

Determiners and Bare Nouns

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Abstract

Determiners and bare nouns raise questions about the interface between morphosyntax and semantics. On the syntactic side, the primary issue is whether bare nouns have a null determiner making all noun phrases structurally uniform. On the semantic side, the primary issue involves determining and deriving the range of permissible readings. Of primary significance are the availability of definite and indefinite readings for bare nouns and how such readings relate to the presence or absence of lexical exponents of (in)definiteness in a language. Further refinements include the special scope properties of kind terms versus regular indefinites, differences between singular and plural kind terms, number distinctions within the noun phrase, and the role of incorporation. We present the theoretical and typological advances that have been made in addressing these issues and identify which considerations are purely syntactic or purely semantic in nature and which considerations have implications for the interface.

1. THE DETERMINER IN THE THEORY OF NOUN PHRASES

If every noun phrase in every language had an overt determiner, the topic of determiners and bare NPs (i.e., NPs without articles) would not merit attention. The fact that noun phrases both with and without overt determiners are ubiquitous in natural language presents a challenge that is, at its core, an interface issue. How are bare nouns interpreted when there are no morphological cues for universal semantic notions like definite and indefinite? Do all noun phrases have determiners, either null or overt? What is the relationship between overt and null counterparts? Can noun phrases lack determiners altogether, and if so, what operations are needed to interpret them? What, if any, are the constraints that apply to such operations? These are the sorts of questions raised by the morphosyntactic variation in noun phrases across languages.

To illustrate the range of cross-linguistic variation, we may take English as a starting point. English has definite and indefinite determiners that can occur with count as well as mass nouns (*the book(s)*, *the water*, *a book*, *some book(s)*, *some water*), optionally with mass and plural count nouns, and obligatorily with singular count nouns.¹ By contrast, French generally requires determiners with all nouns, while Hebrew has only a definite determiner, and Hindi has neither definite nor indefinite determiners. As we show in this review, deciding whether a language has or does not have definite or indefinite articles is itself a nontrivial issue. We start, however, by accepting that there is considerable cross-linguistic variation in this domain, and we place this variation against a general theoretical backdrop sketched in broad strokes.

1.1. Strict Matching of Category and Type

Consider the analysis of a noun phrase with an overt determiner, where the double brackets indicate the semantic value of the morphosyntactic expression, and the lambda notation denotes sets of the specified type:

- (1a) $[\text{DP } \textit{every} [\text{NP } \textit{cat}]]$
- (1b) $[[\textit{cat}]] = \lambda x_e [\textit{cat}(x)]$
- (1c) $[[\textit{every}]] = \lambda P_{\langle e,t \rangle} \lambda Q_{\langle e,t \rangle} [P \subseteq Q]$
- (1d) $[[\textit{every cat}]] = \lambda Q_{\langle e,t \rangle} [\lambda x_e [\textit{cat}(x)] \subseteq Q]$

On the view that common nouns denote a set of entities, the shift from a property-level meaning at NP to an argument-level meaning at DP is captured by taking determiners like *every* to encode a type shift from the property-level meaning to a generalized quantifier meaning: the set of those properties that include the set of cats. When combined with a VP like *meowed*, we get $[\lambda x_e [\textit{cat}(x)] \subseteq \lambda x_e [\textit{meowed}(x)]]$. The sentence is true if the set of cats is included in the set of entities that meowed, and it is false otherwise.

What about proper names like *Kitty*? There is no obvious reason to treat them as having null determiners, at least in English. Furthermore, intuitively it is more natural to think of them as denoting individuals rather than sets of properties. If we think of proper names as denoting individuals, then regardless of whether we posit a DP or an NP structure for them, we are forced to allow a single syntactic category, be it DP or NP, to denote two distinct semantic types: the individual type and the generalized quantifier type in the case of DP and the individual type and the property type in the case of NP. The very existence of proper names, we can see, raises an issue for the mapping from category to type.

¹Definite mass nouns are used in anaphoric contexts: There was water and milk in the fridge. The water was not cold, however.

Montague (1973), in his seminal work on English, resolved the problem by positing a single type for all noun phrases, generalizing to the highest type. Thus, along with the type shifts characterizing the meaning of standard determiners, proper names also are taken to have the type of generalized quantifiers—namely, the set of properties—such that each property includes the relevant individual. This framing fits in nicely with an analysis of proper names as DPs: The sentence *Kitty meowed* is true if the individual named *Kitty* is in the set of those who meowed:

- (2a) [DP *Kitty*]
 (2b) $[[Kitty]] = \lambda Q_{\langle e,t \rangle} [kitty \in Q]$
 (2c) $[[Kitty\ meowed]] = kitty \in \lambda x [meowed(x)]$

This picture of the syntax and semantics of noun phrases provides a one-to-one correspondence between category and type: NPs denote properties, and DPs denote generalized quantifiers.

On the syntactic side, a notable development in the 1980s accorded an elevated status to the determiner as the head of the noun phrase in what became known as the DP hypothesis (Abney 1987, Stowell 1991, Szabolcsi 1987), an analysis that our discussion of example 1 anticipates. While much of the impetus behind the DP hypothesis was a desire to make the structure of the noun phrase parallel to the structure of the clause, it also drew on semantic support about what constitutes reference. The idea that the interpretation of noun phrases was uniformly of the generalized quantifier type fed into the view that the category D was somehow necessary for achieving this denotation.

On this view of the syntax–semantics map, the case of common nouns that seem to function like full-blown noun phrases poses an interesting test case. It seems not only theoretically plausible but also necessary to posit a DP structure for noun phrases like *cats* in examples like sentences 3a,b:²

- (3a) Cats are lying on the mat.
 (3b) Cats meow.

If all noun phrases are DPs, the question that arises in the case of common nouns functioning as arguments (and to some extent also in the case of proper nouns) concerns the internal structure of such DPs. Two possible analyses are given below:

- (4a) [DP \emptyset [NP cats]]
 (4b) [DP cats_i [NP t_i]]

In the first case, there is a null determiner in D. In the second case, the common noun inside NP raises to D in an analog of V-to-C movement in the clausal spine (cf. *Is she t_i here?*). The two analyses have potentially distinct theoretical implications. They may make different predictions about word order: Adj N for structure 4a and N Adj for structure 4b (see Longobardi 1994). Furthermore, examples with structure 4a may require syntactic licensing and therefore be restricted to specific positions (e.g., see Contreras 1986 on Romance languages). Examples with structure 4b may not manifest similar structural restrictions but may be semantically restricted to specific and/or definite readings (e.g., see Li 1998 on Mandarin). We mention these possibilities here without taking a stand on them; we return now to the issue of category-to-type matching.

²The treatment of bare noun phrases as DPs remains one of the prominent positions in the syntactic literature on noun phrases today (see Longobardi 1994, among others). We discuss this approach further in Section 2.

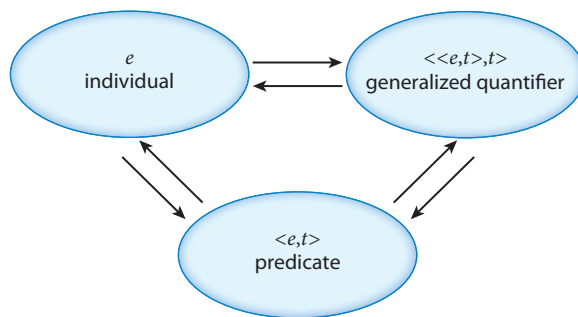


Figure 1

The Partee triangle. Figure based on Partee (1986).

1.2. A More Flexible Approach

Section 1.1 shows some of the semantic and syntactic motivations for a uniform analysis of noun phrases as DPs. While it is certainly possible to interpret all noun phrases as generalized quantifiers as proposed by Montague (1973), an important landmark in our understanding of noun phrase semantics was ushered in by the idea of a more flexible mapping between category and type. Partee (1986) and Partee & Rooth (1983) articulated a flexible approach that takes each noun phrase at its basic type and allows for a shift to the higher type as and when required. On this view, definites and proper names could denote individuals, while universal and other quantifiers would denote generalized quantifiers.³ When the two kinds of noun phrases are conjoined, individual-denoting noun phrases could type-shift and yield a well-defined generalized quantifier. This makes it possible for the two to combine in the standard way:

- (5a) $\llbracket the \rrbracket = \lambda P_{\langle e,t \rangle} : |P| = 1. \iota x [P(x)]$ type $\langle e,t \rangle \rightarrow e$
 (5b) $\llbracket DP \ the \ \llbracket NP \ cat \rrbracket \rrbracket \Rightarrow \iota x. [\text{cat}(x)]$ type e
- (6) $\llbracket the \ cat \ and \ every \ mouse \rrbracket \Rightarrow \lambda P [\lambda Q [\iota x [\text{cat}(x)] \in Q](P) \ \& \ \lambda Q [\text{mouse} \subseteq Q](P)]$
 $\Rightarrow \lambda P [\iota x [\text{cat}(x)] \in P \ \& \ \text{mouse} \subseteq P]$

The familiar Partee triangle (**Figure 1**) articulates a set of operations that mediate between the three nominal domains—the domain of entities, the domain of sets of entities, and the domain of sets of sets of entities—representing a fairly well-accepted view in current semantic literature.⁴ Without any semantic pressure to have uniform category-to-type matching, greater variation in syntactic analyses of noun phrases with no visible determiner becomes plausible. There may, however, still be syntactic reasons for favoring one analysis over the other. As Longobardi (1994) showed, Italian has $N \rightarrow D$ movement in determiner-less proper names because these names must precede adjectives. With a determiner present, the order of adjective and noun is reversed:

³The definite determiner denotes a function from sets of individuals to the unique individual if there is one, and the function is undefined otherwise. The uniqueness associated with the iota operator, when calibrated to refer to maximal individuals, can capture the quasi-universal force of plural definites.

⁴The meaning of *every* belongs in the set represented in **Figure 1** by the arrow going from $\langle e,t \rangle$ to $\langle \langle e,t \rangle, t \rangle$, and the meaning of *the* belongs in the set represented by the arrow going from $\langle e,t \rangle$ to e . For the full set of operations, we refer the reader to Partee (1986).

- (7a) [DP Roma_i [AdjP antica [NP t_i]]] \Rightarrow *Roma antica*
 (7b) * [AdjP antica [NP Roma]]
 (7c) [DP La [AdjP antica [NP Roma]]] \Rightarrow *La antica Roma/L'antica Roma*

Longobardi's account of proper names is sensitive to cross-linguistic differences between English and Italian, which we discuss in Section 2. For now, we note that while we have concrete syntactic evidence for DP in Italian proper names, the NP analysis remains a viable option for English.

Where do bare plurals fit into this relaxed map between category and type? Let us consider the two possibilities that present themselves in light of the theoretical flexibility granted by the type-shift-as-needed approach. We stay neutral on the output and use the variable α as a placeholder:

- (8a) [TP [NP *cats*] [VP *are meowing*]]: SHIFT (NP) = $\lambda P \text{ OP}_{\langle e,t \rangle} \rightarrow \alpha (P)$,
 where [[NP]] = $P = \lambda x$
 [cats(x)]
 (8b) [TP [DP \emptyset *cats*] [VP *are meowing*]]: [\emptyset] = $\lambda P \text{ OP}_{\langle e,t \rangle} \rightarrow \alpha (P)$, where $P = \lambda x$ [cats(x)]

In structure 8a, we have an NP of the property/predicative type $\langle e,t \rangle$ and a VP that is also of type $\langle e,t \rangle$, which can combine by shifting the predicative NP to argumental type via a covert type shift, whatever the type shift might be. Alternatively, we have a null determiner in structure 8b, which facilitates the requisite move from property meaning by encoding in its lexical specification a type shift, whatever the type shift might be. As examples 8a,b illustrate, from the perspective of interpretation, it makes no difference whether we tap into covert type shifts or appeal to null determiners.

We take up the question of the particular type shift or type shifts that would be employed in the interpretation of structures 8a,b in Section 1.3. For now, we note that two distinct syntactic structures may converge semantically. The two structures may, however, have distinct syntactic implications. For example, Contreras (1986) (and many others following her) has argued that null determiners require licensing, which effectively restricts them to specific syntactic positions. In Italian, for example, bare plurals are essentially possible in object but not in subject position. This is obviously not the case in English. Bošković (2008) has similarly argued that an NP structure allows for greater transparency with regard to scrambling out of noun phrases, a transparency available in languages like Serbo-Croatian but not in languages like English.

1.3. Determiners and Reference to Kinds

As indicated above, the semantic and syntactic issues that arise in a close analysis of bare noun phrases are independent of each other. In this section, we elaborate further on this dynamic and focus on issues of interpretation. We begin by shifting our attention from arguments that involve ordinary individuals to arguments that refer to kinds. There are two ways of referring to kinds in English. To illustrate, we consider predicates that can only apply to a species, not to members of the species (Dayal 2004, Krifka et al. 1995):

- (9a) The dinosaur/*Dinosaur is extinct.
 (9b) Dinosaurs/#The dinosaurs are extinct.

We can see that reference to kinds is sensitive to number specification on the noun. Bare singulars are ungrammatical and definite plurals are unacceptable on the intended reading.⁵ We also see

⁵The definite plural has a taxonomic reading in which all the subspecies are referred to (see Dayal 2004).

that the determiner used to refer to kinds is the same one used to refer to ordinary individuals. We return to this paradigm in the sections below, but what is clear is that the ontology of individuals must include abstract kind-level individuals, as noted early on by Carlson (1977) in his landmark discussion of English bare plurals. It is furthermore clear that while number distinctions do not interfere with reference to kinds, singular and plural kind terms have distinct grammatical profiles.

Paradigm 9 also serves to highlight the three operations from the Partee triangle that are specifically relevant to the interpretation of bare noun phrases. The first is *iota*, discussed in relation to ordinary definites in Section 1.2 as the meaning of English *the*. The existence of definite generics raises the question of whether *iota* is also involved in singular kind formation or whether *the* is ambiguous (for arguments in favor of the first option, see Dayal 2004). The second operation is involved in plural kind formation, which in the neo-Carlsonian approach of Chierchia (1998) is defined as the intensional counterpart of *iota*; this operation identifies for each possible world the maximal individual whose parts are the instantiations of the kind at that world. The third operation is the \exists type shift, which takes a property and creates a generalized quantifier. This operation becomes relevant in discussing differences between the indefinite readings of bare plurals and regular indefinites.

Related to kind-level readings, but distinct from them, are generic readings of bare plurals. Such readings are distinct in that indefinites can also participate in them. This characteristic sets them apart from kind-level statements that do not allow indefinites, except under a taxonomic reading, where the reference is to subkinds. Examples 10a–c show a quasi-universal quantification over lions regardless of the form of the noun phrase:

- (10a) Lions are ferocious animals.
- (10b) The lion is a ferocious animal.
- (10c) A lion is a ferocious animal.

Such readings are, of course, dependent on the aspectual specification on the verb. It is also worth noting that bare plurals in generic statements need not have universal force. As discussed by Krifka et al. (1995), example 11a can have the meaning of example 11b, where *typhoons* has universal-like force, or it can have the meaning of example 11c, where *typhoons* has existential force:

- (11a) Typhoons arise in this part of the Pacific.
- (11b) It is generally true of typhoons that they arise in this part of the Pacific.
- (11c) It is generally true of this part of the Pacific that typhoons arise in it.

Although the potential for existential readings is clear in episodic statements, Carlson (1977) argued that bare plurals and indefinites are semantically distinct. He presented a range of empirical evidence to establish this point:

- (12a) Miles wants to meet policemen/some policemen.
- (12b) Miles killed rabbits/#some rabbits for two days.
- (12c) Buildings/#Some buildings are burning in Berlin and in Amsterdam.

While example 12a with an indefinite has two readings, a specific and a nonspecific reading of *policemen*, the bare plural has only the nonspecific reading (for a potential counterexample, see Kratzer 1980; for responses, see Carlson 1996 and Van Geenhoven 1998). Examples 12b,c are even more significant because the bare plurals have readings that the indefinites do not. With bare plurals, different rabbits are killed for each occasion of killing within the two-day interval, and different buildings burn in the two cities. With regular indefinites, instead, the same rabbits

and buildings are implicated, which leads to pragmatically implausible readings. On the basis of such facts, Carlson claimed an independent status for bare plurals as names of kinds and argued that bare plurals are always kind terms, even in statements with predicates that apply to normal individuals.

The special scope property of bare plurals is derived in the neo-Carlsonian theory of Chierchia (1998) through a set of rules that form kind terms from properties and allow access to their instantiations. The kind-forming operator *nom* in definition 13a takes a property-denoting noun phrase, a plural count noun or a mass noun, and turns it into a kind-denoting entity if the entities in the property set have sufficiently regular behavior across time and space. The reverse operation *pred* in definition 13b takes a kind-denoting entity and returns the set of all individuals, singular or plural, that instantiate the kind at a particular time and place. In episodic sentences with predicates that apply to ordinary individuals rather than to kinds (e.g., *bark* as opposed to *be extinct*), Derived Kind Predication (DKP), given in rule 13c, provides existential binding over the instantiation set at the level of the predicate:

- (13a) *nom*: For any property P and world/situation s , ${}^{\circ}P = \lambda s \iota P_s$, if $\lambda s \iota P_s$ is in K , undefined otherwise, where P_s is the extension of P in s .
(Chierchia 1998, p. 351)
- (13b) *pred* (${}^{\circ}$): $\lambda d_{\langle s, e \rangle} \{ \lambda x [x \leq d_s]$ if d_s is defined, λx [FALSE] otherwise}, where d_s is the plural individual that comprises all of the atomic instantiations of the kind.
(Chierchia 1998, p. 350)
- (13c) DKP: If P applies to objects and k denotes a kind, then $P(k) = \exists x [\cup k(x) \wedge P(x)]$.
(Chierchia 1998, p. 364)

To summarize, bare plurals can always take low scope because they are entity-type and, when required, can make available the instantiations of the kind to serve as arguments of predicates. The existential binding that comes with DKP is guaranteed to take scope below any other operator, which is why indefinite bare plurals display narrowest-scope readings. Almost everything we have said about bare plurals applies also to bare mass nouns: They refer to kinds and have kind-based, narrowest-scope indefinite readings.

The final relevant type shift is \exists , which is the meaning associated with the indefinite determiner and is, in effect, Montague's (1973) existential generalized quantifier: $\lambda P_{\langle e, t \rangle} \lambda Q_{\langle e, t \rangle} \exists x [P(x) \wedge Q(x)]$. The indefinite article denotes the set of properties Q that include some member of the common noun property P . Such \exists -shifted indefinites have two signature properties: They are generalized quantifiers that are sometimes prevented from taking scope lower down in the verbal spine, and they are able to permute scopally with other scope-bearing elements. These properties explain the differences between indefinite bare plurals/bare mass nouns and overt indefinites discovered by Carlson (1977).

We emphasize that the view that type shifts are too unrestricted to be explanatory overlooks the almost-parallel issues raised by the uniform DP hypothesis. The distinction between ordinary indefinites and bare plurals argued for by Carlson (1977) has to be captured regardless of whether bare noun phrases are analyzed as NPs that type-shift covertly or as DPs that have a null determiner. Taking the interface perspective seriously necessitates a more nuanced understanding of the two possible options for noun phrases that have no overt determiner.

2. ARGUMENTAL BARE NOMINALS

This section deals with cross-linguistic variation regarding bare noun phrases in argument positions, primarily from the neo-Carlsonian perspective outlined in Section 1. It elaborates

on semantic as well as syntactic aspects of this variation and presents some of the theoretical explanations that have been given for the observed behavior of bare noun phrases. A discussion of these issues from a broader typological perspective is deferred to Section 4.

2.1. Bare Noun Phrases and Definiteness

There are many differences in the internal structure of noun phrases across languages, but we can focus on two factors to provide a broad classification. One such factor is the presence of overt definite and indefinite determiners; the other is the distinction between singular and plural in the domain of conceptually count nouns. Many languages do not have the equivalent of definite and/or indefinite determiners, and many languages do not mark number in noun phrases. Here we start by comparing the readings available for bare noun phrases in English, Mandarin, and Hindi—exemplars of languages with and without determiners. Mandarin and Hindi both lack determiners but differ with respect to number distinctions within noun phrases. Mandarin does not have number distinctions, while Hindi does.

Yang (2001), in a systematic study following the neo-Carlsonian approach of Chierchia (1998), identified that Mandarin bare noun phrases have the same three readings that Carlson identified for English bare plurals: kind, generic, and narrowest-scope indefinite readings. Dayal (1992, 1999, 2004) identified that Hindi bare plurals have the same readings. Furthermore, in both languages, bare noun phrases have additional definite readings that are not available to English bare plurals. Yang and Dayal both drew on Chierchia's (1998) blocking principle, which was designed specifically to account for this aspect of cross-linguistic variation:⁶

- (14) Blocking principle (“type shifting as last resort”): For any type-shifting operation τ and any $X: * \tau(X)$ if there is a determiner D such that for any set X in its domain, $D(X) = \tau(X)$. (Chierchia 1998, p. 360)

While the blocking principle straightforwardly accounts for the core facts, there are some interesting wrinkles that have emerged in the course of research in this area over the last 20 years.

While it is true that English bare plurals cannot be interpreted anaphorically, there are contexts where they seem to be in free variation with definite plurals. One such instance is in example 15a, which comes from Condoravdi (1997):

- (15a) There was a ghost on campus. Students/The students were afraid.
(15b) The monument was impressive. #Stones/The stones were black and shiny.

Does this variation go against the blocking principle? Typically, these cases seem to involve bridging contexts, as in example 15a, where *students/the students* in the second sentence is linked to *campus* in the first. Such uses, also known as associative uses, present a complex picture. Dayal (2013) used sentences like those in example 15b to establish restrictions on such readings and showed that there are special properties that account for cases like example 15 but preserve the basic force of the blocking principle.

Another potential challenge to the blocking principle comes from Nuosu Yi, a Sino-Tibetan language spoken in southern Sichuan and northern Yunnan, China. Jiang (2012, 2018) noted that

⁶Blocking has been invoked as a general principle in the grammar of natural language, typically in relation to morphology and its interface with syntax (see, e.g., Kiparsky 2005, and references therein). In its purest form, blocking should prevent free variation between two competing alternatives, but such pure distinctions are not always attested (for relevant examples, see Dryer 2014).

Yi is like Mandarin in not marking number distinctions and in having a robust classifier system but that it differs from Mandarin in having a definite determiner:

- (16) *si-bni ma* sini sse-vo ma i-go nyi, *si-bni / si-bni ma su* jji nra.
 girl CL and boy CL room sit, girl girl CL the very beautiful
 'A girl and a boy are sitting in the room, the girl is very pretty.'

Jiang argued that, appearances notwithstanding, the bare noun and the definite do not compete. This argument follows those of Dayal (2011a) and Trinh (2011) in taking the definite reading of kind terms to be the extension of the kind at an index $e^K(s)$ —namely, the maximal singular or plural individual that instantiates the kind. This makes the bare nominal a number-neutral definite, which can be used with singular or plural antecedents. The definite determiner, instead, encodes iota; this encoding is a type shift from $\langle e, t \rangle$ to $\langle e \rangle$. Going from type e^K to $\langle e, t \rangle$ requires the presence of a classifier (CL). The resulting term is then effectively singular and therefore sensitive to the singular–plural specification of its antecedent.

Bangla, an Indo-Aryan language spoken in South Asia, is another language that does not have definite determiners; it presents a different kind of situation with respect to bare NPs and definiteness. Dayal (2012, 2014), partly responding to earlier work by Bhattacharya (1999), argued that the variation between [Numeral Classifier Noun] and [Noun Classifier Numeral] orders does not represent a nonspecific versus specific reading but, rather, an indefinite (specific or nonspecific) versus a definite reading:

- (17a) Tin Te c^hatro eSe c^hilo. du To c^hatro boSlo.
 three CL student came two CL student sat
 (17b) Tin Te c^hatro eSe c^hilo. #c^hatro du To boSlo.
 three CL student came student two CL sat
 'Three students came. Two (of the) students sat down.'

Dayal's approach follows that of Bhattacharya, however, in the syntactic derivation of the definite reading via NP→DP movement. Similar strategies have been adopted in other recent work, such as studies by Biswas (2016), Chacón (2012), and Syed & Simpson (2017). We may take Bangla in this respect to be like Cantonese (see Cheng & Sybesma 1999). While there may be no definite determiner in the language, there is a strong D that projects and attracts NP to its specifier to achieve definiteness. Again, in the interests of space, we cannot go into the details of the semantic derivations involved, but we note that the blocking principle is not directly implicated in this kind of situation. We may ask, of course, why the bare nominal is unable to have definite readings through the same mechanisms by which bare nominals in other determiner-less languages are able to. This remains an open question; for possible lines of inquiry, readers are referred to the articles mentioned in this discussion.

We end this section by noting that bare noun phrases are known to have distinct syntactic structures. They may, for example, have null determiners that are in need of syntactic licensing. This arguably is the case in Romance languages where bare plurals are only happily available in direct object positions. One exception is French, which does not allow bare plurals, presumably because it lacks a null determiner. Bare plurals may also be simple NPs that can occur freely in any position as in English, Hindi, or Mandarin. No matter what the morphosyntactic form may be, definite readings are blocked for bare noun phrases if there is a lexical definite determiner in the language. Cases like Bangla and Cantonese are interesting because kind-denoting bare noun phrases are unable to have definite readings by simply using the extensionalization option; this limitation suggests that the presence of a D projection is in itself an inhibiting factor.

2.2. Bare Noun Phrases and Indefiniteness

It is generally accepted that bare noun phrases in languages that do not have determiners are ambiguous between definite and indefinite readings. One way of thinking about this ambiguity is within the competition view of definites and indefinites (Hawkins 1991). As Heim (2011) showed, definites are felicitous in only a subset of the contexts in which indefinites can be used because definites have a presupposition of uniqueness. Thus, indefinites are blocked when the common ground establishes the uniqueness of the set denoted by the noun. Heim speculated that in a language that does not have determiners, bare noun phrases should be acceptable in all contexts—those in which English would use a definite and those in which English would use an indefinite. As discussed in Section 2.1, the claim that bare noun phrases are definite does hold up, even in languages where some shift to D is involved in deriving this reading. We now turn to the other half of the claim—that bare noun phrases also have indefinite readings—and show that this is not the case.

In discussing Mandarin and Hindi in Section 2.1, we note that bare noun phrases have only narrowest-scope readings. Here we provide two examples:

- (18a) Yuehan zai-zhao yisheng.
John be-looking-for doctor
'John is looking for doctors.'
(Yang 2001, p. 26)
- (18b) puure din kamre meN cuuhe ghuste rahe.
whole day room in mice enter-IMP PROG
'The whole day (different) mice kept entering the room.'
(Dayal 2011b)

Mandarin bare nouns (example 18a) do not have a wide-scope/specific indefinite reading; they only have a narrow-scope reading. They also have a definite reading, but that is not relevant to the current point. Hindi (example 18b) demonstrates the narrowest-scope property of bare plurals. An overt indefinite, the equivalent of *some mice*, would not have this reading. These are exactly the properties that distinguish English bare plurals from English indefinites. Thus, at the empirical level, it is clear that bare noun phrases in determiner-less languages are not bona fide indefinites.

One potential explanation is that the indefinite reading is blocked by the presence of the number one—that is, appearances notwithstanding, such languages do have an indefinite determiner. But there are two diagnostics that separate the numeral from the indefinite article, as noted by Chierchia (1998). The numeral does not allow neutral narrow scope with respect to negation, and it does not allow generic readings. We illustrate with English:

- (19a) I didn't read a/one book.
(19b) A/One cow eats grass.

With the indefinite determiner, example 19a can mean *I didn't read any book*, but with the numeral, it can have either a wide-scope indefinite reading (*There is a book I didn't read*) or an emphatic narrow-scope reading (*I didn't read a single book*). Similarly, the numeral in example 19b does not lend itself to a reading where the statement is about cows in general, while the indefinite article does.⁷

⁷Of course, there is no ban on numerals participating in generic statements. An anonymous reviewer provides the following: One gardener is too little to take care of a Scottish castle. What is relevant here is the cardinality expressed by the numeral.

We thus conclude that the effect is not due to the blocking principle. Instead, we appeal to a theory of ranked type shifts that was originally advanced by Chierchia (1998) but revised by Dayal (2004) to capture the unambiguity of bare noun phrases:

$$(20) \quad \{\text{nom, iota}\} > \exists$$

On this view, covert type shifts are not equally available. Rather, the two that do not involve overt quantification are simpler and are therefore favored. Given schema 20, it is predicted that the \exists type shift will never become available in determiner-less languages since iota will always outrank it (for cases that argue for eliminating \exists from the set of type shifts, see Dayal 2013).

Before concluding this section, we would like to point out some distinctions that bear on number. We use a Hindi example, although the same point has been shown to hold in Turkish (Sağ 2019) and other languages. Dayal (2011b) showed that a variant of example 18b in Hindi with a bare singular does not have a differentiated scope reading. That is, there is no kind-based, narrow-scope indefinite reading available. This follows if bare singular kind terms are conceptually plural but grammatically singular, just like *team* or *bunch* is in the regular domain. One way to test this property is by using the following minimal pair in English:

(21a) *The team/*The dog hates each other.

(21b) The team members/dogs hate each other.

Languages that do not mark number seem to fall in line with bare plural kind terms rather than definite singular kind terms in this respect. We turn to such languages in the next section.

2.3. Bare Noun Phrases and Non-Number-Marking Languages

The status of bare noun phrases in languages that do not have determiners and do not mark number has been a matter of much debate. Chierchia (1998) discussed this issue in terms of the Nominal Mapping Parameter, which classifies languages along two dimensions: [+/-pred] and [+/-arg] (mnemonic for predicative and argumental, respectively). Briefly, a [+pred] language allows predicative NPs, which can serve as arguments to determiners; a [+arg] language allows argumental NPs, which can then appear in argument position without the benefit of a D-level projection. The languages we are now considering are posited to be [-pred, +arg]. On this view, NPs denote kind individuals (e^K), and to denote at the level that can combine with expressions in D (i.e., to denote at the predicative level), a higher structure such as a classifier phrase has to be projected. Bare nominals in Mandarin, for example, can serve freely as arguments but need classifiers to combine with numerals: *yi * (ben) shu* 'one CL book.' This is analogous to the requirement for measure phrases with mass nouns, as in English *two *(pieces of) furniture/two *(cups) milk*.

Chierchia's (1998) categorization of [-pred, +arg] languages as those in which every (lexical) noun is mass-like, in contrast to mass/count [+pred, +/-arg] languages, has to be understood against the background of his general view of how number morphology interacts with the mass-count distinction. A count noun denotes a set of atomic individuals. Pluralization uses sum formation and yields the set of pluralities built out of atoms. Mass nouns, in contrast, denote the set of singularities and pluralities in an undifferentiated manner. The atoms for nouns like *milk* are not accessible to speakers without contextual support, while the atoms for nouns like *furniture* are conceptually on par with atoms for count nouns like *chair*. The difference is that the atoms for *furniture* can range over different subtypes of furniture (e.g., *chair*; *table*). Nouns like *milk* seem to be mass in all languages, while nouns like *furniture* are subject to cross-linguistic variation.

If counting requires a differentiated level of atomic individuals, numerals are predicted to combine directly with count nouns but not mass nouns unless measure phrases are there to make the atoms salient. It is in this sense that Chierchia (1998, p. 355), citing Cheng & Sybesma (1998), considered all nouns in [–pred, +arg] languages to be mass: “[S]aying that all members of category NP are mass-like does not mean saying that something resembling the mass/count distinction cannot be found in such languages.” This argument fits in with his view of [–pred, +arg] languages as exclusively having mass-like nouns: If NPs denote kinds at the basic $\langle s, e \rangle$ type, turning them via pred to type $\langle e, t \rangle$ delivers sets that have the same structure as mass nouns. That is, conceptually count nouns in such languages are predicted to be like *furniture* in manifesting mass-like syntax. Chierchia took this setting of the Nominal Mapping Parameter to lead to generalized bare arguments, the extension of all nouns being mass[-like], no pluralization, and the existence of generalized classifier systems.

In the research prompted by Chierchia’s proposal, by far the most debated issues have centered around the last two generalizations: that the extension of all nouns is mass in [–pred, +arg] languages and that all such languages have generalized classifier systems. Borer (2005), for example, claimed that in all languages, the roots of all nouns are mass and need a portioning-out function to interact with the count system. This function is reflected as the projection of classifiers in languages like Chinese and as the plural inflection or the indefinite article in languages like English. Thus, Borer’s analysis predicts that classifiers, plural inflection, and the indefinite article should be in complementary distribution since they serve the same purpose. The literature on the mass–count distinction is vast, and because of space constraints, we are unable to do justice to it; for further discussion, readers are referred to Rothstein (2017) and Doetjes (2017), among others.

Cross-linguistic studies have, in fact, called into question the very notion of plurality. Languages that do not show number distinctions in the basic nominal system—that is, languages in which the bare nominal can refer both to singular and to plural entities—nevertheless have other methods to refer specifically to pluralities. All the canonical classifier languages seem to have such methods, but these methods cannot be equated with normal pluralization (see, e.g., Dayal 2014, Kurafuji 2004, Yang 1998). Then there are languages that lack number marking but do not have classifiers for any kind of noun phrase, and some other languages have classifiers only for substance nouns. These empirical discoveries in languages such as Indonesian (Chung 2000), Yudja (Lima 2014), Nez Perce (Deal 2017), and Dëne Sųłiné (Wilhelm 2008) have prompted many studies that have significantly advanced our understanding of noun phrases. Another language that has been enormously influential in shaping current views is Brazilian Portuguese, a Romance language that in addition to kind-referring singular and plural definites also allows bare singulars and bare plurals (see, e.g., Müller 2002, Munn & Schmitt 2005, Pires de Oliveira & Rothstein 2011). It would be fair to say that we have gained a more detailed picture of cross-linguistic diversity in the expression of number, but much remains to be understood.

3. NONARGUMENTAL BARE NOMINALS

In this section, we consider bare noun phrases in positions that arguably are not argument positions. Nonargumental bare noun phrases occur not only in languages that do not have lexical determiners but also in languages with robust determiner systems. Here we present some of the main issues that have been discussed in the literature on the topic of pseudoincorporation, the umbrella term that has recently been extended to include certain cases of noun phrases with overt definite determiners.

3.1. From Incorporation to Pseudoincorporation

We start by introducing a phenomenon that typically targets direct objects/internal arguments of verbs. In many languages, such noun phrases have behavior that separates them from more canonical cases of complementation. Incorporation, a term originally used to describe the morphosyntactic merger of a lexical noun representing the theme/patient argument with the verb, was extended by Massam (2001) to include noun phrases under the term pseudoincorporation. Niuean is an SVO language with obligatory V-fronting. Massam noted that in addition to the expected VSO order, there also exist sentences with VOS order but with special restrictions:

- (22) Ne inu kofe kono a Mele.
PST drink coffee bitter ABS Mele
'Mary drank bitter coffee.'

While object noun phrases in VOS clauses allow modification (as shown above), they do not allow the full range of elements that occur inside noun phrases: Determiners, case marking, relative clause modification, and number marking are unacceptable. Massam posited a pseudoincorporation structure [_{V'} V NP], with V'-fronting deriving the VOS order. The restrictions on the nominals that occur in this position follow from their being NPs rather than DPs. All other positions in the sentence allow the full range of nominal elements, which is consistent with their being DPs.

Massam's discussion of Niuean marks an important point in the study of noun phrases: It identifies a space where NPs rather than DPs can rightfully take their place in a type of complementation structure. Even though pseudoincorporation is tightly connected to the direct object position, there has not been much pressure to posit a DP structure with a null D that is lexically licensed by the verb. In fact, a DP structure has not been claimed even in Hungarian, where the pseudoincorporated noun phrase bears accusative case marking. The empirical properties of pseudoincorporation have been documented in a wide range of languages, and several plausible semantic analyses have been proposed to capture those properties. In Sections 3.2 and 3.3, we discuss properties that are specific to pseudoincorporated bare noun phrases as opposed to bare noun phrases more generally (for a discussion of weak case versus strong case—a distinction that overlaps but is not identical to the one between argumental and pseudoincorporated noun phrases—see de Hoop 1992).

3.2. Syntactic Visibility in Pseudoincorporation

A Hindi example from Dayal (2011b) illustrates the basic properties of pseudoincorporation in a language where the incorporated phrase shows a great degree of syntactic visibility—it can scramble and affect verb agreement like any argument, as in example 23:

- (23a) anu *bar bacca / bar bacce-ko sambhaaltii hai.
Anu every child every child-ACC looks-after
'Anu looks after every child.'
- (23b) anu bacca / bacce-ko sambhaaltii hai.
Anu child child-ACC looks-after
'Anu looks after (one or more) children/the child.'

Assuming that DPs cannot be incorporated, Dayal's analysis takes a quantified DP to count as a normal complement and be assigned the accusative case. Animate objects are particularly revealing because those with determiners are obligatorily case marked, as shown in example 23a. Because an animate nominal occurs without case marking only when it has no determiners (as in example 23b),

we can say with some certainty that non-case-marked animates represent instances of incorporation. Inanimate objects can certainly be incorporated, but since case marking is optional for inanimates, the evidence for incorporated inanimates is more subtle.

Among the signature properties of pseudoincorporation are the propensity for narrowest scope and number neutrality, both of which were first studied in relation to incorporation proper (Bittner 1994). We illustrate these properties in pseudoincorporation, again with reference to Hindi. In example 24a, where the animate object has no determiner and no case marking, the only possible interpretation is that Anu will not look after any children. In example 24b, the overt indefinite form leads to a wide-scope interpretation for the existential. The case-marked bare singular object has only a definite reading:

- (24a) anu *bacca* nahiiN samhaalegii.
 Anu child not will-look-after
 ‘Anu will not look after children.’
- (24b) anu *ek* *bacce-ko* / *bacce-ko* nahiiN samhaalegii.
 Anu one child-ACC child-ACC not will-look-after
 ‘Anu will not look after a particular child/the child.’

Of course, we have seen that the narrowest-scope property also holds of kind terms, so it is reasonable to treat incorporation as involving kind terms (see Van Geenhoven 1998). However, data involving number neutrality, another signature property of incorporation, show that the two phenomena are distinct:

- (25a) puure din kamre meN cuuhaa ghustaa rahaa.
 whole day room in mouse kept-entering
 ‘The whole day the mouse/a mouse (the same one) kept entering the room.’
- (25b) anu puure din cuuhaa pakaRtii rahii.
 Anu whole day mouse kept-catching
 ‘Anu kept catching mice (different ones) the whole day.’

Compare the subject bare singular in example 25a with its plural counterpart given earlier in example 18b as well as with the bare singular in object position in example 25b. Dayal (2011b) concluded that the number neutrality of bare singular terms is restricted to direct objects without case marking—that number neutrality arises from pseudoincorporation, not from within the singular term itself. She provided two pieces of empirical support for this argument.

The first involves sensitivity to aspectual specification. Hindi singular terms give rise to singularity implicatures even under incorporation unless the aspectual specification supports one of two interpretations, an iterative or a habitual interpretation. The second piece of evidence comes from Hungarian, where pseudoincorporated singular terms can function as arguments of semicollective predicates like *collect/gather* but not of arguments of pure-collective predicates like *unite/compare*. For pure-collective predicates, plural terms have to be used.

We briefly present Dayal’s (2011b) analysis before drawing some conclusions. Dayal took transitive verbs to have a pseudoincorporating version, where the NP complement of the verb serves as its modifier. The incorporating verb effectively takes a syntactic direct object and uses it to derive a more restricted verb meaning (**Figure 2**). The sentence shown in **Figure 2** is true if and only if there is an event of mouse catching with Anu as agent. An event of mouse catching entails an event of catching, with a mouse as its theme. Thus, the sentence implicates what the corresponding sentence with an existentially bound singular theme argument would—namely, that only one

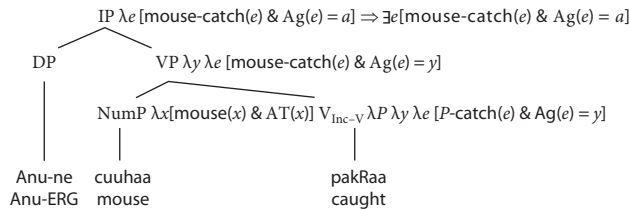


Figure 2

Pseudoincorporation interpreted. Figure adapted from Dayal (2011b) by permission from Springer Nature, copyright 2011.

mouse was caught. If the aspect supports an iterative or a habitual interpretation, the singularity implicature is relativized to each subevent, giving rise to the illusion of number neutrality.

On this view, pseudoincorporation of singular terms by pure-collective predicates is ruled out since pure-collective predicates require a plurality of individuals as their theme. While one can collect or gather objects one at a time, one can only compare or unite a plurality of objects—*leaf-gather*, *stamp-collect*, **example-compare*, *examples-compare*, **country-unite*, *countries-unite*—as evidenced by Hungarian.

This view of pseudoincorporation is important because it provides an explanation for the shifts in number sensitivity and (in)definiteness in bare singular noun phrases in languages such as Hindi and Turkish (see Sağ 2018, 2019). The key finding is that the apparent indefinite reading and the apparent number-neutral reading arise for singular terms in direct object position but not typically in subject or indirect object position (for some cases of subject incorporation, as well as restrictions on them, see Farkas & de Swart 2003; Sağ 2018, 2019). The pseudoincorporating variant of transitive verbs takes a property-level meaning (set of atomic individuals in the case of a singular term) as its first argument and either existentially closes it (see Van Geenhoven 1998) or folds it into the verbal meaning (see Dayal 2011b). In argument positions, the singular bare NP has to become an argument via a covert type shift. The system described in Section 2 blocks \exists type shift because of the presence of the higher-ranked iota, and singular kind terms are unable to provide kind-based indefinite readings. Thus, these terms are locked into the iota-based singular definite readings in constructions like example 25a.

Before we discuss cases of pseudoincorporation that do not fit the [NP V] mold, one final property is worth noting. Although it is a fairly robust phenomenon in most languages thought to have pseudoincorporation, there are also accidental gaps and restrictions more reminiscent of lexical processes. For example, Danish allows the equivalent of *to house buy* but not *to pencil buy*, and it allows *to pig slaughter* but not *to ostrich slaughter*. This somewhat elusive quality has been described as name-worthiness or conventionalized activities in the literature (see Asudeh & Mikkelsen 2000, Carlson 2006, Dayal 2011b, Klein et al. 2013, Mithun 1984, and references therein).

3.3. Pseudoincorporation and Definite Determiners

While the type of pseudoincorporation discussed in this review, with a [_V NP V] core structure, is found in many languages, it is by no means universally attested. However, there are closely related structures that seem to occur in languages not thought to have pseudoincorporation. English, for example, does not allow bare singulars generally, except in particular contexts (for an extended discussion, see Stvan 1998). Consider the following minimal pairs:

- (26a) He is in jail/in the jail.
(26b) She went to school/to the school.

The versions with and without determiners differ semantically. To be *in jail* is to be incarcerated, but to be *in the jail* is simply to be located there. In other words, while the meaning of the PP with a definite is fully compositional, the one without the determiner has an enhanced meaning that has been noted for incorporation more generally. Other languages that have been shown to evidence similar minimal pairs are German, Spanish, and, to a very limited degree, French.

To complete the paradigm, since the publication of studies by Carlson (2006) and Carlson & Sussman (2005), pseudoincorporation has also been invoked to account for weak definite readings:

- (27a) Mary took the train to Boston.
(27b) They were reading the newspaper for several hours.

Among the properties that justify this classification are the apparent number neutrality of the singular definite and restrictions on the types of combinations that lend themselves to weak indefinite readings. For example, *reading the newspaper* but not *reading the book* displays the telltale number neutrality that is diagnostic of pseudoincorporation.

Several semantic accounts of the phenomenon of weak definites as involving pseudoincorporation have been proposed; we mention three representative accounts here. Bosch & Cieschinger (2010) argued for a pragmatic account of weak definites in English and for contracted forms of prepositions and definite articles in German. They claimed that the restrictions on N + V/P combination are not lexical and that even those that appear unacceptable in out-of-the-blue contexts can be made acceptable. One of their examples is the case of *go to the desk*, which has only the standard definite reading where both Fred and Alice must go to the same desk:

- (28) Fred went to the desk and Alice did, too.

Bosch & Cieschinger (2010) discussed example 28 in the context of a game where competing teams of people carry out various problem-solving tasks and deposit a written report of their result at a desk assigned to their team. In such contexts, the weak definite reading can be seen to emerge. Bosch & Cieschinger argued that such contexts replace the default everyday conditions with new situation-specific identity conditions, making it possible to get the weak definite reading. That is, they claimed that the apparent lexical restriction on weak definite readings is a restriction on the ease with which the required concepts are available to the discourse participants. In a sense, this strategy is the same one that Dayal (2004) advocated regarding restrictions on definite singular generics. One way to think of this construction, then, is to treat the V + DP combination as denoting a concept in a taxonomy of concepts.

Aguilar-Guevara & Zwarts (2010) provided a different slant on the restrictiveness of DP incorporation. They took the weak definite to be a kind term and argued for a lexical rule operating on verbs that would make reference to instantiations of the kind. Their incorporation rule is inspired by Espinal & McNally's (2011) account of bare singulars in Spanish and Catalan, which in turn draws on Dayal's (2003) account of Hindi pseudoincorporation. Aguilar-Guevara and Zwarts's crucial condition for restricting DP incorporation is what they termed a "usage" condition related to the kind term. When a verb like *read* is lifted to take the kind term *the newspaper*, the combination meets the usage conditions associated with the latter. This does not happen when the kind term is *the calendar*, an acceptable usage for which would instead be *look up*.

Finally, Schwarz's (2014) elaboration places certain requirements that can be classified as formalizing *name-worthiness*. His approach draws on the rule of pseudoincorporation from Dayal (2011b) but makes some significant changes, adapting the neo-Carlsonian approach to events. On his view, the incorporating version of a transitive verb like *read* takes a property and creates a set of kinds at the level of events. When such a verb combines with a definite, the property is derived through applications of standard semantic operations. The result is a plural entity, which means that the uniqueness entailed by the definite is buried inside the subevents that make up the plurality. The final stage involves the introduction of the agent argument. Details aside, what we have is an event *e*, which is part of a plural event *e'*, which is part of the kind of event described by the incorporating verb and the weak definite.

To explain the distributional restrictions, Schwarz appealed to the role of kind reference and the restriction to established kinds. *Reading the book* and *sleeping in the hospital*, he argued, do not make the cut for counting as an established kind in the nominal domain. However, it is worth keeping in mind the distinction between the type of kind formation that bare plurals undergo and the type that definite generics undergo. The operations that Schwarz adopted from Chierchia apply to the first type, but then we should not get any restriction to well-established kinds (cf. Section 2.1). A closer analogy would be to the second type of kind formation, which makes reference to a taxonomy of subkinds.

As would be clear, the restrictions one sees in this domain remain to be adequately captured at the theoretical level. Another gap in theoretical studies of this topic relates to a question that we believe has not been asked: Why does a language like English allow pseudoincorporation of a bare singular NP within PP but only of full DPs within VP? And, of course, why is pseudoincorporation so much more restricted in English than in other languages that are known to have standard pseudoincorporation of the [NP V] sort?

4. DETERMINERS AND BARE NOUN PHRASES THROUGH A WIDER LENS

To focus our survey, we have taken a particular perspective on determiners and noun phrases. In concluding this review, we briefly mention some of the other perspectives that have been influential both within the theoretical literature and within the typological literature.

4.1. Other Theoretical Positions on Bare Noun Phrases

Section 2 discusses the idea that D is essential for noun phrases to have argumental status. In addition to the authors cited in that section, the following are proponents of this view: Borer (2005), Li (1998), Longobardi (1994, 2000, 2001), Park (2008), Pereltsvaig (2007), Simpson (2005), Simpson & Wu (2002), Tang (1990), Watanabe (2006), Wu (2004), and Wu & Bodomo (2009). Another view is that both options are possible in natural language, either within a single language or parameterized across languages so that some languages have NPs that become arguments via covert type shift and others have DPs with null Ds. Among the proponents of this view are, in addition to Chierchia (1998), Baker (2003), Bošković (2008), Bošković & Gajewski (2011), Cheng & Sybesma (1999), Fukui (1986), Fukui & Takano (2000), and Syed & Simpson (2017).

The study of bare singulars or noun phrases without overt number marking in languages with determiners also continues to intrigue syntacticians and semanticists. Significant discoveries have been made about a range of languages that display such noun phrases in restricted positions. These noun phrases typically display somewhat different behavior than overtly definite and indefinite

noun phrases in similar positions (e.g., with respect to anaphora⁸). The status of such noun phrases as full-blown arguments continues to be debated. These languages include Spanish (Espinal & McNally 2011), Hungarian (Farkas & de Swart 2003), Russian (Geist 2010), Albanian (Kallulli 1999), and Turkish (Sağ 2018, 2019), among others.

4.2. The Typological Perspective

While we have taken a neo-Carlsonian position in talking about interface issues related to bare nouns and determiners, there are alternative ways of carving out the domain of noun phrases with respect to (in)definiteness. A good start has been provided by Dryer (2013a,b).⁹ Dryer took the definite article to code definiteness as well as specificity. He identified this approach as a broader use of the term definite article to include affixes in addition to determiners and demonstratives (2013a). Similarly, Dryer's (2013b) definition of indefinite article is broader than in semantic studies of the sort we consider throughout this review. Dryer's definition includes morphemes that accompany a noun and signal that the noun phrase denotes something not known to the hearer. The term can thus include affixes on nouns, indefinite articles, and the number one. These studies are based on reference grammars of a large number of languages. Applying functional definitions of definiteness and indefiniteness allows for the categorization of languages for which specific syntactic and semantic analyses may not be available. The relative merits of the two approaches have been an issue of some debate; for relevant discussion, we refer the reader to Davis et al. (2014) and Dryer (2014). From our perspective, a multiplicity of approaches is to be welcomed for providing a richer empirical terrain for linguistic theories of how determiners and bare nouns function in the grammar of natural language.

5. CONCLUDING REMARKS

The variation between noun phrases with and without determiners involves issues of syntax as well as semantics. In this short survey, we have tried to outline some of the advances made in our understanding of these issues, but further work is needed. Nevertheless, significant theoretical advances in this domain have allowed us to probe for different facts, and in turn, more intriguing and more challenging patterns have emerged for the theory to tackle. We have tried to underscore two messages for continued work in this domain. One is to separate out issues that are syntactic and truly bear on having or not having a D projection with a null D from issues that are semantic in nature—namely, the operations involved in interpreting bare noun phrases. The other message, related to this last point, is the importance of recognizing reference to kinds and the differences between indefinite readings related to kind-referring terms and those related to noun phrases with indefinite articles.

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⁸A small but significant body of work shows that bare noun phrases are less able to support pronominal discourse anaphora than overt indefinites (Dayal 1999, 2011b; Dryer 2014; Farkas & de Swart 2003; Krifka & Modarresi 2016; Law & Syrett 2017; Seidel 2019; Yanovich 2007).

⁹Another important resource is Lyons's (1999) book, which provides an extensive cross-linguistic survey of the expression of definiteness and indefiniteness in the world's languages.

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Errata

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