this in an entirely compositional manner:

$$(20) \quad \exists x\phi(x) \rightarrow \exists y\psi(y) \Leftrightarrow \exists f(\exists x\phi(x) \rightarrow \psi(f(\mathbf{p}_1)))$$

$$(21) \quad \forall x\exists y\phi(x, y) \Leftrightarrow \exists f\forall x\phi(x, f(x))$$

$$(22) \quad B_x\exists y\phi(y) \Leftrightarrow \exists zB_x\phi(\check{\vee}z)$$

Thus, satisfaction of an implication of the form $\exists x\phi(x) \rightarrow \exists y\psi(y)$ requires a witness function f , which applies to the type of entities which the antecedent requires to be ϕ , and which are picked up by the pronoun \mathbf{p}_1 . By the set up of the system of interpretation the implication can be followed by another one in which an anaphoric pronoun picks up this function. Notice that for this to work, the second pronoun must be functionally dependent upon the same type of things which the original indefinite is functionally dependent upon. Thus, in order to effectively deal with Heim's example, it must be made sure that the adverbial quantifier 'always' relates to books printed with Kluwer.

Something similar holds of the seemingly regular Skolem equivalence (21). The difference with an ordinary Skolem equivalence is that the use of f is associated with referential intentions, so that it is available for anaphoric take up. This gives us a handle on Karttunen's example, if, again, the quantifier 'always' is made to range over the right types of things. In the equivalence (22) I have suggestively used Montague's extension operator $\check{\vee}$ (which is not really part of my own formal language).

The effect of such equivalences can be brought out neatly by means of, e.g., the following sequence of equations:

$$(23) \quad B_x \exists y \phi(y) \wedge B_x \psi(\mathbf{p}_1) \Leftrightarrow \exists z B_x \phi(\check{v}z) \wedge B_x \psi(\mathbf{p}_1) \Leftrightarrow \\ \exists z (B_x \phi(\check{v}z) \wedge B_x \psi(\check{v}z)) \Leftrightarrow \exists z B_x (\phi(\check{v}z) \wedge \psi(\check{v}z)) \Leftrightarrow B_x \exists y (\phi(y) \wedge \psi(y))$$

The first and the last equivalence in this sequence corresponds to the Skolem one in (22). The second serves to display the effect of anaphoric take up. The third is part of the logic of belief. This sequence of equations, then, serves to show how an utterance of Landman's example can be dealt with. Basically it involves anaphoric take up of a belief object which the speaker can be assumed to have referred to.

The previous discussion may also serve to answer the question which I raised earlier in this section. Although the general idea behind the support of indefinites indeed serves to predict the type of functional dependencies which I discussed in this section, still in the great majority of conditionals and quantified statements such dependencies are hardly felt to be there. Why should that be? Part of the answer may be this. For a functional indefinite to be picked up by a subsequent pronoun, it is absolutely necessary that the pronoun is evaluated relative to precisely the same ground as the indefinite is. For, in short, functions require arguments, and these must be of the right type. In a lot of discourse and dialogue, however, contexts seem to change so quickly and subtly that in many cases anaphoric pick up of dependent indefinites is impossible, and functional readings are therefore invisible. Besides, of course, individual concepts and Skolem functions do not really belong to the most familiar things which linguistics agents deal with, so this will certainly be a further reason why the functional interpretation of indefinite noun phrases and pronouns does not belong to our most basic linguistic skills.

4 'Intermediate' Indefinites

In the introduction I mentioned a family of approaches to indefinites which employ choice functions. In this section I will discuss some of the data which have given rise to such choice function interpretations and I will argue that a pragmatic approach like the one presented in this paper is actually more economical, although my findings are, I believe, quite consistent with the pragmatic choice function approach advocated in (Kratzer 1998). Most of the observations are as a matter of fact familiar from the recent literature, and the main conclusions are basically those of Philippe Schlenker, in a paper which does not allow to be quoted.

Before we get along it is useful to inspect an example due to Charles Sanders Peirce (Peirce 1906), and which is discussed in more detail in (Dekker 2001a). Peirce discusses the following example:

- (24) There is some married woman who will commit suicide in case her husband fails in business.

and he notes that on what we understand as a relatively straightforward predicate logical analysis the sentence would be equivalent with:

(25) Some married woman will commit suicide if all married men fail in business.

Most people, however, judge that an utterance of (24) conveys something stronger and more specific than an utterance of (25). Peirce puts the blame for this “absurd result” on “admitting no reality but existence,” and his diagnosis consists in taking *possible* courses of event into account. What is really meant by an assertion of (24), Peirce claims, is that “[t]here is some *one* married woman who under all possible conditions would commit suicide or else her husband would not have failed.”

Interestingly, our pragmatic outlook upon the use of indefinite noun phrases gives us precisely this. For someone’s information state to support an utterance of (24), and not for an utterance of (25), the speaker must have an individual in mind which, in all possibilities which the speaker conceives possible, commits suicide if her husband fails. Various pragmatic principles contribute to making such an utterance non-trivial only if the speaker indeed has a conception of a person about which she believes such a dependency to be true.

The point about Peirce’s example in the present context is this. If the indefinite gives only existentially quantified information then indeed, as Peirce observes, example (24) is in danger of conveying nothing more than example (25). However, since we assume that such indefinites should be supported by belief objects in the speaker’s information state, and because what is predicated of them must be non-trivial in a fully Gricean sense, an utterance of (24) gets its special bite. The person which the speaker has in mind may, normally, not have pertinent information that that person’s husband actually is, or is not, going to fail in business, or that that person will, or will not, commit suicide anyway. These observations are relevant in our discussion of the following examples.

It is one of the rather persistent observations from the formal linguistic canon that quantified noun phrases do not escape from what are called ‘scope islands’ and that indefinite noun phrase seem to do what the canon forbids quantified noun phrases to do. Such ‘scope islands’ are, for instance, phrases restricting the scope of other quantifiers, antecedents of conditional sentences and other subordinate clauses. If a quantified noun phrase occurs in such a place, the idea is, it will not be able to outscope the hosting quantified noun phrase or conditional sentence. Indefinite noun phrases in scope islands, however, do seem to have an interpretation which can be paraphrased well by giving them wide scope. I will not go here through all the motivating data, which go back to the seventies of the last century, and simply refer to the more recent literature on the subject found in, e.g., (Abusch 1994; Reinhart 1997; Winter 1997; Kratzer 1998).

One of the earlier explanations of the seemingly ‘aberrant’ behaviour of indefinite noun phrases in scope islands has been given in (Fodor and Sag 1982), where it is argued that indefinites can have a referential interpretation, and under

such a non-quantificational interpretation they can obtain ‘wide scope’ without being outscoping. The literature has before and after produced examples that challenge the assumption that indefinites only have a local, quantified, interpretation in scope islands, or a global, referential one. A very clear example is one from (Abusch 1994), which seems to favour what is classified as an ‘intermediate’ reading:

(26) Every one of them moved to Stuttgart because a woman lived there.

The most natural interpretation of this example is that for every person among the intriguing ‘them’ there was a woman who lived in Stuttgart, and who made up the reason for that person to move to Stuttgart. Notice that the motivating women have escaped from the ‘because’-scope island, without thereby entailing it was one particular person. Each of ‘them’ may have had his own motivating woman. The indefinite can therefore not be construed as referential, but if it is, therefore, quantificational, it violates the scope island constraint.

‘Intermediate’ readings of sentences with indefinites in scope islands have triggered alternative choice function interpretations, which, in some way or another, allow the indefinite to make its semantic contribution locally. These indefinites get a reference assigned from a choice function applying to the set associated with the indefinite’s descriptive material, and wide, intermediate or local scope effects are obtained by quantifying over these choice functions at some suitable place in a sentence’s analysis.

I will not dwell too much upon choice function interpretations here, since I would like to point out, like others have done before me, that no such move is needed if we assume that indefinite noun phrases can be used with referential intentions, and if we, as we did in the previous section, allow for functional interpretations. This is to say that an intuitive interpretation of for instance example (26) automatically comes off if someone who utters it can be assumed to have a concept or Skolem function in mind which associates every person among (the still intriguing) ‘them’ with a certain woman she holds responsible for that person’s move to Stuttgart.

It may be noticed that the analysis I have just now sketched is not just an alternative way of dealing with (26). In the literature mentioned above one can find plenty examples which indeed require a choice function approach to be in need of Skolem functions as well. The point I want to get through here, and which is made more vehemently in the paper from Schlenker which does not want to be quoted, is that once one allows oneself Skolem functions, choice functions are not needed any longer.

In the literature on choice function approaches to indefinites another interesting issue pops up, which seems to come from Irene Heim, and which is dubbed the ‘Donald Duck’ problem by, I believe, Tanya Reinhart. Consider:

(27) If we invite some philosopher, Max will be offended.

An utterance of this example may be used to convey the information that the

speaker does not really know which specific philosopher it is whose possible invitation would offend Max. By uttering (27) the speaker may wish to convey that she wants to know who this possibly disputable philosopher is. So such an utterance is not directly referential. By the same token, such an utterance does not seem to convey that if we invite any philosopher, Max will be offended. Max may go along well with a lot of philosophers. The idea is that the phrase ‘some philosopher’ is not referential, but also not locally quantified within its own scope island.

An alternative analysis might be that the informational contribution of the indefinite is indeed local, but that it is somehow ‘existentially quantified from the outside’. Maybe it says that there is some individual x , and that if x is some philosopher which we invite, then Max will be offended. And this is where Donald Duck hits in. For, to make such a statement true, it is sufficient, people say, to choose Donald Duck as a witness for x . Since Donald Duck is apparently supposed not to be a philosopher, the statement would be trivially true. The alternative, some have it, is to use choice functions. The idea is that (27) conveys that there is some choice function, and that if we invite the philosopher whom that choice function assigns to the set of philosophers, then Max will be offended.

I can not at all agree with such a conclusion. First, and foremost, I do not believe Donald Duck to be not a philosopher, but maybe you judge that a minor detail. Secondly, and more importantly, a choice function approach does not at all solve the problem at hand. If, as I think, Donald Duck is indeed a philosopher, then an utterance of (27) is still trivially true because we are simply not going to invite Donald Duck. (The guy does not even exist.) But even if you do not want to qualify Donald Duck as a philosopher, take Jacques Derrida. Derrida is a philosopher alright, and we are simply not going to invite him. So he will be the perfect choice by our existentially quantified choice function from among the set of philosophers which will make an assertion of (27) trivially true. But, clearly, nobody would accept Jacques Derrida as a philosopher motivating a sincere and felicitous utterance of (27) on the sketched conditions.

I hope that it has become clear from the previous discussion of Peirce’s example what I think really is at stake. Heim’s example (27) can, after all, be taken to be about a definite philosopher. True, someone who sincerely asserts it may not know in some quite relevant sense which philosopher it is about. But in the circumstances sketched, it seems to be about some definite philosopher. Someone the speaker has heard about from somebody else, or somebody whose name she forgot. In both cases, it ought to be the philosopher, for her, which is the one she heard or learned about to be one whose invitation will upset Max. And it is under such a conception that her utterance of (27) can be seen to be non-trivial, in all Gricean respects, only if she does not know of that philosopher whether or not (s)he is going to be invited, or whether or not Max will be offended anyway. Indeed, I think, only an explanation appealing to pragmatic principles will give us a handle on the example and for such an explanation to come off, I

think, it should be able to refer to a certain philosopher which the speaker may have had in mind with an utterance of (27).⁷

A last example which I would wish to discuss in this context is one from Philippe Schlenker. It goes as follows:

(28) If each student improves in two subjects, noone will fail the exam.

The intended interpretation, which I deem to be very natural, is this. All students in the reported class do bad in two subjects, different subjects for different students. And what an utterance of (28) can be taken to assert is precisely this. If each student improves in the two subjects he or she is bad in, then everybody will succeed for the exam. As simple as that.

Notice that, upon the present rendering, an utterance of example (28) is not about two subjects, referentially construed. It also does not say that if each student improves in two arbitrary subjects, then noone will fail the exam. The indefinite ‘two subjects’ indeed seems to be about specific subjects, but these are again functionally dependent upon the students who are supposed or required to improve precisely in the two subjects they don’t go very well with together. This analysis is easily obtained if, as we have argued in section 1 of this paper, the indefinite ‘two subjects’ is used with referential intentions, and if, as we argued in section 3, these indefinites are functional upon the quantifiers in whose scope they occur. Gricean principles can again be invoked to make sure that an utterance of (28) is not backed up by Skolem functions which make such an utterance trivially true.

I do not think any semantic choice function analysis will be able to do anything better for (28) than I have sketched here. Sure, and again, I do think (Kratzer 1998)’s pragmatic interpretation of choice function variables comes a lot in the same direction, but, like I said, detailed comparison must await another occasion. Whatever will be the conclusion of such a discussion, however, I do wish to claim here that my analysis is more economical since it does not invoke the use of choice functions, and since, I think, the pragmatic principles on which it is based, are independently motivated.

5 Conclusions

In this paper I have presented a view upon the use and interpretation of indefinite noun phrase formally inspired by the dynamic paradigms of discourse representation theory, file change semantics, and dynamic predicate logic. Conceptually it has been inspired by (Stalnaker 1998) and other philosophers who have given their thoughts to the interpretation of definite and indefinite noun phrases.

7. I may have to add that these pragmatic explanations are close in spirit to those of (Kratzer 1998), who conceives of choice function variables are controlled by pragmatic parameters. Unfortunately, detailed comparison must await another occasion.

The basic ideas exposed in this paper can be summarized as follows. A so-called ‘dynamic’ interpretation of natural language utterances can be motivated well by calling upon the referential intentions which are supposed to accompany the use of definite as well as of indefinite expressions. Truly Gricean notions of support can be called upon to explain a couple of basic facts about the use of these expressions.

Not much more has been needed to analyze the use of indefinites in constructions dealt with in alternative approaches to indefinites. We need to adopt some appropriate notion of ground and focus in order to deal with information structure, but this can hardly be new, since this is part of the linguistic canon since the early seventies. We also need to allow definites as well as indefinites to have functional readings, depending on the impact of operators in whose scope they figure. These observations, too, are motivated by findings deriving from the seventies of the previous century.

All of the data discussed in this paper can thus be dealt with by rather traditional means. The tools which I have assumed to be in use are, basically, those of Tarski (satisfying sequences), Jackendoff (information structure), Geach (division) and Grice (pragmatics). I truly believe that it is immaterial whether one wants to believe, in addition, in referential intentions (like Kamp, Stalnaker and I do), or in E-type pronouns (in the sense of Slater), or in choice functions (in the pragmatic sense of Kratzer). I think referential intentions are fine, although it remains to be seen whether anything said about this subject in this paper carries over to the use of plural indefinite noun phrases, an issue which was kindly suggested to me by Ruth Kempson.

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