PERSPECTIVES

Competing methods for uncovering linguistic diversity: The case of definite and indefinite articles (Commentary on Davis, Gillon, and Matthewson)*

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1. Introduction. Davis, Gillon, and Matthewson (DG&M; 2014) argue that 'hypothesis-driven fieldwork has led to a more complete and accurate picture of linguistic diversity than has been produced by methods that rely largely on extracting information from existing descriptive grammars' (p. e181). They discuss five cases to support their conclusion. In this response, I discuss only one of these cases, since this case involves two chapters of mine (Dryer 2005a,b, 2013a,b) in the *World atlas of language structures* (*WALS*; Haspelmath et al. 2005, Dryer & Haspelmath 2013).[1] These chapters deal with definite and indefinite articles among the languages of the world (though for reasons discussed in §6, I use these labels in a considerably broader sense than many would expect). I argue that the research for these two chapters uncovered types of diversity that the methodology employed by DG&M is unlikely to uncover. For reasons of space, here I am only able to summarize some of this diversity, which will be described in more detail in Dryer 2015.[2]

The primary goal of this response is to illustrate the diversity of articles that has been uncovered by the research behind my *WALS* chapters on definite and indefinite articles. I first discuss some preliminary issues as well as what appears to be a misunderstanding by DG&M about the methodology behind my *WALS* chapters (§2). I then discuss a classification of noun phrases in terms of what I call the reference hierarchy, which is necessary background both for my illustrating the diversity uncovered by the research behind my *WALS* chapters and for explaining my criteria for defining definite and indefinite articles for my purposes in *WALS* (§3). I present a basic typology of articles in §4, based on the reference hierarchy, and this provides a way of summarizing some of the diversity uncovered by my research. Next, I briefly discuss some more unusual articles (§5), providing more evidence of this diversity, and then explain in detail my use of the terms definite and indefinite for the purposes of my *WALS* chapters, and why, by my criteria, my classification of articles in the Salish languages appears to be correct (§6). In §7, I discuss the general issue of uncovering diversity, arguing that while there are clear limitations on what my methodology can uncover, there are some aspects of diversity that it is well suited for. Finally, I discuss two general methodological issues that DG&M discuss at length (§8), namely the use of falsifiable hypotheses and the need for negative evidence, and argue that in neither case is there much disagreement. First, I argue that my work also employs falsifiable hypotheses. Second, I concede that my methodology is limited in what it can accomplish precisely because of the lack of

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[1] The *WALS* atlas was originally published as a book (Haspelmath et al. 2005) and since 2008 has existed online (http://wals.info/). DG&M cite the 2011 online edition. The most recent edition is the 2013 edition, which differs in content from the 2011 edition only in correcting some errors. I cite the 2005 book edition as well, since, as discussed below, a few properties of my *WALS* chapters on definite and indefinite articles need to be understood in the context of these chapters originally being part of an atlas in book form.

[2] My interest in definiteness dates back to Dryer 1973, which was primarily about definiteness in English.

negative evidence, but argue that the evidence presented in the earlier sections illustrates how my methodology is well suited for uncovering certain kinds of diversity. My conclusion is that the optimal way to uncover diversity is to use different methodologies, and that there is no unique way to pursue diversity.

I need to be clear from the start that I in no way question the value of the work that Davis, Gillon, and Matthewson have done in this area. There is no question that there are certain kinds of diversity that detailed examination of a single language can uncover that the methodology I used in these studies, based on extracting information from existing descriptive grammars, cannot uncover. In fact, for few of the over 300 languages I examined for these two *WALS* chapters are the factors conditioning the use of articles as clear as those governing the use of determiners in Sḵwx̱wú7mesh as given by Gillon (2006) and St'át'imcets by Matthewson (1998), other than a number of European languages where the use of definite and indefinite articles is fairly well known independently of the research I did. Furthermore, their work clearly has value in documenting languages, quite apart from issues of uncovering diversity. In other words, the issue is not the relative value of their research and mine, but simply the more specific question of how good a particular methodology is at uncovering diversity.

2. DG&M'S CLAIM ABOUT MY METHODOLOGY. DG&M's argument that my methodology failed to uncover diversity in the use of articles is based on two misunderstandings. The first is one that I have to accept full responsibility for. The authors of *WALS* chapters had only two pages in which to discuss various aspects of their typology, and I was forced to discuss my criteria for identifying definite and indefinite articles rather briefly. What I did say covered most languages, but there was not sufficient space to lay out the full criteria (described in §6) that would explain my classification of all of the languages I have examined. Unfortunately, one of the few languages that would have required such a detailed explanation of my criteria was the Salish language Sḵwx̱wú7mesh, the language that DG&M say I misclassified. Once I have outlined my methodology below, I explain how my classification of Sḵwx̱wú7mesh is in fact correct. However, nobody can fault DG&M for concluding that I have misclassified it. Furthermore, I do not want to suggest that every instance of how I classify languages is accurate. There is little question that I have probably misclassified many languages, either because my source is inaccurate or misleading or because I have misinterpreted the source. I have to concede to DG&M that the methodology I use, of collecting data from grammars for a large number of languages, runs the risk of many instances of misclassification.[3]

The other misunderstanding by DG&M is that they do not seem to understand the process involved in collecting data of the sort I collected for these chapters. What I have done involves two activities. The first is the collection of data on articles from a large sample of languages, which has uncovered the diversity I describe below. The second activity involves dividing the multidimensional typological space representing differences among languages into regions and assigning languages to a number of types. Furthermore, because *WALS* is an atlas and the editors felt that its goals would be better

[3] DG&M suggest that the accuracy of *WALS* would be increased if it allowed experts on particular languages to be able to change the coding of languages in a wiki manner, as is the case with SSWL (Syntactic Structures of the World's Languages; http://sswl.railsplayground.net/). While I believe that SSWL provides a valuable complement to *WALS* and will hopefully become more important through time, our experience with *WALS* is that the vast majority of alleged errors brought to our attention by experts are not in fact errors, but that the experts have not read the defining criteria carefully. Thus, allowing experts to make changes would result, in the majority of cases, in changing correct codings to incorrect ones and would thus decrease the accuracy, not increase it.

served by maps showing a smaller number of feature values, authors were asked to classify languages into a smaller set of types than might otherwise be used. In other words, the particular way I divided the typological space was motivated in part by what served the goals of an atlas. But what I refer to as my methodology in this commentary is what was involved in the first activity, where I have uncovered the diversity to be summarized below.

DG&M's conclusion that I have misclassified a number of Salish languages largely stems from the fact that I use the terms 'definite' and 'indefinite' in a way that is considerably looser than the way these terms are generally used. But this broad usage reflects what is the most important result of my study. Namely, languages with an obligatory binary contrast between definite and indefinite articles of the sort found in English are actually relatively uncommon outside of Europe (and the Middle East).[4] Most languages that have articles that code meanings within the general semantic domain of definiteness or indefiniteness (in a sense to be explained in §4) exhibit a distribution that is clearly different from that of the definite and indefinite articles in English and many other European languages. In particular, most languages that have articles restricted to what would normally be considered definite contexts use them in only a subset of the contexts in which English would use a definite article. My data on this is not organized in a way that makes it easy to cite exact numbers, but insofar as I can estimate, I would say that in perhaps only about 10% to 20% of languages with articles that are restricted to definite contexts do these articles occur in most of the contexts where English would require a definite article. Examples of languages where there is an article that is restricted to but not obligatory in definite contexts, excluding instances of articles where my source gives some indication as to how they are restricted, include Busa (Wedekind 1972), Mongsen Ao (Coupe 2007), Loniu (Hamel 1994), Alamblak (Bruce 1984), Maricopa (Gordon 1986), Chontal Maya (Knowles 1984), and Lokono Dian Arawak (Pet 1987).[5]

Similar comments apply to indefinites. In other words, most languages that have two articles, one restricted to definites and one restricted to indefinites, distinguish three categories formally: those marked definite, those marked indefinite, and those not marked as definite or indefinite. And in most languages with one article, say an article that is restricted to definites, this article does not occur in all definite noun phrases, so the absence of an article does not mean that the noun phrase is indefinite.

For the purposes of this response and of my *WALS* chapters on definite and indefinite articles, I use the term 'article' in a somewhat nonstandard sense, one that is more semantic than common uses of the term. Specifically, although I restrict it to words or morphemes that occur in noun phrases, I otherwise make no assumptions as to the syntactic status of the words or morphemes in question. Namely, they must code something in the general semantic domain of definiteness or indefiniteness (in a sense to be explained in §4). In some languages, they appear to be affixes rather than separate words and thus are not articles (or determiners) in any syntactic sense.

I do, however, exclude other sorts of words that are inherently definite because of the nature of their more specific meaning. The most obvious type of word of this sort is demonstratives. My criteria for whether something is a demonstrative is that it have one of two properties: (i) it involves some sort of contrast in spatial distance, usually con-

[4] Note that for a language to have an obligatory definite article does not exclude the possibility that the definite article is absent from noun phrases containing other indications of its definiteness, like a demonstrative or a possessor.

[5] Note that some of the languages and sources I cite in this paper are not reflected in my current *WALS* chapters; all of my current *WALS* chapters simply reflect a stage in an ongoing project.

trasting proximal with one or more spatial distal categories; or (ii) its basic use is exophoric, referring to something in the shared perceptual space of the speaker and hearer. However, if one of the demonstratives (almost always a distal one) is widely used anaphorically, I do treat that as a definite article, though in my *WALS* chapter I separate these out from definite articles that are distinct in form from the demonstratives. I thus do not count something as a definite article if it involves some sort of distal contrast, unless the distal contrast is used or can be used to distinguish two anaphoric uses, where one is used for very recent mentions, the other for mentions further back in the discourse (see more on this below). This is particularly relevant to my response to DG&M, since I do not classify some Salish languages as having definite articles because the words in question appear to involve some sort of spatial distal contrast.

My notion of article appears to be similar to DG&M's notion of determiner. I do not use the term 'determiner' since for many linguists it is understood to include demonstratives as well. DG&M's notion of determiner ('we assume that determiners are elements that introduce argument noun phrases and cannot occur on their own (in contrast to demonstratives)', p. e200) differs from my notion of article in three respects. First, my notion of article excludes adnominal demonstratives that are different in form from pronominal demonstratives (Diessel 2013) and that therefore cannot occur on their own. Second, my notion includes adnominal words coding something like definiteness that also function as third-person pronouns (Dryer 1989). And third, my notion of article includes words that do not introduce argument noun phrases, but occur elsewhere in the noun phrase, most commonly the end, as in Abui (Kratochvíl 2007), Busa (Wedekind 1972), or Maricopa (Gordon 1986) (though I suspect that DG&M did not really intend to exclude words that do not occur at the beginning of noun phrases).

3. The reference hierarchy. The primary goals of this commentary are to illustrate the diversity that has been uncovered by my research on articles and to explain the criteria I use for identifying definite and indefinite articles for my *WALS* chapters. Before I can do this, however, I must first discuss a classification of noun phrases that will provide the basis for a typology of articles. This classification involves five types of noun phrases that are ordered in what I call the reference hierarchy.

(1) The reference hierarchy: anaphoric definites > nonanaphoric definites > pragmatically specific indefinites > pragmatically nonspecific (but semantically specific) indefinites > semantically nonspecific indefinites

The primary factor defining the ordering of these types on the hierarchy is the following: if a language has an article that is used for more than one type of noun phrase on the hierarchy, then the set of types it is used with will be a set that is contiguous on the hierarchy. For example, the definite article in English is used with noun phrases of the first two types on the hierarchy, while the indefinite article is used with noun phrases of the last three types. A second factor is an underlying semantic or pragmatic notion that one might characterize informally as running from 'most definite' to 'least definite' and that explains why articles are used only for contiguous sets of types on the hierarchy.

The reference hierarchy is an adaptation of a similar hierarchy (or more accurately 'wheel') proposed by Givón (1978).[6] Ultimately, a more complete classification of

[6] My reference hierarchy differs from Givón's (1978) wheel of reference in distinguishing anaphoric from nonanaphoric definites and in not including generics and predicate nominals. I also use different terminology from Givón: my 'pragmatically specific indefinite' corresponds to his 'referential indefinite', my 'pragmatically nonspecific but semantically specific indefinite' corresponds to his 'referential nondefinite', and my 'semantically nonspecific' corresponds to his 'nonreferential object', except that my notion is not restricted to (grammatical) objects.

noun phrases would have to include generics and true predicate nominals, that is, nominals that function semantically as predicates, in contrast to nominal predicates in equational clauses, the former represented in English by indefinite noun phrases in predicate position (e.g. *He is a teacher*), the latter by definite noun phrases in predicate position (e.g. *He is the teacher*). True predicate nominals are most commonly coded the same way as semantically nonspecific indefinites, while generics are coded like either semantically nonspecific indefinites or nonanaphoric definites (cf. Givón 1978, 1984: 407). The reference hierarchy also does not include pronouns, since it is intended as the basis of a typology of articles, though it is clear that, if pronouns were included, they would constitute the highest position on the hierarchy.

A detailed description of the five types of noun phrases in the reference hierarchy is not possible here, but they have all been discussed elsewhere in the literature, though not always with the same labels. The first position on the hierarchy, anaphoric definites, covers definite noun phrases that refer back in the discourse, while the second position, nonanaphoric definites, covers definite noun phrases that do not, where their use is based only on shared knowledge of the speaker and hearer; the notion of anaphoric definite is close to the notion of discourse-old in the sense of Prince (1992). However, previous mention in a text does not necessarily make a definite noun phrase an instance of an anaphoric definite. For example, in languages with an article specifically marking anaphoric definites, this marker would not occur with noun phrases denoting the sun, even when there is a previous reference in the text to the sun—just as in English, one would not normally refer to the sun with the noun phrase *the aforementioned sun*, even if there were a previous reference to it; we would only do so in unusual contexts where multiple suns were involved. In other words, anaphoric definites are ones whose use is licensed by linguistic antecedents. My distinguishing anaphoric from nonanaphoric definites is motivated largely by the fact that articles coding anaphoric definites are very common among the world's languages, certainly more common than articles coding pragmatically or semantically nonspecific indefinites and probably more common than articles with a distribution close to that of either the definite or the indefinite article in English. Examples of languages with articles restricted to anaphoric definites include Garrwa (Mushin 2012), Tariana (Aikhenvald 2003), Lamang (Wolff 1983), Lampung (Walker 1976), and Araki (François 2002).

The three types of indefinites, the last three types on the reference hierarchy, are distinguished by two quite distinct notions of specificity, namely pragmatic specificity and semantic specificity. The distinction between semantically specific and nonspecific is what is probably the more familiar notion of specificity, where semantically specific noun phrases are associated with an entailment of existence (e.g. *John bought a car* entails that a car exists) and semantically nonspecific noun phrases are not (as in *John is looking for a unicorn*). The distinction between pragmatic specificity and nonspecificity is less well known, but often recognized (e.g. Givón 1978, Fodor & Sag 1982, Gernsbacher & Shroyer 1989, Enç 1991, Payne 1992:150, Gundel et al. 1993:276, Schroeder 1999:56). It is difficult to define precisely, but strongly correlates with subsequent reference: a pragmatically specific indefinite noun phrase normally introduces a participant into the discourse that is referred to again in the subsequent discourse, while a pragmatically nonspecific indefinite noun phrase normally does not. For example, if someone says *I went to a movie last night*, and then goes on to talk about the movie, then *a movie* is normally pragmatically specific. However, if someone says the same sentence but then proceeds to say nothing more about the particular movie, then *a movie* is normally pragmatically nonspecific. Note that in both cases here, *a movie* is semantically specific, since

in both cases there is an entailment that there is a movie. The use of the word *this* with indefinites in English is an example of an indefinite marker that is restricted to pragmatically specific indefinites (Prince 1981, Gernsbacher & Shroyer 1989, Gundel et al. 1993): if one starts a conversation with *I went to this movie last night*, there is an expectation that one will make subsequent reference to the particular movie.

The notion of pragmatic specificity is probably the least well known of the five notions on the reference hierarchy. But the motivation for including it is that the use of articles in many languages is clearly sensitive to such a notion; in fact, such articles are probably more common among the languages of the world than articles with distributions like that of the indefinite article in English, occurring with most indefinite noun phrases (or most singular indefinite noun phrases with count nouns). In other words, there are many languages with articles that are restricted to a subset of semantically specific indefinites, where what characterizes this subset is some sort of prominence in the discourse, a prominence that correlates strongly with subsequent mention.

Note that the reference hierarchy assumes that semantically nonspecific noun phrases are necessarily pragmatically nonspecific (even though it is possible to continue referring to something that is introduced with a semantically nonspecific noun phrase: *John is looking for a new house. It must be in the city and it must be at least eighty years old*). The basis for this assumption is that articles that code pragmatic specificity appear never to occur with semantically nonspecific noun phrases.[7]

4. A BASIC TYPOLOGY OF ARTICLES. In this section, I lay out a basic typology of articles that emerges from examining articles in many languages, a typology that is defined in terms of the reference hierarchy. This has two purposes. One is that it illustrates the diversity that the research for my *WALS* chapters uncovered. The other is that this typology is necessary background for explaining how I use the terms 'definite' and 'indefinite' for the purposes of my *WALS* chapters, as discussed in §6 below.

As noted above, the primary factor defining the order on the reference hierarchy is the claim that if an article in some language can be used with more than one of the five types on the hierarchy, then the set of types it can be used with will be contiguous on the hierarchy. What this means is that the set of possible articles is claimed to be those given in Table 1.

Table 1 should be interpreted as follows. Each of the columns represents one of the five types of noun phrases represented in the reference hierarchy.[8] Each of the rows represents one of the types of articles that is possible if the set of noun phrase types that an article can occur with must be a contiguous set of types on the reference hierarchy.[9] For each type of article, the horizontal black lines represent the section of the reference hi-

[7] There are some instances of formally definite noun phrases in English that might be considered nonspecific. For example, some instances of weak definites (Carlson & Sussman 2005), such as *the radio* in *Everyone heard about it on the radio*, share properties with nonspecific noun phrases. I believe, however, on the basis of what I have observed about how definite articles are used in texts for other languages, that such noun phrases would rarely be marked as definite in other languages. I suspect that this use of the definite article in English is related to the fact that English can use the definite article to mark generic noun phrases, and I would predict that we would never find noun phrases like this marked definite in languages that do not use the definite article with generics.

[8] Using the abbreviations for the types of noun phrases indicated in the top row of the table, the reference hierarchy can be restated as AD > ND > PSI > PNI > SNI.

[9] Informal characterizations of some of the types of articles, corresponding to the lines in Table 1, are definite for AD + ND, semantically specific indefinite for PSI + PNI, pragmatically nonspecific for PNI + SNI, pragmatically specific for AD + ND + PSI, indefinite for PSI + PNI + SNI, semantically specific for AD + ND + PSI + PNI, and discourse-new (or nonanaphoric) for ND + PSI + PNI + SNI.

erarchy with which that article occurs. An example of a language with an article of that type is given above the horizontal black line.[10]

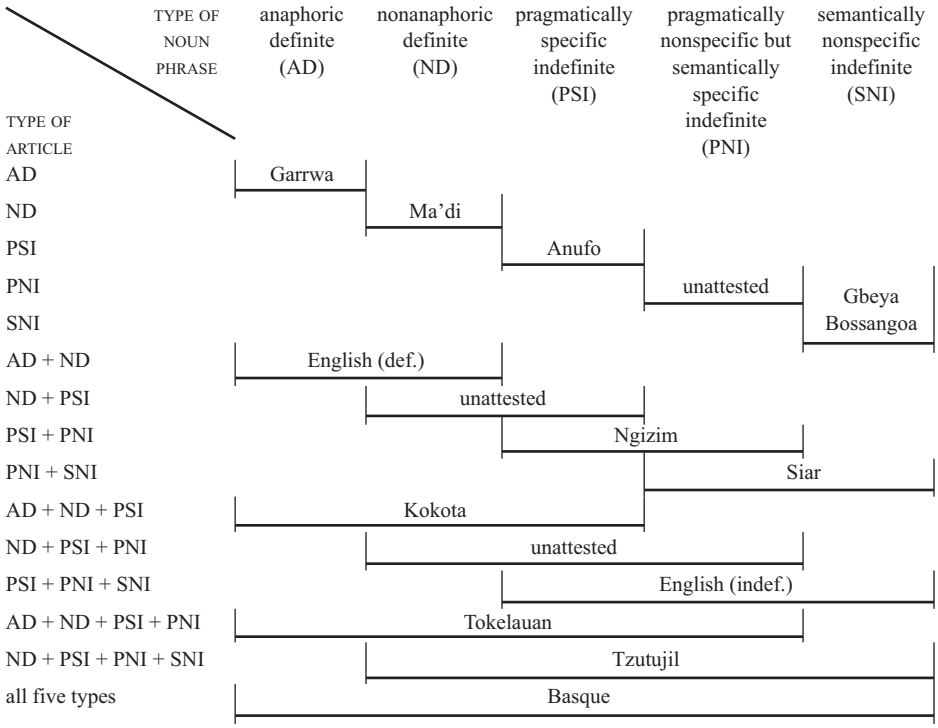

TABLE 1. A preliminary typology of articles.

A number of comments are in order. The first and most important one is that each of the types in Table 1 includes both articles that are obligatory for the type in question and articles that are restricted to the type in question but are not obligatory for that type. There are two ways in which this situation might arise, two ways in which an article might be restricted to but not obligatory for a particular type. First, there are situations where there seems to be some definable subset of cases within a type that are treated differently from other cases; in these situations the meaning of the article will be narrower than that of the larger type. An example of this, mentioned below in §5, is an article for anaphoric definites where the previous mention is not in the immediately preceding discourse but further back. Second, there may be situations where the use of an article within a type seems to be truly optional in the sense that the apparent meaning of the article is as broad as the type, but the use versus nonuse is conditioned by intended perlocutionary effect (Austin 1962).[11] The difference between speaking with a normal volume and speaking more loudly in a particular situation because one is concerned that the hearer may not understand the intended meaning is not a difference in

[10] My sources for the languages mentioned in Table 1 are Mushin 2012 for Garrwa, Blackings & Fabb 2003 for Ma'di, Smye 2004 for Anufo, Samarin 1966 for Gbeya Bossangoa, Schuh 1972 for Ngizim, Ross 2002 for Siar, Palmer 2009 for Kokota, Hooper 1993, 1996 for Tokelauan, Dayley 1985 for Tzutujil, and Hualde & Ortiz de Urbina 2003 for Basque.

[11] There are also probably cases where both situations described here obtain, articles whose meaning is narrower than that of the broader type, but whose use is still truly optional even within the narrower meaning.

meaning, but a difference in intended perlocutionary effect. Choices conditioned by intended perlocutionary effect appear to be common with many phenomena in language, as with optional case markers, where the case marker is more likely to be used if there is a greater risk of ambiguity or misunderstanding if it is not used. The factors conditioning such optional uses of morphemes are not any more a matter of meaning than speaking more slowly or speaking more loudly. A language with a truly optional definite article would be one where the article can be used for any type of definite noun phrase, but is only used if the speaker is concerned that the intended meaning might not be conveyed if the article were not used.

Unfortunately, in most cases where it is clear that an article is not obligatory within a type, it is not clear which of the two possibilities just described obtains. In a few cases, the narrower use is described by an author, as in the special uses of articles described in §5 below. In most cases, however, it is not clear what governs the use of articles that are not obligatory within their type, whether they have narrower meaning or are truly optional. Furthermore, the vast majority of articles I have examined are in fact not obligatory within their type. Sometimes authors will say that an article is not obligatory but without further explanation, and sometimes it is only clear from examples that it is not.

It is also the case that there are many languages where my source characterizes something as an indefinite article but where all that one can determine from the source is that it is restricted to but not obligatory for indefinites. In such cases, it is possible that it is restricted to pragmatically or semantically specific indefinites, but one cannot tell. It is not possible to classify these languages into one of the types in Table 1. And one finds an analogous situation in some languages with articles that are described as definite articles, but where these articles are not obligatory with definite noun phrases. In fact, the majority of articles that I have examined cannot be classified into one of the types in Table 1, because of insufficient data.

One might question the inclusion of the last type in Table 1, articles that can be used with all five types of noun phrases on the hierarchy. And certainly, if an article is obligatory for all types on the reference hierarchy, then I would exclude it from consideration since my focus is on articles that have meanings related to notions like those on the reference hierarchy. My database includes data on articles that do not code anything related to the reference hierarchy (such as articles in Austronesian languages that code only the distinction between common nouns and proper nouns), but these were not considered for my *WALS* chapters on definite and indefinite articles. There are languages like Basque, however, where there is an article—usually called a definite article—that can occur with any of the five types, except for a subset of semantically nonspecific noun phrases (Hualde & Ortiz de Urbina 2003:119–20).[12]

There are three types in Table 1 that are not attested in my data. It is not clear whether these are accidental gaps. The first unattested type is articles that specifically code pragmatically nonspecific but semantically specific indefinites. The absence of such articles in my data reflects a more general property of articles in my data: I am not aware of any language where both notions of specificity are relevant to articles in the language,

[12] When I characterize articles with meanings in the general semantic domain of definiteness and indefiniteness, what I mean is that their meaning conveys something in terms of the notions in the reference hierarchy. For example, the so-called definite article in Basque cannot be used for a subset of semantically nonspecific indefinites, namely those within the scope of negation, and thus has a meaning in the general semantic domain of definiteness and indefiniteness (Hualde & Ortiz de Urbina 2003). In other words, the Basque definite article, when used within the syntactic scope of negation, must be interpreted as semantically specific.

where the distinction between pragmatically specific and nonspecific is relevant to the use of one article, but the distinction between semantically specific and nonspecific is relevant to the use of another article.

The other two unattested types both involve combinations of nonanaphoric definites with different subsets of indefinites, but ones that do not include anaphoric definites. In fact, apart from articles that are used only with nonanaphoric definite noun phrases, my data includes only one language with an article that is used with nonanaphoric but not with anaphoric definites, namely Tzutujil.[13] Furthermore, in all of the languages in my data where there is an article used specifically for nonanaphoric definites, there is another article that is used either for specifically anaphoric definites (e.g. Lampung; Walker 1976) or for definites in general (e.g. Araki; François 2002), where in the latter case nonanaphoric definites occur with either the nonanaphoric definite article or the general definite article and it is not clear what conditions this choice.

The set of types in Table 1 that are attested represents one example of the sort of diversity uncovered by my *WALS* research; it is not clear from the work of DG&M whether they are aware of this particular sort of diversity.

5. Special uses of articles. The typology in Table 1 summarizes the basic findings of the research behind my *WALS* chapters on definite and indefinite articles, although I believe that the most important finding of this research is the fact that articles in most languages are not obligatory within any of these types. However, there is additional diversity that I have uncovered that involves idiosyncratic articles in various languages. In this section, I describe six of these cases briefly. All six involve anaphoric definites.

- In addition to languages with articles that specifically code anaphoric definites, there are languages that have more than one such article, where a distinction is made between more recent mentions and more distant mentions in the same discourse (e.g. Ma'di; Blackings & Fabb 2003).
- In Yapese (Ballantyne 2005), there is an article that codes anaphoric definites but can also be used for entities that have not been explicitly mentioned but are highly accessible in the discourse context, in the sense of being on the edge of the hearer's consciousness, entities that are inferable (in the sense of Prince 1992) from other entities mentioned in the preceding discourse, such as *the door* in Prince's example *He passed by the Bastille and the door was painted purple*. This article in Yapese apparently cannot be used with nonanaphoric definites that are not highly accessible in this sense.
- In Oksapmin (Loughnane 2009), there is an article that marks only those anaphoric definites whose referent was introduced into the discourse only fairly recently. (This article contrasts with an article for nonanaphoric definites, an article that appears to be possible with any definite noun phrase, and an indefinite article.)
- In Biak (van den Heuvel 2006), there is an article that can be used for anaphoric definites and some nonanaphoric definites, but not for referents that are inherently unique and known to everyone, like the moon.
- In Epena Pedee (Harms 1994), there are two articles for anaphoric definites, one marking referents that are particularly important in the discourse and one that appears to be possible with anaphoric definites in general.

[13] The characterization of Tzutujil by Dayley (1985:255) implies that what he calls the indefinite article can be used for nonanaphoric definites as well as at least some indefinites, but it is not clear whether it can be used for all three types of indefinites, so it is not clear whether it is specifically ND + PSI + PNI + SNI rather than ND + PSI or ND + PSI + PNI. Furthermore, Tzutujil does appear to distinguish nonanaphoric definites from indefinites, in that there is a definite article that occurs alone with anaphoric definites but combines with what Dayley calls the indefinite article to mark what appears to be nonanaphoric definites.

- In Abui (Kratochvíl 2007), there are two articles for anaphoric definites, one for referents that the speaker mentioned and one for referents that the hearer mentioned.

6. Defining definite and indefinite articles for my *WALS* chapters. It is worth considering what a typology that was more fine-grained than the typology in Table 1 would look like. First, for each of the types in Table 1, it would further distinguish those articles that are obligatory within the type and those that are not. Second, it would further distinguish those that are not obligatory because they code some narrower meaning from those that are truly optional (in the sense explained above). And third, among articles that code some narrower meaning, it would distinguish different articles on the basis of what that narrower meaning is. However, only a small minority of the languages I have examined can be classified by such a fine-grained typology, because of lack of data. In fact, only a minority of the languages I have examined can be classified by the broader typology in Table 1. For many languages, one can only get a rather vague idea of what governs the use of articles.

Faced with the vague characterization of the use of articles in many sources, I developed a very broad typology, with very broad notions of definiteness and indefinite, one that has allowed me to classify articles in most languages that have them as definite or indefinite. Namely, if an article is more strongly associated with positions higher on the reference hierarchy, I treat it as a definite article, while if it is more strongly associated with positions lower on the hierarchy, I treat it as an indefinite article. More specifically, I classify articles as follows: (i) if an article is restricted to the first two types on the reference hierarchy (including cases where it is restricted to one of these two types), then it counts as a definite article; (ii) if an article is restricted to the last three types on the reference hierarchy, then it counts as an indefinite article; (iii) if a language has two articles where, in some contexts, one article is more likely to be interpreted as definite and the other as indefinite, then the first article counts as a definite and the second as an indefinite article; (iv) if an article is restricted to a set of types that includes anaphoric definites but not semantically nonspecific indefinites or some subset thereof, then it counts as a definite article. Examples of this fourth possibility include (a) pragmatically specific articles, that is, articles that occur only with definites and pragmatically specific indefinites; (b) semantically specific articles, that is, articles that occur with anything but semantically nonspecific indefinites; and (c) articles that can occur with anything except for a subset of semantically nonspecific indefinites. An apparent example of this third case is what is commonly called the definite article in Basque. Hualde and Ortiz de Urbina (2003) report that the definite article in Basque can be used for indefinites, even including indefinites within the scope of an intensional operator like 'want', but not for indefinites within the scope of negation (see also n. 12).

A second apparent example of this last possibility, of a determiner that can be used for all five types of noun phrases on the reference hierarchy but with only a subset of semantically nonspecific indefinites, is the determiner *ta* in S<u>k</u>w<u>x</u>wú7mesh, one of the Salish languages that is the focus of DG&M's discussion. As they point out, this determiner can be used not only with definites and semantically specific indefinites, but also with some semantically nonspecific indefinites, as in their example 63, glossed 'Did you buy any/the fish?' (p. e206). My reasons for classifying *ta* in S<u>k</u>w<u>x</u>wú7mesh as a definite article and for classifying a second article *kʷi* as an indefinite article are the following.[14] Kuipers (1967:138) cites contrasts such as *saˈt-šit-ka ta staˈqʷ* ... 'give him the water', with the article *ta*, and *saˈt-šit-ka kʷi staˈqʷ* 'give him (some) water', with the article *kʷi*, to illustrate the difference between the two articles. This contrast alone implies that there

[14] Gillon (2006) represents the article that Kuipers gives as *kʷi* as *kwi*.

are contexts in which a noun phrase with *ta* is more likely to be interpreted as definite and *kᵊi* is more likely to be interpreted as indefinite. Further evidence for this is provided by discussion by Gillon (2006). She notes that although *kᵊi* is not restricted to semantically nonspecific indefinites, only a nonspecific reading is possible in the context of a variety of scopal operators, such as negation and the universal quantifier (p. 119). The fact that only a nonspecific reading is possible in these contexts counts as evidence that *kᵊi* is more strongly associated with positions lower on the hierarchy. Further evidence that *ta* is more strongly associated with positions higher on the hierarchy is provided by two additional facts reported by Gillon (2006). First, although it can be used with narrow-scope readings with respect to negation, it can only be used with wide-scope readings with respect to other scopal operators, like universal quantification (p. 95). Second, Gillon notes (p. 97) that in the context given in 1, *ta míxalh* 'the bear' can only be interpreted as referring back to the bear mentioned in the preceding sentence.

(1) ... S-en men kw'élash-t ta míxalh.
NOM-1SG.SBJ just shoot-TR DET bear
'[I went hunting. I saw a bear.] I shot the bear.'

Even though *ta* can be used in certain nonspecific contexts, the fact that it cannot be used in certain other nonspecific contexts and the fact that it must be interpreted as definite in contexts like that in 1 provide sufficient evidence that it counts as a definite article in my sense.

Whether I have correctly classified Bella Coola and Comox, the two other Salish languages discussed, is less clear, but part of the issue for me is whether these languages have determiners that are neutral with respect to distance; I treat words that code a spatial distal contrast as demonstratives, not articles, as noted above. For example, I did not count the Salish language Upriver Halkomelem as having a definite article since there appears to be a distal contrast with the relevant forms. My interpretation of the discussion of Bella Coola by Davis and Saunders (1997:87–88) is that there are forms that are neutral with respect to distance. This is not obvious from their discussion, however, and if what DG&M say about Bella Coola is correct, then I have indeed misclassified it, even by my own criteria. With respect to Comox, the following quotation from DG&M provides sufficient evidence that it has a definite article in my sense: 'Hagège [1981:134] actually states that the Comox system is NOT constructed according to a definite/indefinite opposition, although he writes that the articles he glosses as "anaphoric, distal" are often used as indefinites, while the articles glossed as "anaphoric, proximal" are often used as definites' (p. e206). The two other Salish languages that DG&M discuss, St'át'imcets and Nsyílxcen, are not ones I have coded for this feature in my database.

As noted above, I was not able to fully explain my notion of definiteness and indefiniteness in my *WALS* chapters for reasons of space. What I said covered most languages. Unfortunately, Skwxwú7mesh was one of the few languages not covered by my brief explanation, where the lengthy explanation that has required much of this response would have been necessary. DG&M's conclusion that I have misclassified Skwxwú7mesh was thus perfectly justified on the basis of what I did say. Although I have to plead guilty to not being clear about my criteria, I believe I have classified Skwxwú7mesh correctly according to my criteria.

One might still object, however, to my criteria for determining whether something is a definite or indefinite article. There are actually (at least) two kinds of possible objections. The first objection might be that if I am going to classify languages according to these criteria, I ought to use terms other than 'definite' and 'indefinite'. There is a general issue in typology as to whether to use familiar terms with a meaning somewhat dif-

ferent from their familiar use or new terms. The problem with using familiar terms is that they can have misleading implications; this particular instance could be taken as a good example of that. The problem with new terms is that people often do not understand the general idea behind claims using new terms. In this case, since most of the articles I classified as definite were specifically restricted to definites and most of the articles I classified as indefinite were specifically restricted to indefinites, I felt using the familiar terms was the better option, especially because I did not have space to explain my criteria. But I am aware that there is room for disagreement as to whether my choice of terms was a good one. I should note, however, that my use is not inconsistent with the use by authors of grammatical descriptions. As noted above, what is generally called the definite article in Basque can be used for indefinites, even some semantically nonspecific indefinites. Similarly, Kuipers (1967) calls the article *ta* in Sḵwx̱wú7mesh a definite article, although it exhibits a somewhat similar distribution to the Basque definite article, at least in terms of the types on the reference hierarchy. When authors call something a definite article, they often do not mean that it has a distribution close to that of the definite article in English, just that it has a distribution that is more like that of the definite article than the indefinite article. This is similar to the way I use the terms in classifying languages for my *WALS* chapters.

The other possible objection is that, apart from my choice of terms, there is a problem with the concepts to which I apply the expressions definite article and indefinite article. DG&M might object that lumping together everything I treat as a definite article is a mistake. I should emphasize that I do not consider this notion of definiteness particularly useful beyond the needs of my *WALS* chapter; my notions of definite article and indefinite article are motivated largely because it is not easy to classify languages using more refined notions, due to the lack of data.[15] But it is also worth asking what the alternative might be. The discussion by DG&M (as well as more detailed discussion by Matthewson (1998)) might suggest an alternative typology that includes six types of articles: definite, indefinite, specific, nonspecific, indefinite specific,[16] and other (where the Salish articles would clearly fall into this last class). One reason why I did not adopt such a typology is the practical one mentioned above: I wanted a typology that would allow me to classify as many languages as possible, and, for the majority of languages I have examined, there is not clear evidence on how to classify them by this typology. One cannot assume from the fact that an article in some language is called a definite article that it is that (rather than, for example, being a specific article). For example, Saltarelli and colleagues (1988) refer to the so-called definite article in Basque as such, without apparently noting that it can be used with many types of indefinites.

Furthermore, if the objection to my typology is that it mixes together articles that are very different from each other, then one can make exactly the same objection to the above alternative typology. As discussed above, there are (at least) two different notions of specificity, namely pragmatic specificity and semantic specificity. Despite the choice

[15] Note that apart from my nonstandard use of these terms in my *WALS* chapters, I otherwise use these terms in a fairly standard sense in this commentary, as in the characterization of the typology in Table 1. Note also that my notions of definite article and indefinite article are not intended as crosslinguistic categories; rather, they are comparative concepts in the sense of Haspelmath 2010.

[16] One would need to distinguish specific from indefinite specific since there are articles that code specific in general (including definite) and articles that only mark specific indefinites. There is otherwise no need to consider other combinations of definiteness and specificity, since definites are always specific (and nonspecifics are always indefinite). The discussion by DG&M and by Matthewson (1998) seems to assume that determiners in a given language will code either definiteness or specificity, which would leave out articles that code specific indefinites; however, perhaps this was not their intention.

of labels, these differ from each other as much as they differ from definiteness. It is not clear what justification there might be for grouping these two notions together but distinguishing them from definiteness. Similarly, the difference between anaphoric definite articles and articles that can be used for both anaphoric and nonanaphoric definites is in some ways analogous to the distinction between definite articles and specific articles, in the sense that anaphoric definite noun phrases are a subset of definite noun phrases and definite noun phrases are a subset of specific noun phrases. And given the lack of information on what governs the choice of definite articles in languages where they do not occur on all definite noun phrases, there may be a great variety of different subsets of definites that would be grouped together on the alternative typology.

7. Uncovering diversity. I have attempted in this commentary to demonstrate a number of instances of diversity that the research for my *WALS* chapters on definite and indefinite articles has uncovered. However, I would not want to argue that the methodology behind those is the only or even the best way to uncover diversity. For one thing, the fact that, for most languages, the precise meaning of the article is unclear means that the picture that emerges is 'fuzzy', in the sense that it is like a satellite photo of an area of the surface of the earth, where zooming in on an area eventually leads to a blurry picture (as is the case for Google Earth for many parts of the world). A clearer picture would require detailed examination of articles in many different languages.

What the methodology behind my *WALS* chapters does allow is to give a bird's eye view of the landscape. It is not clear from DG&M's work that they are aware of the sort of diversity my study uncovered. For example, it is not clear that they are aware that languages with articles with a distribution similar to that of the definite and indefinite article in English are relatively uncommon outside of Europe, that in most languages with an article that is restricted to definite noun phrases, the article is used in fewer contexts than in English, and it is not clear that they are aware of the sort of special cases discussed above in §5. In other words, to get a clear picture of the diversity found among the world's languages, we need both crosslinguistic studies of the sort I have conducted and detailed examination of particular languages.[17]

It is also not clear how much further one can go applying my methodology to articles, given the extent to which grammatical descriptions are so often vague about how articles in particular languages are used. At most, examining more languages might uncover more types and find additional instances of types I have already found. But getting a clearer picture of exactly how languages differ in their articles requires detailed examination of particular languages.

It is also true, however, there are questions that can only be answered by the methodology of collecting data from a large number of grammatical descriptions. I originally collected data on articles in order to test the hypothesis that the order of article and noun correlates with the order of object and verb, in that article-noun order correlates with object-verb order and noun-article order correlates with verb-object order, a hypothesis that was suggested by claims that modifiers of nouns tend to precede nouns in OV languages and to follow nouns in VO languages (under the traditional view that articles

[17] DG&M are quite correct that it is often difficult to get a precise idea of the meaning of an article from a descriptive grammar; however, since I believe I first examined Kuipers's (1967) description of Sḵwx̱wú7mesh about thirty years ago, I was probably aware that the Sḵwx̱wú7mesh determiner *ta* does not code definiteness in the standard sense long before Davis, Gillon, or Matthewson were, and I was able to conclude this on the basis of Kuipers's description. In other words, for the particular case that DG&M focus on, both methodologies uncovered this fact.

modify nouns). What I found was the opposite correlation (Dryer 1989, 1992): article-noun order is found more often in VO languages and noun-article order more often in OV languages. I would not have been able to reach this conclusion without collecting data from a large number of grammatical descriptions.

8. METHODOLOGICAL ISSUES. Since the primary issues involved in this debate are methodological, there are a couple of general methodological issues raised by DG&M that bear on the particular issue of definite articles that merit some mention. These are the issues of falsifiable hypotheses and negative evidence.

While DG&M consider the issue of falsifiable hypotheses to be a central methodological issue distinguishing their methodology from mine (and others), I do not believe that this is as significant a difference as they seem to believe. For one thing, part of the process of my collecting data on articles can be construed as involving a hypothesis at any given point in time that the range of meanings of articles that I had found so far was the complete range of meanings of articles in any language, and each time I discover a language with articles that do not fit this, I am falsifying that hypothesis. Thus, both methodologies involve positing falsifiable hypotheses.

Furthermore, when looking at descriptions of individual languages, I frequently look at the characterization of an article given by the author, form a hypothesis as to the meaning and use of that article, and then examine examples and, when possible, texts to test that hypothesis. More specifically, if an author describes an article as a definite article, I then examine examples to see whether instances of that article correspond to instances of the definite article in the English sentence gloss and, if texts are available, whether the use of the article in the sentences in the text is consistent with the use of the definite article in English. Very occasionally, I find something called a definite article used in introducing an entity into a text, and if this happens more than once for a language, I decide that it probably is not really a marker of definiteness in the usual sense of this term. Far more commonly, what I find is that something that is called a definite article is frequently not used in contexts where a definite article would be required in English. In such cases, I will decide that the article has a narrower distribution than the definite article in English. In fact, my conclusion that languages with articles that occur in only a subset of the contexts where English uses the definite article are far more common than languages where there is an article with a distribution very similar to that of the English definite article is based primarily on inspection of examples, not on explicit statements in grammatical descriptions. It is very common for descriptions to refer to something as a definite article without noting that it has a narrower distribution than the definite article in English.

The one thing I cannot do using my methodology is answer questions that would require negative evidence, since grammatical descriptions rarely give evidence of that sort bearing on the meaning of articles. So DG&M are quite accurate in saying that this is a shortcoming of my methodology. For example, there are many languages with articles described as definite articles where all instances in texts provided are anaphoric; but without negative evidence I cannot know whether the article is specifically anaphoric. But I have admitted that there are clear limitations on what my methodology can achieve, that it is better suited to providing a bird's eye view of the landscape than precise characterizations of articles in individual languages, and that one of the sources of those limitations is the unavailability of negative evidence. Furthermore, it is not the case that I have any principled objection to the use of negative evidence when I work on individual languages: some of the arguments in Brown & Dryer 2008, for example, rely on negative evidence.

I do want to point out one risk associated with the particular way DG&M propose formulating initial hypotheses. The methodology DG&M advocate in the context of definite and indefinite articles is to initially assume for a language that an article codes definiteness or indefiniteness and then test this hypothesis on the basis of features of definiteness and indefiniteness discussed in the literature. Consider the hypothetical example of applying the tests that DG&M describe to an article in a language that is restricted to anaphoric definites. As far as I can see, the tests they describe would not falsify the hypothesis that this article coded definiteness. However, DG&M emphasize that they are only illustrating the sort of tests that they apply, and in fact Gillon (2006), in discussing the determiner *ta* in Sḵwx̱wú7mesh, does explicitly address the question of whether it can occur in both anaphoric and nonanaphoric definite contexts.[18] But it remains the case that the methodology, as they describe it, will only test hypotheses suggested by distinctions discussed in the literature on definiteness. Consider the more unusual articles described in §5 above. For example, there are a number of languages where there is a distinction between more recently mentioned anaphoric definites and less recently mentioned anaphoric definites. Since this is a distinction that, as far as I know, has not been discussed in the literature on definiteness, it is not clear how examining such articles in light of the notions discussed in the literature would identify this distinction, and hence it would not uncover the diversity represented by such articles. More generally, if the use of an article in a language is conditioned by some factor not discussed in the literature on definiteness, it is not clear how their methodology will discover what that factor is, and since much of the diversity of articles among the world's languages is probably due to factors that are different from those discussed in this literature, much of this diversity will remain uncovered by their methodology.

The methodology I describe above that I have used on some languages is to examine texts and see whether a particular article is used in exactly the contexts where the definite article is used in English. This methodology can also be characterized as positing an initial falsifiable hypothesis, and it is a stronger hypothesis than one based only on notions discussed in the literature on definiteness. Once that hypothesis has been falsified (as it has been for most languages I applied this to), however, the next step is to try to determine exactly what does govern the use of the article. That involves looking for patterns in the data with the goal of coming up with some hypothesis about what actually governs its use. Crucially, however, these hypotheses will be ones that come out of the data for that language, not hypotheses that one brings to a language based on English or other languages. Unfortunately, because of the fact that grammatical descriptions rarely give negative evidence bearing on the use of an article, I am not able to apply this beyond what can be decided on the basis of positive evidence. In short, neither methodology is ideally suited to answering questions about the exact use of particular articles and thus a typology of articles.

9. Conclusion. The primary goal of this response has been to illustrate the extent to which the methodology I have used for my *WALS* chapters on definite and indefinite articles has uncovered diversity, thus supporting the more general claim that this methodology is well suited to uncovering at least certain kinds of diversity. For reasons of space, I have not been able to provide evidence for my claims with the degree of detail

[18] One approach that is more in the spirit of what DG&M do would be to develop a fine-grained inventory of uses of the definite article in English (using at least distinctions of the sort made by Hawkins (1978) and Prince (1992)) and then determine for a given article whether it is possible and whether it is obligatory for noun phrases of that sort.

that I would like, which I plan to do in Dryer 2015. The amount of diversity uncovered by my methodology that has not been uncovered by that of DG&M provides clear evidence against their claim 'that hypothesis-driven fieldwork has led to a more complete and accurate picture of linguistic diversity than has been produced by methods that rely largely on extracting information from existing descriptive grammars' (p. e181). I have conceded that there are aspects of diversity that my methodology is not suited to uncovering and that their methodology is better suited for. My general conclusion is that the optimal way for linguistics, as a discipline, to uncover diversity is to pursue different methodologies, including but not limited to my methodology and the methodology employed by DG&M.

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