Pragmatic functions and lexical categories[1]

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Abstract

Much recent work has argued that the major lexical categories can be distinguished in terms of pragmatic functions (e.g., Baker 2003; Bhat 1994; Croft 2001; Hengeveld 1992). Typically, such pragmatic accounts argue that nouns distinguish themselves by referring, verbs distinguish themselves by predicating and adjectives distinguish themselves by modifying. The current article argues that such accounts are prone to two distinct sets of problems. The first set of problems arise from the definitions of the pragmatic functions that are employed in these accounts. Thus, the definitions of predication and modification that feature in such accounts are typically so similar they render attempts to distinguish verbs and adjectives in terms of them vacuous. Moreover, the definitions of all three pragmatic functions are often so vague and general that they apply with equal ease to words of all three major lexical categories. When more specific definitions are given, however, they typically exclude words from their intended category while continuing to include words from other categories. The second set of problems arise from the lack of direct evidence for the pragmatic functions. Such an absence of evidence gives rise to disputes over issues as basic as whether a given lexical category performs a given pragmatic function or not, whether there are two, three or more pragmatic functions and whether pragmatic functions are performed by words, phrases or different units altogether. It is argued that in the absence of direct evidence such basic disputes cannot be satisfactorily resolved. It is concluded that these problems are as serious as those which afflict semantic and morphosyntactic approaches to lexical categories and thus that the prospects for a coherent explanation of lexical categories remain as remote as ever.

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1. Introduction

1.1. *Pragmatic accounts of lexical categories*

Much recent work in linguistics has emphasized that morphosyntactic features cannot form the basis for crosslinguistic definitions of the lexical categories because such features are subject to a great deal of crosslinguistic variation (Anward et al. 1997: 168; Bhat 1994: 13; Croft 1991: 42; Dik 1989: 162; Hengeveld 1992: 50; Ramat 1999: 169; Sasse 1993: 647; Schachter 1985: 5). Thus, it has been observed that, while a particular morphosyntactic feature may be criterial for a particular lexical category in a large number of languages, there will typically be many other languages where the feature is not present at all. Croft (2001: 29), for instance, observes that number, gender and case marking is absent in Vietnamese and hence cannot be used as a criterion for nounhood in this language. A further problem is the existence of languages which, while not lacking the given morphosyntactic feature, apply it to multiple lexical categories. Thus, Nordlinger and Sadler (2004: 790–792) demonstrate that in languages such as Kayardild and Lardil tense and aspect marking is applied not only to verbs but also to nouns and thus that such marking cannot be used to discriminate a category of verbs in these languages. The attempt to define lexical categories in terms of morphosyntactic features is further complicated by the fact that even when languages apply the given morphosyntactic feature to the correct lexical category they will often fail to apply it to all of the words within that category. As Pullum and Huddleston (2002: 531) note, for example, while most adjectives in English are gradable, many are not (e.g., *marine*, *left*).

Recent studies have also criticized the traditional view that the lexical categories of nouns, verbs and adjectives can be defined semantically in terms of the three concepts of things, events and properties (Anward et al. 1997: 167; Bickerton 1990: 58; Carstairs-McCarthy 1999: 88–90; Fries 1952; Hopper and Thompson 1984: 705; Maratsos 1990: 1355; Newmeyer 1983: 5–11; Sapir 2004 [1921]: 94–96; but for a notable recent exception to this trend cf. Givón 1984: Ch. 3). Against the traditional view, it has been argued that any given lexical category will denote an extremely heterogeneous set of concepts. Thus, as Sasse (1993: 648) puts it, "If we take nouns as an example, it begins with the difficulty of applying the criterion of "thingness" to such immaterial entities as "sky" and ends with total confusion with regard to abstract and verbal nouns (how can we say that "drunkenness" or "swimming" are things?)". It has further been observed that concepts expressible via one lexical category can often be expressed by others. Hengeveld (1992: 49), for instance, notes that in Latin the con-

cept "white" can be expressed via a noun (e.g., *candor*), an adjective (e.g., *candida*) or a verb (e.g., *candet*). Linguists have also argued that the concepts of things, events and properties are vacuous. Along these lines, Baker (2003: 293; cf. also Lyons 1968: 318) states that "what we really mean by thing is "whatever can be referred to by a noun."" and, consequently, that "To the extent that this is true, it is circular to define noun as "a word that refers to a (person, place, or) thing."" In response to the difficulties encountered by the traditional view, alternative semantic accounts of the lexical categories have recently been developed. Such accounts are no less problematic however. Langacker (1987b), for instance, argues that a noun such as *explosion* represents an explosion as a single, atemporal image like a photograph while the verb *exploded* represents it as a series of temporally ordered images like a film. Yet Langacker (1987b: 55) admits he has no evidence for his claims and it is difficult to see how he might have obtained any. Moreover, as Nordlinger and Sadler (2004: 802) have observed, the fact that many languages mark noun phrases for tense is a problem for the claim that nouns are atemporal.

Such doubts over the viability of defining the lexical categories purely in terms of morphosyntactic or semantic features have led many linguists to develop accounts in which pragmatic functions act as the fundamental determinants of lexical categories (e.g., Anderson 1989; Baker 2003; Bhat 1994; Croft 2001: Ch. 2; Hengeveld 1992). In general, such accounts focus on the three pragmatic functions of reference, predication and modification where reference is typically defined as an act which points to an entity in the world (e.g., Cruse 1999: 305; Dik 1989: 111; Searle 1969: 26) and predication and modification are typically defined as acts which ascribe properties to an entity (e.g., Lyons 1977: 221; Ramat 1999: 166; Sasse 1987: 554). Such accounts emphasize that pragmatic functions are exhibited not by the abstract word forms within a lexicon but rather by specific word tokens occurring in actual discourse (on this point cf. in particular Hopper and Thompson 1984: 708–709).[2] Typically, such accounts argue that nouns are distinguished from words of other lexical categories by their propensity to refer, verbs are distinguished from words of other lexical categories by their propensity to predicate and adjectives are distinguished from words of other lexical categories by their propensity to modify. However, some accounts employ only the two functions of reference or predication (e.g., Anderson 1989; Baker 2003). Such accounts distinguish adjectives from nouns and verbs either by arguing that they neither refer nor predicate (e.g., Baker 2003: Ch. 4) or by arguing that they both refer and predicate (e.g., Anderson 1989: 18). Accounts may also disagree over whether the pragmatic functions are universally distributed throughout the world's languages with, for instance, Croft (1991: 51)

arguing that they are and Bhat (1994: 192) arguing that they are not. A further point of disagreement is over the definitions of the functions themselves. While most accounts define reference as the designation of an entity and modification and predication as the characterization of that entity, other accounts employ distinctive definitions. Sasse (1993: 651; cf. also Jespersen 1992 [1924]: 86), for instance, defines predication as "that operation which allows a proposition to assume a self-contained linguistic form, a sentence". Accounts also differ over whether it is words or phrases which perform the pragmatic functions. While most accounts are vague on this issue (particularly with regard to predication and modification) some accounts are explicit with regard to reference. Payne and Huddleston (2002: 400), for instance, argue that it is NPs rather than nouns which refer while Croft (2001: 258; cf. also Langacker 1991: 95) argues that both nouns and NPs refer.[3] Finally, accounts may also differ in terms of the number of lexical categories they cover. While most accounts focus exclusively on the noun, verb and adjective categories, a number of accounts also extend to cover other lexical categories such as adverbs and prepositions (e.g., Baker 2003: 230–232; Hengeveld 1992: 58).

1.2. *Prototypicality and markedness in pragmatic accounts*

Some pragmatic accounts of lexical categories claim that words of a given category will always perform the pragmatic function associated with that category (e.g., Baker 2003). However, most such accounts argue that words of a given category will not always perform the pragmatic function associated with that category. Typically, this failure of a word of a given category to perform the pragmatic function associated with its category is explained either in terms of prototypicality or markedness or some combination of the two (e.g., Bhat 1994: 13; Croft 2001: 88–90; Hengeveld 1992: 58–59; Hopper and Thompson 1984: 708–709). By applying these concepts, pragmatic accounts of lexical categories are able to distinguish between a set of prototypical words and a set of nonprototypical words. A common difficulty with such accounts is that while they specify the categories of prototypical words explicitly they often fail to specify the categories of nonprototypical words explicitly. As an example of this tendency, consider the account of lexical categories given in Croft (2001: Ch. 2). For Croft, prototypical words result from the intersection of particular semantic properties and semantic functions. Thus, for Croft (2001: 89), a prototypical noun is a word which has the semantic property of denoting an object and the pragmatic function of reference, a prototypical verb is a word which has the semantic property of denoting an action

Table 1. *Overtly marked structural coding constructions for parts of speech (Croft 2001: Table 2.3)*

	Reference	Modification	Predication
Objects	UNMARKED NOUNS	genitive, adjectivalizations, PPs on nouns	predicate nominals, copulas
Properties	de-adjectival nouns	UNMARKED ADJECTIVES	predicate adjectives, copulas
Actions	action nominals, complements, infinitives, gerunds	participles relative clauses	UNMARKED VERBS

and the pragmatic function of predication and a prototypical adjective is a word which has the semantic property of denoting a property and the pragmatic function of modification. Croft (2001: 89) further notes that prototypical words tend to be morphologically unmarked in comparison to nonprototypical words. Croft (2001: 88) expresses all of this information in a table (cf. Table 1 above).

Croft's table clearly indicates the set of prototypical words and the set of nonprototypical words. Moreover it clearly indicates the lexical category of each prototypical word. What it does not do is clearly indicate the lexical category of nonprototypical words. For instance, complements, infinitives and gerunds are clearly nonprototypical words in Croft's schema but are they nonprototypical verbs or nonprototypical nouns? Croft's table does not give us any clear answer to this question and nor, as far as I can tell, does any other part of his text.[4]

Because Croft does not provide a systematic explanation of how the category of nonprototypical words should be decided, his table can be interpreted in a number of different ways. Firstly, we could interpret the table to mean that pragmatic functions are the sole determinant of lexical category while semantic properties are the sole determinant of prototypicality. On this reading of the table, all words which refer are either prototypical or nonprototypical nouns, all words which predicate are either prototypical or nonprototypical verbs and all words which modify are either prototypical or nonprototypical adjectives. Thus, infinitives would indeed be nouns because they refer and nonprototypical nouns because they denote actions rather than objects. Clearly, one problem with such an approach is that it results in categories which contain a bizarre assortment of words. Do we really want the noun category to contain infinitives or the verb category to contain predicate nominals for instance? Such an

approach is also problematic insofar as it amounts to little more than the claim that some words refer, some words predicate and other words modify. We might doubt whether it explains nouns in terms of reference, verbs in terms of predication and adjectives in terms of modification because the classes of words it takes to be nouns, verbs and adjectives are so dissimilar to the classes of words we ordinarily take to be nouns, verbs and adjectives. Exactly the same problems arise, moreover, if we interpret the table to mean that semantic properties are the sole determinant of lexical category while pragmatic functions are the sole determinant of prototypicality. Thus, on this view the verb category would contain bizarre members such as action nominals and lead to the doubt that the approach was not so much explaining the class of verbs as the class of action words.

The table can also be interpreted to mean that the lexical category of nonprototypical words is sometimes determined by their pragmatic function and sometimes by their semantic property. Such an approach would allow us to argue that action nominals are nouns because they have the pragmatic function of reference while infinitives are verbs because they have the semantic property of denoting actions. The advantage of this approach is that it would allow us to place words in those categories we intuitively feel they belong to. Thus, it allows us to follow our intuition and assign action nominals and infinitives to distinct noun and verb categories rather than requiring us to lump them into the same category. The obvious problem with such an approach is that it is arbitrary. Clearly, if both action nominals and infinitives have the semantic property of denoting actions and the pragmatic function of reference, then an account which determines the lexical category of words purely in terms of semantic properties and pragmatic functions would have no basis for assigning action nominals and infinitives to different lexical categories. In order to be able to assign the two types of word to different categories the account would have to make use of some feature other than semantic properties or pragmatic functions. Thus, the account could argue that action nominals belong to the noun category because they possess nominal suffixes (e.g., *-tion* in *destruction*). If we modify the account in such a way, however, then it determines lexical category on the basis of morphology rather than pragmatic function and can no longer be regarded as a pragmatic account of lexical categories.

The table can also be interpreted to mean that Croft's approach only determines the lexical category of prototypical words and leaves the lexical category of nonprototypical words indeterminate. On such an interpretation, Croft's approach can determine that a word is nonprototypical but cannot also determine whether that word is a noun, verb or adjective. Such an approach would avoid the difficulties associated with the other

two interpretations of the table. Thus, on such an interpretation, Croft's approach would neither yield lexical categories with bizarre members nor would its assignment of words to categories be arbitrary. The shortcomings of such an approach are, however, obvious. In particular, such a model of lexical categories can be accused of cherry picking the words whose lexical category it seeks to explain. Moreover, we might question the value of a model of lexical categories that is unable to determine the lexical categories of most types of words. Furthermore, assigning an indeterminate category to a word may seem plausible in the case of words such as gerunds or participles that do seem to occupy a fuzzy middle ground between categories. However, such an approach is surely less plausible in the case of words situated nearer to the category prototype. Thus, such an approach would suggest that the category of de-adjectival nouns such as *whiteness* or action nominals such as *destruction* is indeterminate when it is surely more plausible to state that they belong to the noun category.

In this way, then, Croft's use of prototype theory in his model of lexical categories is problematic. Croft does not specify how the model determines the lexical category of nonprototypical words. There are three possible ways of determining the lexical category of nonprototypical words in Croft's model but all of these run into serious difficulties. Nor is Croft's account unique in this respect. Other pragmatic accounts of lexical categories such as those developed by Bhat (1994) and Hengeveld (1992) also fail to supply an explicit account of how lexical categories are assigned to nonprototypical words despite being book length treatments. Thus, Bhat (1994: 19–20) specifies a distinct set of pragmatic, semantic and syntactic properties for the noun, verb and adjective categories but fails to stipulate how many of these properties a given word must exhibit in order to be either a prototypical member or a nonprototypical member of the noun, verb and adjective categories. As a result, Bhat's model does not even allow us to state whether a word is prototypical or not. It simply allows us to state whether a given word is more or less prototypical than another word. Similarly Bhat's model allows us to state whether a word possesses more or less noun properties than another word and thus where that word is on the noun continuum. Since it specifies no thresholds, however, it does not allow us to state whether that word is a noun or not. Similarly, Hengeveld (1992: 58) states that morphologically unmarked nouns, verbs and adjectives are associated with particular pragmatic functions but is less clear about the lexical category of morphologically marked words. Thus, Hengeveld (1992: 58–59) describes *singing* in *the singing detective* as a participle and notes that it is derived from the verb *sing*. It is left unclear, however, whether a participle such as *singing* is an adjective or a

verb or some combination of the two on Hengeveld's account. If Hengeveld regards *singing* in *the singing detective* as a verb since it is derived from a verb, then this commits him to the problematic claim that *whiteness* is an adjective rather than a noun since it is derived from an adjective. If Hengeveld regards *singing* in *the singing detective* as an adjective since it has the pragmatic function of an adjective, then this commits him to the problematic claim that *London* in *the London office* is an adjective. Overall, then, it would appear that the use of concepts of prototypicality and markedness in pragmatic accounts of lexical categories give rise to a range of problems which are avoided by accounts such as Baker (2003) which do not make use of these theories.

1.3. *The structure of the current article*

While the use of pragmatic functions is widespread in contemporary discussions of lexical categories, however, there has been little in the way of sustained attempts to assess their merits. Critiques of pragmatic accounts of lexical categories tend to occur as brief asides within articles or books (e.g., Brugman 1999: 5–9; Croft 2001: 67–70). In this article, an attempt is made to investigate in depth the kinds of problems that pragmatic accounts of lexical categories give rise to. Section 2.1 assesses the use of general definitions of predication and modification (e.g., definitions which state that these functions ascribe a property to a referent) in accounts of lexical categories. It is observed that such definitions are typically so alike as to render modification and predication indistinguishable from one another. Furthermore, it is argued that these general definitions apply not only to the words within the intended lexical category but also to the words within the other major lexical categories. As such, they fail to distinguish verbs and adjectives from other each other or from other lexical categories. Section 2.2 looks at a number of alternative definitions of modification and predication which have been developed. It is observed that such definitions do render predication and modification distinct. However, it is further observed that such definitions are typically so specific that they fail to apply to all of the words within the intended lexical category. Moreover, despite their specificity, such definitions still apply to words within other lexical categories as well as their own. In both respects, such definitions fail to distinguish verbs and adjectives from each other or from other lexical categories. Section 3.1 considers reference and argues that even general definitions of this pragmatic function fail to apply to all nouns by virtue of the fact that many (indeed perhaps the majority of) nouns are nonreferential. It is also argued that words within

other major lexical categories satisfy general definitions of reference and thus that such definitions fail to distinguish nouns from other lexical categories. Section 3.2 looks at Baker's (2003) attempt to define reference in terms of a criterion of identity. It is argued that none of the series of arguments that Baker presents in support of the view that only nouns possess a criterion of identity succeeds in distinguishing nouns from other lexical categories. Section 4 looks at a number of problems which apply to all three pragmatic functions. In Section 4.1, it is observed that it is not only words and phrases which perform pragmatic functions but a whole range of other linguistic units besides. This is a problem for pragmatic accounts of lexical categories because it requires them to accept as members of lexical categories a variety of linguistic units which would not ordinarily be recognized as such. In Section 4.2, it is argued that pragmatic accounts of lexical categories cannot cope with examples of lexical categories performing not only the pragmatic function standardly assigned to them in such accounts but other functions as well. Section 4.3 argues that there is no means of determining the number of pragmatic functions and explores the consequences of this fact for pragmatic accounts of lexical categories. The article concludes by assessing the prospects for a successful pragmatic account of the lexical categories.

2. Predication and modification

2.1. *Problems associated with general definitions of predication and modification*

Many accounts of the lexical categories employ very simple and general definitions of predication. Thus, Sasse (1987: 554) defines predication as "a statement about an entity, that is, a statement which does not merely assert some fact as such but presents some fact as a property ascribed to an entity" while Lyons (1977: 148) defines a predicate as "a term which is used in combination with a name in order to give some information about the individual that the name refers to: i.e., in order to ascribe to him some property". Likewise, Dik (1989: 111) defines predication as "assigning properties and relations to . . . entities" and Croft (1991: 110) follows Searle (1969: 100) in defining predication as "the act of ascribing a property to a referred-to entity". Similarly broad definitions of modification have also been proposed. Thus, Ramat (1999: 166) states that adjectives "modify a head noun" and "ascribe a quality/property to a referent", Croft (2001: 66) states that modification "functions to enrich a referent's identity by an additional feature of the referent, denoted by the

modifier'' and Sasse (1993: 652) states that modification ''enables us to characterize individuals in terms of their properties''. One benefit of such broad definitions is that they apply to all of the words within their category. Thus, it is hard to think of a verb which cannot be characterized as ''ascribing a property to a referred-to entity''. Similarly, it is hard to think of an adjective which does not ''ascribe a quality/property to a referent''. A further benefit of such broad definitions is that they capture the similarity in the function of verbs and adjectives that has often been noted by linguists. As Bhat (1994: 44) states, for instance, ''Several linguists have emphasized the fact that adjectives are similar to verbs in denoting the property or characteristic of a given individual or object'' (cf. also Croft 1991: 131: Lyons 1977: 221).

Despite their virtues, when such broad definitions of the pragmatic functions are employed in accounts of the lexical categories, they engender a number of problems. Thus, a general definition of predication may be useful insofar as it applies to all verbs. However, such a definition is also likely to apply to some or all adjectives. While it may be difficult to think of a verb which cannot be characterized as ''ascribing a property to a referred-to entity'', for instance, it is equally difficult to think of an adjective to which this definition does not also apply. Similarly, a general definition of modification is likely to apply not only to all adjectives but also to some or all verbs. Thus, while it is difficult to think of an adjective which does not ''ascribe a quality/property to a referent'', it is also difficult to think of a verb which this definition does not also apply to. A further, related problem with such general definitions is that they are difficult to distinguish from one another. Thus, if we ''ascribe a quality/property to a referent'' in modification while predication is ''the act of ascribing a property to a referred-to entity'', it is difficult to see what the difference between the two consists in. Obviously, however, if there is no difference between predication and modification, then it is nonsensical to claim that verbs and adjectives differ because the former predicate while the latter modify. Instead the effect of such general definitions is to lump verbs and adjectives together into a single category and suggest merely that adjectives ''are similar to verbs in denoting the characteristics of objects'' (Bhat 1994: 43).

General definitions of predication and modification are problematic not only insofar as they fail to discriminate verbs and adjectives from each other but also insofar as they fail to discriminate verbs and adjectives from nouns. Most obviously, such general definitions apply to nouns when they occur in the predicative or modifying positions typically occupied by verbs and adjectives. It is commonly argued, for instance, that a noun in predicative position predicates rather than refers. Thus, Lyons

(1999: 185) states that "in *John is a doctor . . . a doctor* is not a referring expression; it predicates a description of the subject" (cf. also Huddleston 2002: 217). To preserve the view that it is verbs rather than nouns which predicate, it could be argued that in such sentences predication depends on a verbal element in the form of a copula. Such an approach struggles to account for languages such as Russian and Arabic which do not employ copulas in such sentences. It also fails to explain action nominals and gerunds. Consider, for instance, the following examples:

(1) a. *Caesar defeated the Gauls.*
b. *Caesar's defeat of the Gauls*

Clearly, the verb in (1a) predicates in the sense of ascribing a property to Caesar. Given the semantic similarity of (1a) and (1b), however, it is difficult to see how we can both maintain this of (1a) and simultaneously deny that the action nominal in (1b) predicates in the sense of ascribing a property to Caesar. Since (1b) lacks any verbal element, however, we must concede that the action nominal "defeat" is serving to predicate. Similarly, it is commonly argued that nouns serve to modify when they occur in adnominal positions typically occupied by adjectives (e.g., Pullum and Huddleston 2002: 536). Consider, for instance, the following examples:

(2) a. *a pleasant scent*
b. *a nutmeg scent*

If it is clear that the adjective *pleasant* in (2a) modifies in the sense of ascribing a property to *scent*, it is surely no less clear that the noun *nutmeg* is also modifying in just this sense. Moreover, Bhat's (1994: 127) observation that adnominal nouns often behave like adjectives in supporting degree modification (e.g., *an almost nutmeg scent*) only reinforces this parallel. Clearly, however, the view that nouns, like adjectives, can modify in the general sense of ascribing a property is a problem for the view that this definition of modification can be used to discriminate adjectives from other lexical categories such as nouns.

One response to the problems raised by the examples of (1) and (2) would be to argue that the pragmatic functions only distinguish words occurring in those syntactic positions which their lexical category is prototypically associated with (e.g., Bhat 1994: 19). On such a view, we should expect the noun *nutmeg* in (2b) to modify rather than to refer since it is occurring in a position associated with adjectives rather than nouns. A problem for this view is that general definitions of modification and predication apply even to nouns occurring in the argument positions prototypical for nouns such as subject and direct object. Accounts of the

head-modifier distinction, for instance, typically claim that modifiers "have the function of modifying the meaning of the head, in the everyday, nontechnical meaning of "modify"" (Hudson 1987: 113; cf. also Jespersen 1992 [1924]: 96; McGlashan 1993: 205; Zwicky 1993: 296). Such accounts also commonly claim that nouns in subject and direct object positions act as modifiers to the verb that heads the sentence. Thus, McGlashan (1993: 218) claims that in *elephants run* the noun *elephants* is a modifier which restricts the meaning of the head *run* with the effect that "The resulting type is a more specific event: that is, the event of elephants running". Nouns in argument position may also modify prenominal modifiers. Thus, McGlashan (1993: 218) notes that while *long* in *a long life* denotes great duration it denotes a slow passing of time in *a long year* (cf. also Cruse 1986: 152). Moreover, while nouns are often claimed to modify in the general sense of ascribing a property they are also claimed to predicate in this sense also. Most obviously, it is eventive nouns in complex verb phrases such as light verb constructions (e.g., *a walk* in *I had a walk*) and nonreferential nouns in object positions (e.g., *traitor* in *He turned traitor* or *treasurer* in *They elected her treasurer*) which are so characterized (e.g., Algeo 1995: 204; Cattell 1984: 2; Himmelmann and Schultze-Berndt 2006: 24). Yet even referential, noneventive nouns in object positions can be described as predicative. Thus, Huddleston (2002: 226) states that in *Kim loves Pat* the direct object *Pat* forms part of "a complex predicate denoting a property attributed to Kim".

The fundamental problem with applying general definitions of predication and modification, then, is that they require a given word to do little more than vary the meaning of a referent in some way. This is such an undemanding criterion that it is likely to be met by every word in a sentence since all words are likely to influence the meaning of immediately neighboring words to some extent. Since such definitions can (and have been) applied to words from all types of lexical category, then, they cannot be used to distinguish between the different lexical categories.

2.2. *Problems associated with specific definitions of predication and modification*

In order to avoid such problems, many linguists have provided more specific definitions of predication and modification or coupled their general definitions of these functions with additional, more specific features. Thus, Croft (2001: 66) states that "the act of predication ascribes something to the referent" but couples this general definition with the further stipulation that predication "reports relatively transitory states of af-

fairs''. One danger associated with such an approach is that the definition becomes so specific it fails to apply not only to members of other categories but also to some members of the intended category. Thus, we can imagine not only adjectives but also verbs which do not report relatively transitory states of affairs (e.g., *endure*, *persist*, *remain*). A further problem associated with such an approach is that the additional, specific features of the definition may be quite tangential to the core concepts of predication and modification. In such instances, it may seem that the categories of verb and adjective are not being distinguished in terms of the notions of predication and modification at all but rather in terms of a set of quite distinct concepts with their own distinct problems (e.g., verbs and adjectives are being distinguished in terms of transitory and permanent states rather than in terms of predication and modification). This section will consider a number of examples of specific definitions of modification and predication and consider the problems associated with them.

2.2.1. *Predication applies to referents and modification applies to reference.* While noting that the functions of adjectives and verbs are similar in that both involve characterizing objects, Bhat (1994: 19) nevertheless maintains that the function of adjectives is ''modifying the reference of the head noun'' whereas that of verbs is ''characterizing the referents of the arguments''. Bhat explains this distinction more fully in the following passage:

> Adjectives . . . modify the reference (or meaning) of their head nouns, and noun phrases make use of this modified meaning in their function of identifying a participant; whereas verbs denote an action or event in which the referents of noun phrases get subordinated as participants. Thus, the function of adjectives and nouns are dependent upon one another, whereas those of nouns and verbs are independent in the sense that the identification of participants by nouns takes place independently of the denotation of actions or events by verbs. (Bhat 1994: 43–44)

Bhat (1994: 56) observes that this is a ''well-known difference'' and cites Bolinger (1967) and Jespersen (1992 [1924]: 131) as instances of linguists who have adopted a similar view (cf. also Portner 2005: 61). However, two observations suggest that it cannot be used to distinguish between verbs and adjectives and the functions associated with them. Firstly, there is a wide variety of adjectives to which Bhat's view of the function of adjectives does not apply. Most importantly, Bhat's view of the function of adjectives does not apply to adjectives in predicative position. As Ferris (1993: 38) has noted, an adjective in a predicative position ''instantiates a property explicitly assigned to the entity already identified by the subject of the sentence but . . . does not take part in identifying the

subject.'' It is possible that Bolinger (1967: 15) makes a related point when he notes that *The student is eager* involves ''referent-modification'' whereas *an eager student* involves ''reference-modification''. Furthermore, Bhat's view of the function of adjectives does not apply to all adjectives within NPs. Consider, for instance, the following examples from Ferris (1993: 117):

(3) a. *The eloquent Dryden is too learned for some tastes.*
b. *The carnivorous leopard has much larger teeth than an antelope.*
c. *After the barren desert, Kano is like a garden.*

As Ferris (1993: 117) notes, the underlined adjectives in these examples are nonrestrictive and, consequently, ''the identification carried out by the noun phrase as a whole is the same as it would be if the adjective were not present.'' Consequently, such adjectives can be described as characterizing the referents of their head nouns but cannot be described as ''modifying the reference of the head noun.'' Such nonrestrictive adjectives also occur as secondary predicates. Consider, for instance, the following examples from Aarts (1995: 77):

(4) a. *He rubbed the dry plate.*
b. *He rubbed the plate dry.*

dry has a restrictive function in (4a). However, as a resultative secondary predicate in (4b), *dry* is nonrestrictive. Consequently, it can be described as characterizing the referent of the plate but cannot be described as modifying its reference. Secondly, Bhat's view of the function of verbs does not apply to all verbs. Most obviously it does not apply to verbs in restrictive relative clauses. Thus, in *All that glistens is not gold*, for instance, *glistens* can be described as ''modifying the reference of'' *All*. Bhat (1994: 59) concedes this point moreover when he states that relative clauses ''are helpful in establishing the identity of the participant that the noun phrase refers to''.

2.2.2. *Predication completes sentences.* It has often been claimed that predication, unlike modification, completes a sentence and allows it to stand alone as an independent form. On such a view, predication is linked to morphosyntactic features such as tense, aspect and mood and pragmatic features such as illocutionary force. An early example of such a view is provided by Jespersen (1992 [1924]):

> . . . if we combine a verb with a pronoun . . . we discover that the verb imparts to the combination a special character of finish and makes it a complete piece of communication — a character which is wanting if we combine a noun or pronoun

with an adjective or adverb . . . only exceptionally do we find combinations without a verb which might be called complete sentences. (Jespersen 1992 [1924]: 86)

Such a view has also been expressed by Sasse (1993; cf. also Sasse 1991: 77):

Predication is that operation which allows a proposition to assume a self-contained linguistic form, a sentence. By the act of predication we posit the existence of a state of affairs: it is predication that provides the proposition with illocutive force. (Sasse 1993: 651)

Similar views have also been put forward by Bhat (1994: 265) and Heine (2001: 312). It is doubtful whether such a view of predication can be used to distinguish verbs and adjectives however. Firstly, it has been argued that not only verbs but also adjectives in predicative position can complete sentences. Ferris (1993: 13–14), for instance, observes that the adjective *lucky* imparts "completeness" in *Gomez is lucky* but not in *lucky Gomez*. We could perhaps attribute the completeness to the copula rather than the adjective in a sentence such as *Gomez is lucky* but we are then faced with the difficulty of explaining languages such as Russian which would not employ a copula in such a sentence. Secondly, phrases can predicate without completing a sentence. Thus, in *The boy's feeding of the penguins annoyed the zookeeper* both the gerund *feeding* and the verb *annoyed* can be said to predicate but only the latter can be regarded as completing the sentence and allowing it to stand alone. Similarly, verbs in certain types of embedded clauses such as restrictive relative clauses and manner-of-speaking complement clauses represent presupposed or backgrounded information and lack illocutionary force (Arnold 2007: 275–277; Goldberg 2006, 143–144). Consequently, while such verbs can be said to predicate of their subjects they nevertheless cannot be regarded as completing sentences in the required sense. It could also be argued that infinitives predicate without completing sentences. Thus, in *I want to eat supper* it could be argued that while the infinitive *to eat* predicates it is the finite verb *want* which completes the sentence. An alternative view is provided by Croft (1991: 78) who argues that infinitives such as *to eat* refer rather than predicate. Such a claim is clearly incompatible with the view that verbs rather than adjectives predicate and, as a consequence, complete sentences.

2.2.3. *Predication denotes transitory properties but modification denotes permanent properties.* Certain linguists (e.g., Bhat 1994: 18; Croft 1991: 118, 2001: 66) have explained the difference between predication and modification in terms of the "time-stability" account developed by Givón (1979: 320–321: cf. also Stassen 1997: 15–16) . Thus, Bhat (1994: 18) and

Croft (2001: 66) argue that, while predication and modification are alike in denoting properties of objects, they differ in that the former denotes transitory properties of objects while the latter denotes permanent properties of objects. Against such a view, Baker (2003: 32–33: cf. also Hopper and Thompson 1984: 705) has observed that verbs can denote permanent properties while adjectives can denote transitory properties e.g.,:

(5) a. *God exists.*
b. *The traffic light is red.*

As Baker himself (2003: 33) notes, accounts such as that by Croft (1991) respond to examples such as those in (5) by arguing that they "do not contain prototypical uses of the categories in question". Bhat (1994: 19), for example, states that "when adjectives proper are used in other functions such as reference or predication, they would fail to show . . . these characteristics". As an example of this, Bhat (1994: 60) cites the following examples (from Bolinger 1967: 4):

(6) a. the man responsible
b. the responsible man
c. the man is responsible.

Bhat claims that the postnominal adjective in (6a) predicates of the noun and, consequently, denotes a transitory property of the man whereas the prenominal adjective in (6b) modifies the noun and, consequently, denotes a permanent property of it. He also observes that the adjective in predicative position in (6c) can denote either a temporary property like the postnominal adjective or a permanent property like the prenominal adjective. Similarly, Croft (2001: 75) claims that "the more predicate-like the syntax of object words and property words in predication, the more transitory and less inherent is the property asserted." In support of this he cites the following example from Bolinger (1980: 79) and states that it demonstrates "a scalar increase in inherentness from Verb to Adjective to Noun in English":

(7) a. *Jill fusses.*
b. *Jill is fussy*.
c. *Jill is a fussbudget.*

Croft is thus suggesting that *Jill is fussy* is less predicate-like in its syntax than *Jill fusses* and consequently, denotes a less transitory and inherent property than it. Croft (1991: 105) also provides the following examples:

(8) a. *Her red cheeks radiated youth and good health.*
b. *Her cheeks were red.*

Like Bhat (1994), Croft argues that such examples indicate that prenominal adjectives denote permanent properties while adjectives in predicative position denote transitory properties.

Clearly, such an approach allows both Bhat and Croft to account for examples such as (5b). Thus, they can argue that the fact that *red* denotes a transitory property in such a sentence is only to be expected since it occurs in predicative position. Nevertheless, a number of observations suggest contra Bhat and Croft that there is not a neat correspondence between pragmatic functions and the contrast between transitory and permanent properties. Firstly, as Ferris (1993: 47) notes, examples of prenominal adjectives with transitory readings are common in English (e.g., *the empty beer mug*, *the angry bartender*). Even Bolinger's (1967) paradigm examples of prenominal adjectives denoting permanent properties are ambiguous between permanent and transitory readings. Thus, an internet search with the keywords *responsible* and *pupil* yields many examples such as the following in which *responsible* has a transitory reading even though it occurs prenominally:

(9) a. *A rental book that is damaged beyond normal wear shall be paid for by the responsible pupil.*
b. *It will be assumed that the User Name and Password will identify the responsible pupil.*

Moreover, as Ferris (1993: 47) notes, adjectives with transitory readings can actually be blocked from postnominal position:

(10) a. *Eddy will present the cheque to the happy winner.*
b. **Eddy will present the cheque to the winner happy.*

Secondly, while permanent readings are unavailable for the great majority of postnominal adjectives in English, a few examples can nevertheless be found as Ferris (1993: 55) observes:

(11) a. *The line defective is the one to the outside.*
b. *Those children intelligent enough will take the exam early.*

Thirdly, verbs in predicative position can also denote permanent properties as Example (5a) from Baker (2003: 32) demonstrates. Even Bolinger's (1980) paradigm examples of verbs in predicative position denoting transitory properties are ambiguous between permanent and transitory readings. As Palmer (1987: 62) notes, for instance, the present tense in English can be interpreted as denoting habitual activity. On such a reading, (7a) can support the following continuation:

(12) *Jill fusses more than any person I know.*

Clearly, the verb *fusses* in (12) resembles the predicative adjective *fussy* in (5b) in denoting a permanent characteristic of Jill rather than a transitory occasion on which Jill fussed.

It would seem, then, that even when we confine ourselves to a single language such as English the correspondence between pragmatic functions and time stability is, to say the least, messy. While postnominal adjectives are strongly biased towards transitory readings, permanent and transitory readings are commonly found both for prenominal adjectives and for adjectives and verbs in predicative position. It is difficult to see how such an inelegant data set can be harnessed in service of the view that verbs predicate whereas adjectives modify. Consider, for instance, the fact that predicative adjectives support either permanent or transitory readings as in Example (6c) above. On the assumption that such adjectives predicate of rather than modify subjects, the fact that they can sustain either permanent or transitory readings indicates that predication can denote either permanent or transitory properties contra the time-stability account. We can circumvent this problem by claiming that predicative adjectives which denote permanent properties predicate whereas predicative adjectives which denote transitory properties modify. However, this move breaks the link between the predicative position and predication and requires us to explain how it can be that adjectives in predicative position are modifying rather than predicating. Similar problems arise with prenominal adjectives. The fact that they can sustain both permanent and transitory readings indicates that modification can denote either permanent or transitory properties contra the time-stability account. The time-stability account also struggles to explain why prenominal adjectives block permanent readings more strongly than either predicative adjectives or verbs. If there is an association between predication and transitory readings, then we would surely expect this to be at least as strong in the case of predicative adjectives and verbs as it is in the case of postnominal adjectives even on the contentious assumption that the prenominal position resembles the predicative position (for discussion of this assumption cf. Ferris 1993: 49; Radford 1993: 86). Moreover, if virtually all postnominal adjectives denote transitory readings, then we must accept that such adjectives predicate rather than modify if we want to maintain the view that predication denotes transitory properties. This is a view that Bhat (1994: 60) gladly embraces. But if we accept that prenominal adjectives predicate rather than modify, then we have to surrender the claim that adjectives modify rather than predicate. The only way we can maintain the correspondence between lexical category and pragmatic function at this point is to adopt the absurd claim that postnominal adjectives are actually verbs rather than adjectives. Whatever move we make we cannot

fit the view that predication and verbs denote transitory properties whereas modification and adjectives denote permanent properties with the data.

2.2.4. *Predicates have specifiers.* Baker (2003: 23) distinguishes predication from other pragmatic functions by arguing for what he terms a "precise version" of Croft's (1991) claim that predication is "the pragmatic function that provides the external motivation for the category verb". Baker (2003: 23) encapsulates this precise version in the following statement:

(13) *X is a verb if and only if X is a lexical category and X has a specifier.*

Baker (2003: 30) illustrates this claim with examples such as the following:

(14) a. *Chris hungers.*
b. *Chris is hungry.*
c. *That arrow is a spinner.*

In (14a) the verb *hungers* has the specifier *Chris*. In (14b), by contrast, Baker (2003: 31) argues that it is not the adjective *hungry* which has the specifier *Chris* but rather a "silent functional Category" called "Pred". Similarly, in (14c) it is Pred which has the specifier *That arrow* rather than the noun *spinner*. Baker (2003: 39) notes that "The English copular verb *be* has roughly the distribution expected of a Pred" but also notes numerous instances where the two fail to coincide. He notes, for instance, that certain small clauses lack the copula:

(15) *I consider Chris intelligent*.

In such a sentence Baker cannot avoid the claim that the adjective *intelligent* has the specifier *Chris* by arguing that it is a copula which has it. He therefore claims that in (15) it is a silent Pred interposed between *Chris* and *intelligent* which has it. This strategy of Baker's (2003: 46) can also be used to explain languages which can employ adjectives without copulas in a range of sentences where copulas would be obligatory in English as in the following example from Moroccan Arabic:

(16) *Omar mrid*
Omar sick
'Omar is sick.'

Baker (2003: 40) also notes that the correspondence between the English copula and Pred is imperfect insofar as the copula occurs not only with nouns and adjectives but also with verbs:

(17) *Chris is dying*.

According to Baker, it is neither the copula *is* nor Pred which has the specifier *Chris* in this example but rather the participial verb *dying*. If we can believe in the existence of the silent category Pred postulated by Baker, then, we can maintain his view of predication as stated in (13) even in the face of examples where predicative adjectives and nouns appear to have specifiers. Even if we can believe in the existence of Pred, however, it cannot be used to explain most instances of specifiers. Consider, for instance, the following examples in which the specifier is underlined and the head word which has the specifier is immediately to its right (the first is from Culicover 1997: 135 while the remainder are from Radford 1988: 227):

(18) a. *Their rejection last week of the agreement*
b. *a student of physics*
c. *very proud of her son*
d. *quite independently of me*
e. *right out of the window*

Baker's (2003: Ch. 2) discussion of Pred indicates that it gets inserted between two distinct phrases one of which is a specifier and the other of which is in a predicative position. In the examples in (18), however, both the underlined specifier and the head element occur in the same phrase and the head element does not (or at least need not) occur in a predicative position. As a result, Pred cannot be inserted into these examples and cannot be used to evade the generally accepted view (at least amongst those linguists who employ the term specifier i.e., linguists working in the generative paradigm) that categories other than verbs (such as nouns as in [18a]–[18b], adjectives as in [18c], adverbs as in [18d] and prepositions [as in (18e)]) can have specifiers. It is possible that the examples in (18) are in some way not a problem for Baker. Perhaps, for instance, Baker intends the term specifier in a manner that diverges from its ordinary usage. However, since he neither addresses examples such as (18) nor provides any definition of the term specifier, this is difficult to assess.

2.2.5. *Nouns and specific definitions of predication and modification.* If specific definitions of predication and modification do not distinguish between verbs and adjectives, the possibility remains that they serve to distinguish nouns from verbs and adjectives (unlike general definitions of predication and modification). Section 2.2.1 considered the view that

adjectives modify the reference of the head noun whereas verbs characterize the referents of the arguments. It seems unlikely that such definitions can discriminate nouns from verbs and adjectives given that, as was argued in Section 2.1 above, prenominal nouns can modify the reference of the head noun (e.g., *nutmeg* in *a nutmeg scent*) and predicative complement nouns can characterize the referents of arguments (e.g., *traitor* in *He turned traitor*). Section 2.2.2 looked at the claim that predication completes sentences. It was argued that such a view fails to distinguish adjectives from verbs because adjectives in predicative position can complete sentences while verbs can predicate without completing sentences. That verbs can predicate without completing sentences is equally a problem for the view that sentence completion distinguishes verbs from nouns. The fact that nouns, like adjectives, complete sentences when they occur in predicative position is also a problem for such a view. Section 2.2.3 asked whether predication denotes transitory properties but modification denotes permanent properties. Particularly relevant here is Stassen's (1997: 16) claim that the referents of nouns are more permanent than those of adjectives which in turn are more permanent than those of verbs. Such a view seems unlikely given that, as was argued in Section 2.2.3, adjectives and verbs denote both transitory and permanent properties. A further problem for such a view is the fact that nouns can denote transitory referents (e.g., *explosion*) as well as permanent ones. Section 2.2.4 considered Baker's (2003) claim that verbs form predicates which take specifiers in contrast to other lexical categories. Such a claim does not serve to distinguish verbs from other lexical categories because, as noted in Section 2.2.5, it is generally accepted that nouns can also take specifiers (e.g., *rejection* in *their rejection last week of the agreement*). Finally, it is worth considering in this section the claim that verbs and adjectives, unlike nouns, are inherently relational since inherent relationality is often linked to predication and modification (Langacker 1987a: 214–216). According to Croft (1991: 62) "A concept is inherently relational if its existence or presence requires the existence or presence of another entity". Thus, as Croft (2001: 87) notes, "one cannot conceive of an action such as running without the involvement of a runner". Relational nouns (e.g., *father* in *the father of the bride*) and body part terms (e.g., *neck* in *the giraffe's neck*) are often invoked as counterexamples to the claim that nouns are not inherently relational (e.g., Croft 1991: 140). Action nominals and gerunds also form counterexamples. Thus, if one cannot conceive of an action such as running without the involvement of a runner, then this should apply both to verbs denoting running (e.g., *run* in *I run very slowly*) and to action nominals and gerunds denoting running (e.g., *running* in *All that running tired me out*).

3. Reference

3.1. *Problems associated with general definitions of reference*

Pragmatic accounts of the lexical categories maintain that nouns refer. Reference is commonly defined as the act of pointing to an entity in the world. Thus, Searle (1969: 26) remarks that "Referring expressions point to particular things" and that "... their utterance serves to pick out or identify one "object" or "entity" or "particular" apart from other objects". Similarly, Cruse (1999: 305) states that "Reference is concerned with designating entities in the world by linguistic means" while Dik (1989: 111) observes that "Referring means pinpointing some entity about which something is to be predicated". Such definitions can be interpreted as implying that reference can only be applied to prototypical objects (e.g., cars, shoes etc) but not to events or properties. However, such a view of reference fails to discriminate nouns from other lexical categories both because it fails to apply to all nouns and because it applies to lexical categories other than nouns. Applied to a sentence such as *The explosion shook the building*, for instance, such a view implies that *building* refers to a building but *explosion* does not refer to an explosion since while the former denotes a prototypical object the latter denotes an event. But if *explosion* is not referring to an explosion what is it doing? It can hardly be said to be referring to something other than an explosion. We could perhaps argue that it is applying some pragmatic function other than reference to the explosion such as modification or predication. On the assumption that nouns refer, however, such a view implies that *explosion* must be something other than a noun such as a verb or an adjective since it modifies or predicates rather than refers. The same set of problems arise when we consider nouns which denote properties such as *whiteness*. Here again the assumption that reference applies only to entities forces us to argue either that *whiteness* refers to something other than the property of whiteness or that it is not a noun because it is doing something other than referring. Moreover, since there are lexical categories other than nouns that denote entities, the view that reference applies only to entities does not guarantee that only nouns can be referring expressions. It has often been observed, for instance, that whereas most adjectives ascribe a property to the referent of the noun they modify, an associative adjective resembles a prenominal noun in denoting an entity distinct from that referred to by the noun it modifies. Thus, Giegerich (2005: 572) notes that in *dental decay* the associative adjective "*dental* does not describe the nature of the decay (as *slow* or *unexpected* would, for example) but identifies what is decaying" and is, consequently, synon-

ymous with *tooth* in *tooth decay*. Even on the view that reference can only apply to entities, therefore, it is nevertheless possible that associative adjectives can be used to refer. Similar considerations also apply to verbs denoting processes involving entities (e.g., *to saddle*, *to knife*, *to skateboard* etc).

Given the problems that the view that reference applies only to entities creates for pragmatic accounts of the lexical categories, it is unsurprising that such accounts have sought to sever the link between reference and entityhood and allow that reference can apply not only to prototypical objects but also to events and properties. Even accounts which are at pains to emphasize that nouns prototypically refer to objects allow that they can also refer to events and properties (e.g., Croft 2001: 63). Yet such approaches are not without problems of their own. If we allow that a noun such as *explosion* refers to an event and that a noun such as *whiteness* refers to a property, then questions arise as to whether verbs such as *exploded* can refer to an event or adjectives such as *white* can refer to a property. It seems intuitively natural to suppose that they can especially if we are operating with as general a notion of referring as designating or pointing to or identifying. It seems entirely innocuous to suppose that in the sentence *The car exploded* the verb *exploded* designates an explosion or that in *the white building* the adjective *white* designates the color white. Innocuous though it may be, pragmatic accounts of the lexical categories are compelled to reject such a move. Clearly, if not only nouns but also verbs and adjectives can refer, then pragmatic accounts of lexical categories cannot use reference as a means of distinguishing nouns from other lexical categories. In order to pursue a pragmatic account of the lexical categories, therefore, linguists must defend the view that whilst nouns can refer to entities, events and properties, verbs and adjectives cannot. Such a view requires us to explain what a verb such as *exploded* is doing to an explosion if not referring to it. Similarly it requires us to explain what an adjective such as *white* is doing to the color white if not referring to it. Obviously, we cannot answer such questions in terms of the pragmatic functions of predication or modification. In *The car exploded*, predication is what the verb *exploded* does to the noun *car* rather than to an explosion. Similarly, in *the white building*, modification is what the adjective *white* does to the noun *building* rather than to the color white. It is at this point, then, that linguists keen to pursue a pragmatic account of the lexical categories argue that verbs denote rather than refer to events and adjectives denote rather than refer to properties (Bhat 1994: 18; Croft 1991: 51–52; Payne and Huddleston 2002: 399–410). Clearly, if such a claim can be sustained, then reference can be used to distinguish nouns from both verbs and adjectives.

What then is denotation if it is not reference? To distinguish denotation from reference pragmatic approaches to the lexical categories link it to the notion of sense. As Payne and Huddleston (2002: 400) state, "Denotation . . . is a matter of the meaning of expressions in the language system, while reference is not. An ordinary monolingual dictionary is largely concerned with describing the denotation of lexemes and idioms." For Payne and Huddleston (2002), a consequence of this is that reference is context-dependent whereas denotation is not. Thus, a referring expression "can be used on different occasions to refer to indefinitely many distinct individuals, so that what its referent is on any particular occasion will depend on the context" (Payne and Huddleston 2002: 400; cf. also Croft 1991: 51; Cruse 1999: 305; Langacker 1987a: 11–12). As a result, an expression must be referential if it is "independently distinguishable" — that is to say, if it is "distinguishable by properties other than those inherent in the meaning of the expression itself" (Payne and Huddleston 2002: 399). To put it another way, if what we know about the meaning of an expression is not confined to its dictionary meaning or denotation but extends to context-dependent features, then that expression must refer as well as denote. Payne and Huddleston (2002: 399) illustrate this contrast between denotation and reference with the following example:

(19) *Mary washed her car*.

They argue that were such a sentence to be used on a particular occasion, the speaker (and most likely the hearer also) would associate context-dependent features with the nouns *Mary* and *car* which would extend beyond the denotation or dictionary meaning of these two expressions.[5] Thus, the speaker might know about context-dependent features of Mary such as her appearance or where she lives and about context-dependent features of her car such as its color and its make. Because these two expressions are independently distinguishable in this way, we can be assured that as well as possessing a denotational meaning they are also referential. In contrast, Payne and Huddleston argue that the verb *washed* in (19) denotes the relation between Mary and her car but is not referential. As evidence of this, they observe that while (19) "can be used on different occasions to refer to different people and different cars, the relation between the subject-referent and the object-referent is the same". That is to say, the meaning of a verb such as *washed* in (19) is not context-dependent. As a result, such a verb is not independently distinguishable and cannot be referential.

One consequence of the view that nouns both denote and refer while verbs can only denote is the claim that nouns can refer even when they denote events rather than things. Thus, on such a view, the noun *explo-*

sion must be able not only to denote but also to refer to different explosions on different occasions each with their own distinct set of context-dependent, distinguishing features. Consider for instance the following examples:

(20) *Exactly as planned, the explosion occurred.*

Clearly, sentence (20) can be used on different occasions to refer to different explosions. If the sentence is used to refer to the explosion of the atomic bomb Little Boy, then this explosion will have a distinct set of context-dependent, distinguishing features (e.g., lethally destructive, occurring in Hiroshima at the end of the second world war, radioactive etc). If, however, the sentence is used to refer to the explosion of a firework over Sydney Harbour Bridge at midnight on New Years Eve in 1999, then the explosion will have a different set of context-dependent, distinguishing features (e.g., celebratory, occurring on New Year's Eve 1999, not radioactive etc). Yet whilst the fact that nouns such as *explosion* can refer to events is not a problem for the view that nouns both denote and refer while verbs can only denote the fact that verbs can also refer to events is. Consider, for instance, the following examples:

(21) *Exactly as planned, it exploded.*

Clearly, just as the noun *explosion* in (20) can be used to refer to distinct explosions on different occasions so the verb *exploded* in (21) can be used to refer to distinct explosions on different occasions. Thus, if (21) is used like (20) to refer to the explosion of Little Boy, then it will involve the same set of context-dependent, distinguishing features as this use of (20) (e.g., lethally destructive etc). If, however, (21) is used like (20) to refer to the explosion of a firework over Sydney Harbour bridge, then it will involve the same set of context-dependent, distinguishing features as this use of (20) (e.g., celebratory etc). Such observations suggest then that verbs no less than nouns can give rise to context-dependent, distinguishing features. If we accept that the context-dependent, distinguishing features that nouns give rise to constitute evidence that they are referential, however, we must also accept that the context-dependent, distinguishing features that verbs give rise to constitute evidence that they are referential.

To preserve the view that nouns both denote and refer while verbs can only denote in the face of such examples two moves are possible. The move advocated by Payne and Huddleston (2002: 399–400) is to maintain that while the noun *explosion* in (20) can be used to refer to two distinct explosions with two distinct sets of context-dependent, distinguishing features the verb *exploded* in (21) cannot. Yet such a move is highly

counterintuitive. We would surely suppose there was something seriously awry with a reader's grasp of English if they accepted that a noun such as *explosion* could refer to different explosions but could not accept that a verb such as *exploded* could do likewise (on this point cf. Wunderlich 1996: 11–12).[6] A second move would be to accept that the two explosions in the two uses of (21) involve distinct sets of context-dependent, distinguishing features but to maintain that these are associated with the sentence as a whole rather than the verb *exploded* alone. The problem with this move is that it applies with equal force to nouns. Thus, if we cannot rule out that sets of context-dependent, distinguishing features arise from sentences rather than verbs, nor can we rule out that they arise from sentences that nouns occur in rather than the nouns themselves. If this is the case, however, then the claim that nouns are referential is no more assured than the claim that verbs are referential. Thus, while Payne and Huddleston (2002: 399–400) clearly distinguish reference and denotation they provide no evidence or argumentation to support their claim that verbs can only denote but instead ask us to accept this claim on the basis of its intuitive plausibility. Such a claim runs counter to intuition, however, and in the absence of evidence or arguments to the contrary it must be rejected.

A number of accounts of the lexical categories have portrayed verbs as referential (Broschart 1997: 155–156; Déchaine 1993: 39; Keizer 1992: 3–16; Vogel 2000: 259; Wunderlich 1996: 10–13). Thus, Wunderlich (1996: 12) argues that "The referents of basic nouns can be individuated within space, while the referents of verbs can be individuated within time". Along similar lines, Déchaine (1993: 39) claims that verbal projections refer to events via tense. A number of studies have also argued that adjectives can be referential particularly when they function to restrictively modify a noun (Anderson 1989: 18–19; Croft 1991: 131; Jackendoff 1983: Ch. 2; Keizer 1992: 3–16; Muysken and van Riemsdijk 1986; Thompson 1988: 181). Thus, Anderson (1989: 19) characterizes adjectives as referential and claims that "like nouns they establish potentially referential sets" (Anderson 1989: 19). In support of this, Anderson (1989: 18) observes that in *large dogs* the adjective "invokes some subset of the set of dogs" and also that adjectives, like nouns, can constitute arguments (e.g., *the poor* and *the beautiful*). Similarly, Croft (1991: 131) argues that the function of adjectives is modification but maintains that "that function mimics either reference or predication". According to Croft (1991: 52), while a nonrestrictively modifying adjective predicates, a restrictively modifying adjective "helps fix the identity of what one is taking about (reference) by narrowing the description". As well as claiming that restrictively modifying adjectives are referential, linguists have also claimed

that associative adjectives are referential. Thus, Ferris (1993: 24) argues that associative adjectives denote an entity that is referentially distinct from the entity denoted by the noun that they modify (cf. also Giegerich 2005: 572; Pullum and Huddleston 2002: 556). As an example of this he cites the example of a journalist who used the NP "papal assailant" to refer to Mehmet Ali Agca who attacked the Pope in 1981. As Ferris (1993: 24) notes, while the journalist intended "assailant" to refer to Mehmet Ali Agca, "the property "papal" was referentially applicable to somebody else, a person otherwise known as "Karol Wojtyla" ". Ferris (1993: 42) further argues that it is because associative adjectives have a distinct "referential locus" from the nouns they modify that they are unable to occur in postnominal or predicative positions. Thus, *The assailant was papal* suggests that *assailant* and *papal* have the same reference and thus that the Pope rather than Mehmet Ali Agca was the assailant in contrast to *papal assailant*.

Despite such observations, the view that adjectives are referential has been opposed. Payne and Huddleston (2002: 399), for instance, consider the following example:

(22) *Mary is very talkative*.

They argue that in this sentence "the adjective *talkative* is nonreferential and denotes a property of an argument x such that x talks a lot" (Payne and Huddleston 2002: 399) and suggest that it can be argued to be nonreferential for all of the reasons that *washed* in (19) can be (e.g., it lacks context-dependent, distinguishing features etc). Consider, however, the following example:

(23) *The girl with the red hat*

The phrase in (23) is often used to refer to a painting by Vermeer now in the National Gallery of Art in Washington. When it is so used the noun *girl* refers to a girl with a particular set of context-dependent, distinguishing features (e.g., pretty, bejeweled, enigmatic etc). Similarly, on such a use, the adjective *red* refers to a particular shade of red with a particular set of context-dependent, distinguishing features (e.g., dull, nearly orange, modulated etc). Clearly, however, the phrase in (23) can be used on other occasions to refer to things other than Vermeer's painting in which case it will refer to other girls with different sets of context-dependent, distinguishing features and other shades of red with different sets of context-dependent, distinguishing features. Such observations suggest, then, that adjectives can be referential. A similar view to that of Payne and Huddleston (2002: 399) has been advanced by Sasse (1993: 662) who maintains that "Adjectives always remain within the realm of nonreferentiality". In

support of this, he observes that in the phrase *Chomskyan revolution* "The adjective "Chomskyan" does not refer to Chomsky it just includes his name and characterizes a certain entity in terms of this name" (Sasse 1993: 662). However, the fact that the adjective is not here referring to Chomsky does not rule out the possibility that it might be both denoting and referring to a property. Consider, for instance, the following phrase:

(24) *a Chomskyan approach to this problem*

If the problem being referred to was a political problem, then *Chomskyan* would acquire a particular set of context-dependent, distinguishing features (e.g., left wing, anarchist etc). However, if the problem being referred to was linguistic, then the adjective would acquire a different set of context-dependent, distinguishing features (e.g., generative, minimalist etc). In sum, just as a noun or a verb can both denote a type of entity or event and refer to distinct tokens of that type on different occasions so an adjective can both denote a type of property and refer to distinct tokens of that type on different occasions.

Such observations suggest that just as general definitions of predication and modification fail to discriminate a particular lexical category because they apply to all of the major lexical categories, so reference fails to discriminate the category of noun because it also applies to verbs and adjectives. Yet reference does contrast with predication and modification in that whereas it can be argued that all verbs predicate and all adjectives modify it cannot be argued that all nouns refer since a wide variety of nouns are nonreferential (cf. Payne and Huddleston 2002: 399–410). Such nonreferential nouns might appear to undermine the claim advanced in pragmatic accounts of the lexical categories that nouns are distinguished from verbs and adjectives by being referential since they provide examples of nouns which are not referential. In order to accommodate such nouns while maintaining a link between nouns and referentiality, pragmatic accounts of the lexical categories have drawn on prototype theory. Specifically, they have argued that referentiality only distinguishes nouns which exhibit grammatical characteristics prototypically associated with nouns (Bhat 1994: 19). One version of this argument maintains that nonreferential nouns tend to occur in sentential positions that are atypical for nouns such as predicative, adnominal or incorporated positions (Croft 1991: 67–69; 2001: 102–103). However, against such a view it can be observed that whilst nonreferential nouns do occur in such positions, referential nouns occur in such positions also. It has been observed, for instance, that languages such as Tiwa and West Greenlandic allow referential nouns to be incorporated (cf. Allen et al.

1984: 297; Van Geenhoven 1998: 36). Similarly, Ward et al. (1991: 445) provide examples such as the following in which an underlined prenominal noun serves as an antecedent for an anaphoric expression — a fact which strongly suggests that it is referential:

(25) *Last night's Sinead O'Connor concert at the Garden will be her last.*

Pragmatic accounts of lexical categories also cast nonreferential nouns as nonprototypical by suggesting that nonreferential nouns in atypical positions fail to exhibit behavior typical of nouns such as case, number and determiner marking and modification by adjectives (Hopper and Thompson 1984: 709–712). Against such a view, however, it can be observed that there are many examples of languages in which nonreferential nouns in atypical positions exhibit forms of grammatical behavior prototypical for nouns such as determiner marking etc. Thus, nouns in predicative position in many languages (e.g., English, German etc) can exhibit behavior typical of nouns such as case, number and determiner marking and modification by adjectives (for a useful crosslinguistic survey cf. Pustet 2003: Ch. 2).

A further problem for the attempt to cast nonreferential nouns as nonprototypical is the fact that they occur in sentential positions prototypically associated with nouns. Consider, for instance, the following examples:

(26)	a.	*Pass me a book.*	(Indefinite)
	b.	*Every child needs a good education.*	(Quantified)
	c.	*Who* told you?	(Interrogative)
	d.	*No fingerprints were found at the scene.*	(Negative)
	e.	*The Chancellor is the guy by the piano.*	(Bare role)
	f.	*Lions are ferocious beasts.*	(Generic)
	g.	*He kicked the bucket.*	(Idiomatic)
	h.	*A square is a shape with four sides.*	(Definition)
	i.	*"Socrates" has eight letters.*	(Metalinguistic)
	j.	*I'm going to marry the man of my dreams.*	(Hypothetical)
	k.	*There are several eggs left.*	(Dummy)

In these sentences, the underlined nouns can constitute examples of the nonreferential noun type given in brackets even though they occur in the argument positions prototypically associated with nouns (for further explanation of these nonreferential noun types cf. Lyons 1999: 165; Payne and Huddleston 2002: 399–410; Portner 2005: 112; Reboul 2001: 512).[7] Because nonreferential nouns do occur in subject and direct object positions, nonreferential nouns cannot be explained away with the claim that the pragmatic functions only distinguish words occurring in those

syntactic positions which their lexical category is associated with (e.g., Bhat 1994: 19). Moreover, such nonreferential nouns also resemble prototypical nouns in that they can be marked for number and case and determiners and adjectives can be attached to them. The examples in (26) also suggest a further problem for the view that nonreferential nouns are nonprototypical — namely, the fact that such nouns are extremely common. Indeed, philosophers of language tend to maintain that nonreferential nouns are more common than referential nouns with only a small subset of nouns — specifically, proper names, demonstratives and pronouns — actually being referential (Lyons 1999: 165–166; Miller 1998: Ch. 2; Morris 2007: Ch. 4). Thus, according to Kripke (1977: 6–17), definite and indefinite NPs such as *a car* and *the car* denote a description in contrast to "singular terms" such as proper names, demonstratives and pronouns which refer by picking out an individual entity. Clearly, if most nouns are nonreferential, then it would be peculiar to characterize nonreferential nouns as nonprototypical. Moreover, this problem is compounded by the fact that those types of nouns held up by philosophers of language as the most central and paradigmatic cases of reference — namely, proper names and pronouns — fail to exhibit a good deal of the grammatical behavior typically associated with nouns. Thus, in a wide variety of languages, proper names resist number and case marking and along with pronouns tend not to have determiners and adjectives attached to them. Such considerations serve to undermine the view that referential nouns exhibit grammatical characteristics prototypically associated with nouns while nonreferential nouns fail to exhibit grammatical characteristics prototypically associated with nouns. They question whether referentiality can be a viable criterion for membership of the noun category.

3.2. *Reference and the criterion of identity*

A number of studies have emphasized the link between the referentiality of nouns and discourse. Thus, as Hopper and Thompson (1984: 708) observe, "The extent to which prototypical nounhood is achieved is a function of the degree to which the form in question serves to introduce a participant into the discourse." On occasion, this approach is contrasted explicitly with the more traditional notion of reference advocated in studies such as Payne and Huddleston (2002: 399–410). Hopper and Thompson (1984: 711) state, for instance, that "the coding of participants in discourse depends very little, if at all, on the logic-based semantic notion of 'referentiality' as involving 'existence' in some 'world'."[8] In contrast to the traditional approach, the discourse approach emphasizes that it is because nouns typically recur across a discourse that they need to refer.

As Croft (2001: 66) puts it, "The act of reference identifies a referent and establishes a cognitive file for that referent, thereby allowing for future referring expressions coreferential with the first expression" (cf. also Bhat 1994: 156; Du Bois 1980: 208; Givón 1981: 85; Hengeveld 1992: 49).

The most detailed version of this view that reference links multiple instances of a noun in a discourse has been developed by Baker (2003: Ch. 3). Baker (2003: 15) states "my leading intuition about nouns . . . is very similar to Croft's, Hengeveld's and Bhat's — that nouns are somehow inherently suited to referring". Following Geach (1962), Gupta (1980) and Larson and Segal (1995), Baker argues that whether multiple instances of a word share the same reference can only be determined for nouns because only nouns possess a criterion of identity. Baker (2003: 95) provides both a semantic and a syntactic version of this claim: "Semantic version: nouns and only nouns have *criteria of identity*, whereby they can serve as standards of sameness . . . Syntactic version: X is a noun if and only if X is a lexical category and X bears a *referential index*, expressed as an ordered pair of integers." Baker elucidates this claim as follows:

> The idea in a nutshell is that only common nouns have a component of meaning that makes it legitimate to ask whether some X is the same (whatever) as Y. This lexical semantic property is the precondition that makes nouns particularly suited to the job of referring, since it is fundamental to reference to be able to keep designating the same entity over and over again. (Baker 2003: 95–96)

To support this claim, Baker highlights a wide variety of grammatical behavior distinctive of nouns such as their ability to be modified by quantifiers, determiners and relative clauses, their ability to inflect for number, their ability to undergo complex forms of wh-movement, their ability to constitute argument phrases and their ability to act as antecedents for pronouns, reflexives and traces. He argues that it is necessary to possess a criterion of identity to engage in such forms of behavior and thus that the fact that only nouns can engage in such behavior is evidence that only they possess a criterion of identity. Baker (2003: 96) also claims that, while there is a close link between a noun's possessing a criterion of identity and its being referential, a noun can possess a criterion of identity and yet be nonreferential. As examples of such nouns, Baker (2003: 96) cites quantified nouns and predicate nominals. He argues that while such nouns are nonreferential they show that they possess a criterion of identity by engaging in behavior that requires a criterion of identity such as acting as an antecedent for pronouns, reflexives and traces. Because all nouns have a criterion of identity while not all nouns are referential, Baker (2003: 96) argues it is the criterion of identity rather than referentiality per se which constitutes the "fundamental nature" of nouns.

As a first piece of evidence for the claim that nouns possess a criterion of identity Baker (2003: 101) cites the claim by Geach (1962) that only nouns can occur in the frame "X is the same _ as Y" and provides the following examples of this:

(27) a. *That is the same man as you saw yesterday.*
b. *#That is the same long as this.*
c. *#I saw Julia the same sing as Mary did.*

For Baker (2003: 101), such examples demonstrate that while nouns are acceptable in such a frame "Adjectives and verbs (or verb phrases) are uniformly terrible in this environment". As Baker notes, such examples could be explained on purely syntactic grounds since *the* is a determiner, *same* is an adjective, and only nouns fit into the syntactic environment [Det A_]. Clearly, if such an explanation provided a successful account of the examples, then the examples could be explained without reference to a criterion of identity and would therefore not bear upon the claim that only nouns possess a criterion of identity. According to Baker (2003: 101), however, examples such as (27b) and (27c) are not merely ungrammatical, they are also "incoherent" or "semantically uninterpretable" (hence examples [27b] and [27c] are marked with a #). Baker (2003: 101) maintains that the contrast in semantic acceptability cannot be explained via a syntactic account but it can be explained in terms of the criterion of identity. Specifically, while we can judge whether what is denoted by one noun is the same as what is denoted by another, we cannot do so for what is denoted either by verbs or adjectives and consequently examples such as (27b) and (27c) are semantically incoherent as well as being grammatically unacceptable.

Clearly, Baker's account of the examples in (27) is contentious. It is difficult to be certain whether the oddness of (27b) and (27c) stems from their grammatical unacceptability alone or from a combination of grammatical and semantic unacceptability. If assessing the sameness of what is denoted by verbs and adjectives leads to semantic unacceptability independently of grammatical unacceptability as Baker claims, then we should expect that syntactically well-formed frames which assessed the sameness of what is denoted by verbs and adjectives would still be semantically incoherent. Such syntactically acceptable frames would provide a clearer test of whether verbs and adjectives possess a criterion of identity — one that was uncontaminated by the confounding variable of grammatical unacceptability in contrast to the examples in (27). Baker (2003: 102) notes that Ken Safir (personal communication) has proposed the following such frame:

(28) *Mary tore up her application form, and John did the same.*

Contra Baker, such a frame is both grammatically and semantically well-formed suggesting that we can assess what is denoted by verbs for sameness and thus that verbs have a criterion of identity. Other syntactically acceptable frames for assessing sameness might include:

(29) a. *Mary tore up her application form, and John did as well/likewise/too.*
b. *Mary sang the same way that John did.*
c. *Mary is as intelligent as John is.*
d. *Mary is intelligent in the same way that John is.*

Baker (2003: 102) counters Safir's example by arguing that it contains an ellipsed noun e.g.,:

(30) *Mary tore up her application form, and John did the same thing.*

However, such an objection seems merely to repeat the point that verbs cannot occur in the frame [Det A_] and does little to undermine the suggestion that the events denoted by the verbs in both (28) and (30) are being assessed for sameness. Moreover, the frames in (29a) and (29c) are not open to Baker's objection since they do not contain ellipsed nouns and they also suggest that verbs and adjectives can be assessed for sameness. Furthermore, if assessing the events and properties denoted by verbs and adjectives for sameness leads to conceptual incoherence as Baker maintains, then we should expect that assessing the events and properties denoted by nouns for sameness should also lead to conceptual incoherence. Consider, for instance, the following examples:

(31) a. *I heard the same explosion that you heard.*
b. *I see the same greatness in Roger Federer as I see in Tiger Woods.*

The examples in (31) show that it is not semantically incoherent to assess the events and properties denoted by nouns for sameness and suggest that assessing the events and properties denoted by verbs and adjectives for sameness should also be semantically coherent. Obviously, doing so will require a different syntactic frame but this fact by itself has little bearing on whether it is conceptually coherent to assess the events and properties denoted by verbs and adjectives for sameness and thus on the criterion of identity.

As further evidence for the claim that only nouns possess a criterion of identity, Baker (2003: 106) argues that only nouns "can appear with plural morphology and other morphosyntactic expressions of cardinality".

Following Geach (1962) and Gupta (1980), Baker (2003: 106) argues that this restriction arises because only nouns have a criterion of identity: "the criterion of identity associated with nouns is what allows them to be used for counting . . . An essential precondition for counting a group of things is the ability to distinguish which of those things are the same". As examples of this restriction, Baker (2003: 107) gives the following:

(32) a. *Chris will take (two) naps this afternoon.*
b. **Chris will (two) naps this afternoon.*
c. **Chris is (two) sicks.*

Problematically for Baker's account, however, the same problems that applied to the examples in (27) also apply to the examples in (32). It is possible that the unacceptability of (32b) and (32c) indicates simply that the verb and the adjective have been placed into the wrong syntactic environment and does not also indicate that the events and properties denoted by verbs and adjectives cannot be counted. If we use a suitable syntactic environment, moreover, the examples become acceptable which suggests that the events and properties denoted by verbs and adjectives can be counted:

(33) a. *Chris will nap twice this afternoon.*
b. *Chris has been sick twice.*

Moreover, if it is semantically coherent to count the events and properties denoted by nouns, then it should be semantically coherent to count the events and properties denoted by verbs and adjectives. Thus, if we can count *naps* in (32a), we should be able to count *nap* in (33a). The fact that *nap* occurs with *twice* in (33a) indicates that this is indeed the case. As further evidence that what is denoted by nouns can be counted, Baker (2003: 109) observes that quantifiers and determiners take NP but not VP or AP complements. In support of this, Baker (2003: 110) provides the following examples:

(34) a. *No/some/many/most/every [$_{NP}$dogs] barked.*
b. **No/some/much/many/most/every [$_{AP}$rude] is tolerated here.*
c. **No/some/much/many/most/every [$_{VP}$pay(ing) parking fees] is pleasant.*

(35) a. *John has the/an illness.* (NP)
b. **John is the/a sick.* (AP)
c. **I made John the/a sing.* (VP)

Again, however, it can be questioned whether the unacceptability of these examples does indicate that the events and properties denoted by verbs and adjectives cannot be counted or whether it simply reflects grammatical constraints. The fact that we can observe the quantification or determiner marking of verbs and adjectives in different syntactic environments suggests that the unacceptability is purely grammatical in origin (example [37a] is from Ferris 1993: 153 and Example [37b] is from Pullum and Huddleston 2002: 547):

(36) a. *I kissed her on the mouth a few times/many times/sometimes/mostly/every time.*
b. *Chris was sick a few times/many times/sometimes/every time.*

(37) a. *The older a violin is, the more valuable it is supposed to be.*
b. *He is now the fattest he's ever been.*[9]
c. *Pour moi, le cyclisme est le sport le plus difficile.*
d. *The paying of parking fees is never pleasant.*

Clearly, it cannot be argued that an ellipsed noun rather than the adjective is being determiner-marked in examples such as (37a), (37b) and (37c) since it is difficult to see how the comparative and superlative adjectives in such examples could be lacking an ellipsed noun. Thus, we would surely not want to claim that (37a) is equivalent to odd sentences such as the following (for more on this point cf. Ferris 1993: 153):

(38) a. **The older thing a violin is, the more valuable thing it is supposed to be.*
b. **The older violin a violin is, the more valuable violin it is supposed to be.*

Baker (2003: 123) argues that in an example such as (37b) *the* is a degree head rather than a determiner but there would seem to be little direct evidence for such a view.[10] It can be argued that the gerund in (37d) is at the nominal rather than the verbal end of the spectrum. However, languages other than English do furnish clear examples of determiner-marked VPs. Thus, Croft (2001: 252) cites the following Palauan sentence (originally from Josephs 1975: 113) as an example of a determiner-marked VP:

(39)

a	*ngalęk*	*a*	*męnga*	*ęr*	*a*	*ngikęl*
DET	child	DET	eat	OBJ	DET	fish

'The child is eating the fish.'

Baker (2003: 125) also argues that because only nouns possess a criterion of identity (and, on a syntactic level, referential indices) "they alone can

enter into relationships of coreference and binding". As evidence of this Baker (2003: 126) gives sentences such as the following:

(40) a. *Italy$_{\{j.k\}}$'s announcement that it would invade Albania caused a stir.*
b. ??*The Italian announcement that it{j} would invade Albania caused a stir*.

Baker argues that while the genitive NP forms an acceptable antecedent to the pronoun in (40a) the adjective in (40b) does not. One problem with such a claim is that examples such as (40b) are in fact common in English. Entering the phrase *The French announcement that it* into an internet search engine, for instance, yielded the following grammatical examples:

(41) a. *The French announcement that it had no objections to assigning the mandate for Palestine to Britain removed the last psychological and political obstacle from full British control of the country*.
b. *The French announcement that it had been struck by foot-and-mouth confirmed fears the disease had reached continental Europe from Britain*.
c. *The French announcement that it will assist India in its nuclear program is in keeping with Britain and the European pledge to follow the US line in this regard*.

Example (40) is also problematic insofar as it does not compare like with like since the syntactic relation between the genitive noun and the head noun is very different to that between the adjective and the head noun (as is suggested by the presence of a determiner in [40b] but not in [40a] and the presence of a clitic *'s* in [40a] but not in [40b]). When we place a noun in the same prenominal position occupied by the adjective in (40b) moreover we observe a marked decrease in its ability to act as an antecedent (example taken from Ward et al. 1991: 446):

(42) *Yesterday, I met this really odd truck driver. #He lives in it*.

As Ward et al. (1991: 446) observe, the example is infelicitous when the prenominal noun *truck* is taken to be the antecedent of the pronoun *it*. Prenominal nouns can act as antecedents for pronouns (cf. Example [25] above) but, as Ward et al. (1991: 455–457) emphasize, pragmatic factors such as contrastiveness influence their acceptability just as they do for prenominal adjectives.

A further problem for Baker's claim that only nouns form antecedents for anaphoric expressions is the fact that it is generally accepted that in English VPs can form antecedents for anaphoric expressions such as *do so* (Halliday and Hasan 1976: 112–139; Huddleston 2002: 222). Baker (2003: 130) claims that it is the adverb *so* in *do so* which forms the anaphoric expression but such a claim in no way undermines the fact that VPs can form antecedents for it (for detailed discussion of this issue cf. Halliday and Hasan 1976: 130–139). That it is not only nouns which can form antecedents for anaphoric expressions is perhaps even clearer in languages other than English. Consider for instance the following example from French:

(43) a. *Avez-vous dormi?*
b. *Oui, je l'ai fait*.

In this example the pronoun *le* is used to refer back to the past participle *dormi*.[11] Moreover, verbs can also form antecedents for nouns. Consider, for instance, the following dialogue between two Mohawk speakers observed by Mithun (1986: 34)

(44) a. *s-a-k-atshó:ri* *nì:i*
again-past-1sg.-slurp myself
'I had soup, myself.'
b. *á:ke ki' nà:'a tsi ni-ka-nutar-áku*
gee just guess that so-neut.sg-soup-delicious
'Gee, I bet it (soup) must have been delicious.'

As Mithun (1986: 34) notes, the topic of soup is introduced into the discourse in Example (44a) by a verb. In (44b), the second speaker refers back to this topic using an incorporated noun — thereby confirming that the verb used by the first speaker in (44a) has already established it as a discourse topic. Moreover, verbs can also form antecedents for other verbs. Consider for instance the following passage from Ralph Ellison's (2001 [1952]: 456) novel *Invisible Man* where the unnamed protagonist describes the murder of Tod Clifton:

(45) *He was standing and he fell. He fell and he kneeled. He kneeled and he bled. He bled and he died. He fell in a heap like any man* . . .

This passage achieves a high degree of lexical cohesion because the reiterated verbs refer to the same events (for a discussion of lexical cohesion cf. Halliday and Hasan 1976: 274–288). Thus, the verb *fell* occurs three times in the passage but each instance refers to the same event: Tod Clifton falls once not three times.

As further support for his claim that only nouns possess a criterion of identity, Baker (2003: 98) observes that only nouns can occupy core argument positions such as subject and direct object. As examples of this contrast Baker (2003: 99) provides the following sentences:

(46) a. *A mistake/errors in judgment/slander led to Chris's downfall.*
b. **Proud led to Chris's downfall.* (compare: Pride_{N} led . . .)
c. **Boast*$_{V}$ *led to Chris's downfall.* (compare: $\text{Boasting}_{\text{N}}$ led . . .)

Baker (2003: 145) argues that APs and VPs cannot occupy such positions because they cannot receive theta-roles. This constraint arises moreover because "theta-role assignment is a species of anaphora" (Baker 2003: 145) and APs and VPs cannot be antecedents for anaphors because they lack a referential index. Ultimately, then, the inability of APs and VPs to occupy such positions constitutes further evidence that they lack a criterion of identity in contrast to NPs. Such an interpretation of the data in Example (46) is clearly contentious — the view that theta-role assignment is a species of anaphora is not widespread amongst linguists for instance. Moreover, examples can be found which go against Baker's claim that APs and VPs do not occupy argument positions. Consider, for instance, the following examples:

(47) a. *Paying parking fees really annoys me.*
b. *To celebrate on a day like this would surely be inappropriate.*

Example (47a) is adapted from Baker's (2003: 110) Example (27c) (reproduced as Example [34c] above). In this example the phrase *paying parking fees* which Baker himself analyses as a VP occupies the subject position. Similarly, in (47b) the subject position is occupied by the infinitive *To celebrate*. It might be possible to argue that such phrases are nominalized and that a finite English verb form is blocked from argument positions (as in Baker's [27c] example). However, this argument does not apply to languages in which verb forms can occur in argument positions without any nominalization of the verb (e.g., Tagalog cf. Broschart 1997: 126; Sasse 1993: 655; Schachter 1985: 12). Examples of APs occupying argument positions are admittedly more rare. Nevertheless they do seem to occur (Example [48c] is from Pullum and Huddleston 2002: 536):

(48) a. *Cute is good but sexy is better.*
b. *I'd settle for poor but happy.*
c. *Rather more humble is how I'd like him to be.*

A further difficulty with Baker's view that an ability to occupy argument positions stems from the possession of a referential index is the fact that nonreferential nouns frequently occur in argument positions (as shown in

Example [26] above). This suggests that referentiality is not a necessary property of core argument phrases and thus that an inability to occur in such phrases is not evidence of the nonreferential nature of a phrase.

As a final piece of evidence for the claim that only nouns possess a criterion of identity, Baker (2003: 137) observes that only NPs can participate in complex forms of wh-movement involving a null operator. As Baker (2003: 138) himself concedes, such a claim is at odds with the fact that APs can undergo one such form of wh-movement, namely, comparative deletion. Baker (2003: 139) attempts to account for this anomaly by arguing that it is Pred rather than the AP itself which participates in comparative deletion. Such an argument is contentious, however, since as argued above in Section 2.2.4. it is debatable whether Pred itself exists or not.

Overall, then, Baker presents a variety of evidence to support his claim that only a noun can possess a criterion of identity and a referential index. It has been suggested that alternative interpretations of or counterexamples to Baker's evidence can always be found. As a result, it must be concluded that his evidence does not compel us to accept that only a noun can possess a criterion of identity and a referential index.

4. General problems

4.1. *Applying pragmatic functions to units other than the word*

In claiming that nouns refer, verbs predicate and adjectives modify, pragmatic accounts appear to suggest that it is words rather than any other type of linguistic unit which perform pragmatic functions. Such accounts are rarely explicit on this issue, however, and often appear to vacillate between claiming that it is words which perform pragmatic functions and claiming that it is phrases which perform them. The sole exception to this trend are discussions of reference which have on occasion explicitly investigated the issue of whether it is nouns or NPs which refer. Such investigations have yielded a variety of conflicting claims, however. Thus, while most accounts have claimed that it is NPs rather than nouns which refer (e.g., Cruse 1999: 314; Payne and Huddleston 2002: 400; Van Valin and LaPolla 1997: 53), others have claimed that both nouns and NPs refer (Croft 2001: 258; Langacker 1991: 95) or that it is the determiner rather than the noun in an NP which refers (Hudson, 2004: 15). Such disputes are the inevitable result of vague and general definitions of pragmatic functions. When pragmatic functions are defined in extremely general terms they apply not only to any type of lexical category (as was argued above in Sections 2 and 3) but also to any size of linguistic unit. Consider, for instance, the following passage:

> . . . *this book* defines some object (its referent) in terms of its position ('this') and in terms of its encyclopedic classification ('book') . . . D defines the referent, while N defines the sense. For example, in *this book*, *this* requires the referent to be nearby, whereas *book* requires it to be a book; in terms of the referent/sense contrast, *this* has no sense of its own, but *book*'s sense is 'book'. (Hudson 2004: 15)

While Hudson's analysis is doubtless a reasonable one, it seems no less reasonable to argue that both *this* and *book* have a sense (i.e., of being nearby and of being a book respectively) and that these senses can be used to point to properties of an object in the world and thereby to refer to it. On this latter view, *this* and *book* are alike in both denoting and referring. Moreover, it could equally well be argued that the NP *this book* also denotes and refers. Thus, *this book* could be said to have its own distinct sense which is a product of the senses of its component words and also that this sense can be used to refer to an object in the world. Yet if general definitions of reference fail to determine whether it is nouns or NPs which refer, general definitions of modification and predication, which — if anything — tend to be more vacuous than general definitions of reference, are even less likely to be of use in determining whether it is verbs and adjectives or VPs and AdjPs which perform pragmatic functions. This is, moreover, perhaps why linguists have avoided speculating on this issue.

Such uncertainty over the size of the unit which performs pragmatic functions is especially marked in the case of coordinate phrases. Consider, for instance, the following sentence:

(49) *John and Sue celebrated.*

Even if we set aside the issue of whether the VP *celebrated* can be used to refer to an event of celebration, it is still difficult to determine how many acts of reference the sentence contains. It can be argued that the subject phrase contains three distinct NPs — *John*, *Sue* and *John and Sue* and, as a result, three distinct acts of reference. Baker (2003: 119–120; cf. also Longobardi 1994: 620–621) suggests something like this when he claims that the individual NPs in a coordinated NP have distinct referential indices which are summed to form a plural referential index for the coordinated NP as a whole. Some linguists might baulk at the suggestion that the subject phrase in (49) involves three distinct acts of reference, however, since it requires us to accept that both *John* and *Sue* refer twice — once individually and once as part of *John and Sue*. Even if we reject such a claim, however, we still have to choose between the claim that the subject phrase involves a single act of reference (i.e., the view that *John and Sue* refers) or two acts of reference (i.e., the view that both *John* and *Sue*

refer). Standard tests for referentiality fail to resolve this choice for us since they merely serve to affirm that both the individual NPs and the coordinated NP are referential. Thus, either of the individual NPs or the coordinated NP as a whole can act as an antecedent for a pronoun:

(50) a. *John and Sue celebrated. They had just won the lottery.*
b. *John and Sue celebrated. She had just won the lottery.*

Such indeterminacy is apt to suggest to us that we simply do not have the diagnostic tools at our disposal to obtain a sufficiently precise grip on the workings of the pragmatic functions.[12]

Moreover, such indeterminacy is not restricted to reference but also afflicts predication and modification. Consider, for instance the following example (from Huddleston 1984: 181):

(51) *Ed loves Kim.*

It could be argued in such a sentence either that *loves* predicates, that *loves Kim* predicates or that both *loves* and *loves Kim* predicates. Huddleston (1984: 182; cf. also Huddleston 2002: 226) argues for the latter option: "*loves* is used to predicate something of the pair *Ed* and *Kim*, to ascribe a relation to them, but we might also say that *loves Kim* is used to predicate something of the individual Ed, to ascribe a property to him". Clearly, some might find the claim that *loves* predicates twice of *Ed* inelegant and counterintuitive. Yet it is difficult to resist the claim that both *loves* and *loves Kim* predicate in (51) if our criterion for predication is merely that something ascribes a property or relation to something else since both *loves* and *loves Kim* clearly satisfy this criterion. Indeed, on such a weak criterion it is hard to resist the further claim that *Ed loves* predicates of *Kim* in (51). Certainly, it is hard to see how we can claim that *loves Kim* ascribes a property to *Ed* while simultaneously denying that *Ed loves* ascribes a property to *Kim*. If this is so, however, then it is the case that units other than words or phrases — indeed units that are not even constituents — can perform pragmatic functions.

In fact, because the pragmatic functions are typically defined in such vague terms they can easily be applied to a variety of units other than words or phrases — a fact which has been recognized by a number of linguists. In particular, linguists have characterized the component elements of compound words as performing pragmatic functions. Thus, Liberman and Sproat (1992: 136–137) argue that a compound noun such as *lifesaver* denotes one who save lives and thus that the right-hand element *saver* functions like a verb in predicating of the left-hand element *life* which is its argument. Similarly, as Baker (2003: 202) observes, in a compound noun such as *doghouse* the left-hand element *dog* serves to restrictively

modify the right-hand element *house*. Baker (2003: 234) even suggests that morphological affixes such as *-ly* in English and *-mente* in Romance languages function to refer. General definitions of the pragmatic functions also allow us to apply them to units larger than phrases. Most obviously, it has been claimed that relative clauses function to modify NPs (e.g., Croft 2001: 88; Koptjevskaja-Tamm 1993: 23). It has also been claimed that they predicate of NPs (e.g., Bhat 1994: 59). However, since modification and predication are similar in that they both involve ascribing a property, it can be argued that there is little real difference between these two apparently distinct claims. Croft (2001: 88) has also argued that complement clauses refer like nouns when they occur as arguments of verbs. This further implies they modify or predicate like relative clauses when they are attached to noun phrases.[13] Van Valin and LaPolla (1997: 53) also suggest that clauses in general predicate since their head element is a predicate phrase. Given the ease with which pragmatic functions can be applied to different sizes of units, the question might even be raised as to whether suprasentential units can perform pragmatic functions.

Clearly, if the pragmatic functions do apply not only to words and phrases but also to all manner of linguistic units from morphological affixes to nonconstituents to sentences and beyond, then this creates problems for pragmatic accounts of lexical categories. In particular, it forces such accounts to admit as members of linguistic categories linguistic elements which clearly do not belong in those categories. Consider, for instance, Baker's (2003: 234) claim that morphological affixes such as *-ly* and *-mente* are referential. Since his account states that only nouns are referential, he is forced to state that such affixes are, in fact, nouns (Baker 2003: 234). Baker does not discuss the issue of whether complement clauses functioning as arguments of verbs are referential but, if we accept with Croft (2001: 88) that they are, then Baker's account would indicate that they too must be nouns. Similarly, since Croft (2001: 88) claims that only prototypical verbs predicate and denote actions it suggests that a nonconstituent such as *Ed loves* from sentence (51) is a verb since it too both predicates and denotes an action. Clearly, it is vital for the success of such accounts that such bizarre category members be screened out but the vague definitions of the pragmatic functions that are typically employed in such accounts fail to provide such screening.

4.2. *Nonstandard and multiple pragmatic functions*

Pragmatic accounts claim that each major lexical category standardly performs a single pragmatic function. Thus, they will typically state that

the standard function of nouns is reference while that of verbs is predication and that of adjectives is modification. As has already been observed, however, there is evidence that words may perform functions other than their standard function. Consider again, for instance, the following example (from Section 2.1 above):

(52) *a nutmeg scent*

As argued in Section 2.1., while *nutmeg* is a noun, it nevertheless functions to modify the noun *scent* in this example. Clearly, an account that claims that nouns refer, verbs predicate and adjectives modify will be flatly contradicted by words such as *nutmeg* which perform a nonstandard pragmatic function. As a result, proponents of pragmatic accounts of lexical categories have developed a number of strategies for dealing with the threat posed by instances of lexical categories which perform nonstandard pragmatic functions. One such strategy is simply to deny that nouns, verbs and adjectives perform nonstandard functions. An example of this denial strategy is provided by Baker (2003: 31) who argues that nouns in predicative position do not predicate by attributing their apparent predicative force to a silent category he terms Pred. Such an argument is clearly contentious, however, given the uncertainty over the existence of the silent category Pred (cf. Section 2.2.4 above). Equally contentious is Baker's (2003: 193) claim that nouns do not modify other nouns. As evidence of this, he considers examples such as the following:

(53) *the dóghòuse*

Baker (2003: 202) argues that *dóghòuse* in (53) is not a syntactic combination of two heads *dóg* and *hòuse* but rather a single compound word with a single referential index. Because *dóg* is not a distinct noun in its own right, neither the fact that it does not refer nor the fact that it modifies *hòuse* is a problem for Baker. Consider, however, the following example (from Giegerich 2004: 7):

(54) *a steel bridge*

In this NP, as Giegerich (2004: 7–8) argues, two nouns have been brought together through a process of syntactic combination rather than through morphological compounding in the lexicon. That *a steel bridge* is a phrasal NN rather than a compound NN (to use Giegerich's terminology) is demonstrated by the fact that it has end stress, that it has transparent semantics, that it is fully productive and that it is amenable to syntactic processes such as modification and coordination. Since *steel* is not simply a part of a compound Baker's account predicts that it should refer

and not modify. The fact that it does modify *bridge* even as an adjective would go against Baker's claim that nouns only ever refer.

A second strategy for dealing with nonstandard pragmatic functions is to argue that only morphologically unmarked instances of a lexical category carry out the standard pragmatic function while only morphologically marked instances of a lexical category carry out a nonstandard pragmatic function. By arguing that the pragmatic account applies only to morphologically unmarked instances of a lexical category, the threat posed by morphologically unmarked instances of a lexical category which carry out an nonstandard pragmatic function can be evaded. An example of this strategy is provided by Croft (1991: 51–62; 2001: 86–98). Croft (1991: 55; 2001:88) argues that prototypical nouns refer to objects, prototypical verbs predicate and denote actions and prototypical adjectives modify and denote properties. Furthermore, Croft (1991: 52; 2001: 90) proposes a rule to the effect that while prototypical instances of lexical categories are morphologically unmarked, instances of lexical categories which perform nonstandard pragmatic functions are morphologically marked. Thus, while a verb in predicative position is morphologically unmarked, adjectives and nouns in predicative position are morphologically marked (e.g., in English they require the support of a copula). Croft (2001: 90) concedes that "counterexamples are abundant" to this rule. He notes, for instance, that in English nouns can modify other nouns without additional morphological marking (e.g., *university housing*, *state budget* cf. Croft 1991: 58). To deal with such counterexamples, Croft (2001: 90) proposes a revised version of the rule which states that instances of lexical categories which perform nonstandard pragmatic functions are "encoded by at least as many morphemes" as instances of lexical categories which perform standard pragmatic functions. A problem for this revised version of the rule is the existence of instances of lexical categories which perform standard pragmatic functions but which are nevertheless morphologically marked. Thus, in English, *-er* nominals (e.g., *governor*, *reader*, *teacher*, *editor* etc) are prototypical nouns in that they refer to objects but are simultaneously morphologically marked. Since these nouns are more morphologically marked than morphologically unmarked nouns which modify other nouns (e.g., *state* in *state budget*) they form a counterexample to Croft's revised rule.

The morphological markedness strategy is also used by Hengeveld (1992: Ch. 4) who claims like Croft (1991; 2001) that nouns, verbs and adjectives occur without extra morphological marking when they perform their standard pragmatic function but take extra morphological marking when they perform a nonstandard pragmatic function. Thus, Hengeveld (1992: 58) observes that while the adjective *intelligent* requires no extra

morphological marking in order to modify a noun in the phrase *the intelligent detective*, the noun *London* must take extra marking in the form of the preposition *from* in order to modify a noun in the phrase *the detective from London*. In order to deal with counterexamples to the rule that instances of lexical categories which perform a nonstandard pragmatic function require extra morphological marking, Hengeveld employs a recategorization strategy. Consider, for instance, the following examples from Mandarin Chinese (taken from Hengeveld 1992: 63):

(55) a. *neige nühaizi liaojie*
that girl understand
'That girl understands'
b. *neige nühaizi piaoliang*
that girl beautiful
'That girl is beautiful'
c. *liaojie de nühaizi*
understand REL girl
'a girl who understands'
d. *piaoliang de nühaizi*
beautiful REL girl
'a beautiful girl'

On the basis of such examples, Hengeveld argues that in Mandarin Chinese the translational equivalents of both English adjectives and verbs behave like verbs in occurring in predicative positions without extra morphological marking and in adnominal positions with extra morphological marking. As a result, Hengeveld argues that Mandarin Chinese lacks a category of adjectives but possesses a category of verbs which contains the translational equivalents of English verbs and adjectives. Clearly, if *piaoliang* is a verb rather than an adjective (even though it denotes a property), then the fact that it can predicate without taking extra morphological marking (as [55b] demonstrates) poses no problem for Hengeveld's claim that only verbs can predicate without incurring extra morphological marking.

Hengeveld (1992: 64) further observes that other languages employ a second recategorization strategy. Consider for instance the following examples from Quechua (taken from Hengeveld 1992: 63–64):

(56) a. *rikaška: alkalde -ta*
see:PST.1sg mayor -ACC
'I saw the mayor.'
b. *rikaška: hatun -ta*
see:PST.1sg big -ACC
'I saw the big one.'

c. *chay alkalde runa*
that mayor man
'that man who is mayor'
d. *chay hatun runa*
that big man
'that big man'

Hengeveld (1992: 64) argues that such examples demonstrate that in Quechua the translational equivalents of English nouns and adjectives can be used both as heads of argument phrases and as attributive modifiers within them without incurring extra morphological marking. On this basis, Hengeveld (1992: 64) denies that *alkalde* is a noun while *hatun* is an adjective but instead argues that "Each of the two words fits the definitions of both nominal and adjectival predicates". Since both words are both nouns and adjectives (or, as Hengeveld puts it, belong to a category he terms "N/A"), Hengeveld's account successfully predicts that they should be able to both refer and modify without incurring extra morphological marking. Yet whilst Hengeveld's approach can explain data from a wide range of languages it still struggles to account for English as Croft (2001: 69) has argued. Consider, for instance, the fact that English nouns can modify other nouns without taking extra morphological marking (e.g., *a steel bridge*, *university housing*). We cannot recategorize such nouns as adjectives since they can also occur as heads of argument phrases without extra morphological marking. However, we cannot recategorize them as members of a hybrid N/A category either since most English adjectives do not occur as heads of argument phrases without extra morphological marking. As Croft (2001: 69) observes, there simply is "no obvious way" to deal with such examples in Hengeveld's approach.

In different ways, then, the various pragmatic accounts of lexical categories struggle to account for the problem of nonstandard pragmatic functions (and, in particular, they struggle to account for nouns which modify other nouns in English). A closely related and equally troublesome problem for pragmatic accounts of lexical categories is the problem of multiple functions. This arises when a word or phrase performs both its standard pragmatic function and a nonstandard pragmatic function simultaneously. Consider again the following examples:

(57) a. *papal assailant*
b. *The French announcement that it had no objections to assigning the mandate for Palestine to Britain removed the last psychological and political obstacle from full British control of the country*.
c. *The girl with the red hat*

In Section 3.1, it was observed (following Ferris 1993: 23) that the adjective *papal* in Example (57a) had been used by a journalist to refer to Karol Wojtyla. Similarly, it was noted in Section 3.2. that the adjective *French* in Example (57b) was used to refer to the French government. Finally, it was observed in Section 3.1 that the adjective *red* in Example (57c) can be used to refer to the particular shade of red employed by Vermeer in a painting in the National Gallery of Art in Washington. While these adjectives have a referential function, however, it is clear that they also function to modify the noun which immediately follows them (e.g., *assailant*, *announcement* and *hat*). In such examples, then, the adjective performs both its standard function of modification but also a non-standard function of reference. Adjectives can also perform multiple functions by predicating as well as modifying as the following examples demonstrate:

(58) a. *Your question is a legitimate one.*
b. *Your question is legitimate.*
c. *He was a mournful man.*
d. *He was mournful.*

As Leech and Li observe (1995: 190), in examples such as (58a) and (58c) the "adjectives often carry the major functional load of the phrase, so that the noun is reduced to a noncommunicative "dummy" status". Clearly, we would want to maintain that the adjectives in such examples are attached to and modify the dummy noun that immediately follows them. Also, however, it seems reasonable to suppose that they have a predicative function since what is primarily predicated of the subjects in these sentences is denoted by the adjectives as the fact that we can get rid of the dummy nouns whilst retaining the overall meaning of the sentences suggests.

Multiple functionality is also demonstrated by nouns and verbs as well as adjectives. Nouns, for instance, perform both reference and modification simultaneously in a wide variety of structures as the following examples indicate:

(59) a. *Last night's Sinead O'Connor concert at the Garden will be her last.*
b. *la gentillesse de Jean*
c. *Die Mutter wusch dem Kind die Haare.*
the mother washed the:dat child the:act hairs
'The mother washed the child's hair'

It was argued in Section 3.1. (following Ward et al. 1991: 445) that the proper noun *Sinead O'Connor* is referential. Clearly, however, as well as

being referential it also serves to modify the noun *concert*. Similarly, Bartning (2001: 158) observes that the noun *Jean* in the French NP de NP structure in (59b) is an attributive modifier of the noun *gentillesse*. At the same time, *Jean* is clearly referential in that it is being used to refer to a specific individual. Finally, in the example of external possession from German in (59c) (from Haspelmath 1999: 109), the noun *Kind* is used to refer to a specific child. Also, however, it can be argued that it serves to modify the noun *Haare* since it tells us whose hair has been washed. Nouns can also perform multiple functions by predicating as well as referring as the following examples show (Example [60c] is from Andrews 1985: 66):

(60) a. *Caesar's defeat of the Gauls*
b. *Sue had a chat with Mike this morning.*
c. *Kuṭṭi ammaye salyam ceyṯu*
child mother annoyance did
'The child annoyed the mother'

In (60a), the action nominal *defeat* predicates of *Caesar* (as was argued in Section 2.1. above). At the same time, however, it is clearly referential in that it refers to a specific historical event.[14] In (60b), the noun *chat* refers to an event but also predicates of *Sue* as part of the light verb construction *had a chat.* In the Malayalam sentence in (60c), the noun *salyam* refers to a state but also predicates of *ammaye* as part of the complex predicate *salyam ceyṯu*. Finally, it can be argued that verbs can exhibit multiple functionality as the following example demonstrates:

(61) *Exactly as planned, it exploded.*

In Section 3.1., it was argued that the verb *exploded* in this example can be used on different occasions to refer to a variety of distinct events. Yet were the verb to be used in this referential manner it would clearly still be functioning to predicate of the subject phrase *it* at the same time.

The issue of multiple functions has never been addressed in pragmatic accounts of lexical categories. While proponents of such accounts have acknowledged that nouns, verbs and adjectives perform nonstandard functions they have not acknowledged that they perform multiple functions. Clearly, however, multiple functions pose significant problems for pragmatic accounts of lexical categories and, in particular, they exacerbate the problems that nonstandard functions provide for such accounts. Fundamentally, proponents of pragmatic accounts try to deal with the problem of nonstandard functions by establishing criteria for dividing the instances of each lexical category into two discrete sets such as whether such instances are morphologically marked or whether they are com-

pounded. They then argue that their pragmatic account applies to one set but not the other and thereby suggest that one set will perform standard functions while the other will perform nonstandard functions. However, words or phrases which perform multiple functions cannot be fitted into either set. Attempts to place them in the set performing standard functions are scuppered by evidence that they perform nonstandard functions while attempts to place them in the set performing nonstandard functions are undermined by evidence that they perform standard functions. As evidence of this, consider again Example (59a). If we accept that the proper noun *Sinead O'Connor* is referential on the basis of the criterion advanced by both Baker (2003: 125) and Ward et al. (1991: 445) that nouns can form an antecedent for a pronoun, then we must accept that *Sinead O'Connor concert* is not a compound NN but is rather a phrasal combination of two noun heads. Yet if *Sinead O'Connor* is a distinct, referential noun, then the fact that it modifies *concert* contradicts Baker's claim that the function of nouns is reference not modification. Or consider the account of Croft (2001). Croft's approach demands that we separate out prototypical nouns, verbs and adjectives which perform standard functions from prototypical nouns, verbs and adjectives which do not. In an example such as (61), however, the verb *exploded* according to Croft's (2001: 88) own criteria is prototypical since it predicates and denotes an action yet it can also perform a nonstandard function since it can be used referentially. Clearly, there is no way to reconcile a prototypical verb that performs a nonstandard function such as reference with Croft's account which claims that prototypical nouns, verbs and adjectives only perform standard functions. Such multiple functionality is also a problem for Hengeveld's (1992) account. As noted above, Hengeveld's account suggests that nouns in English which modify other nouns without incurring extra morphological marking (e.g., *a steel bridge*, *university housing*) must be recategorized. But if such nouns are referential (e.g., *a Sinead O'Connor concert*), then this only increases the implausibility of recategorizing them as adjectives rather than nouns since Hengeveld (1992: 58) takes referentiality to be a defining feature of nouns. Nor can the proper noun *Sinead O'Connor* be recategorized as N/A since this category applies to words that refer like nouns on some occasions and modify like adjectives on other occasions rather than to words which modify and refer simultaneously.

4.3. *Determining the number of pragmatic functions*

As Croft (2001: 65) has observed, linguists frequently dispute the number of lexical categories a given language possesses. So-called "lumpers" tend

to conflate major lexical categories and argue that a particular language lacks one or more of the major lexical categories. Thus, according to Hengeveld (1992: 64), Mandarin Chinese possesses distinct noun and verb categories but lacks a distinct category of adjectives. In contrast, so-called "splitters" tend to argue that a language possesses not only common lexical categories such as nouns, verbs and adjectives but others besides. Thus, according to Martin (1975), Japanese possesses not only the three major classes of nouns, verbs and adjectives but also a fourth class of nominal adjectives. Deciding between lumping and splitting accounts of a language will often be an entirely arbitrary choice because lumpers and splitters will often be in dispute not over the empirical facts but simply over whether these facts amount to the existence of a particular category or not. Thus, while agreeing with the basic empirical features of Martin's (1975) analysis of Japanese, Backhouse (1984) chooses to place greater emphasis on the morphosyntactic features that nominal adjectives share with other adjectives and so lumps them together into a single adjective category. It is of course possible to avoid either lumping or splitting by simply insisting that a given language possesses no more and no less than the three major lexical categories possessed by English. Such a move is equally vulnerable to accusations of arbitrariness and Anglocentrism however. In particular, it can seem as though a framework suitable for English has been arbitrarily imposed upon a language that English may bear little similarity to.

Such problems also arise in discussions of the numbers of pragmatic functions that languages possess. The standard view that languages possess the three pragmatic functions of reference, predication and modification, for instance, has often been opposed by "lumpers" claiming that lexical categories can be accounted for in terms of the two functions of reference and predication alone. Thus, Baker (2003: 194) argues that accounts that define adjectives in terms of modification are unable to explain English adjectives that occur only in predicative position (e.g., *tantamount*, *asleep*) or languages in which adjectives only occur in predicative position (e.g., Slave) since in either case the adjectives do not engage in modification. Rather than defining adjectives in terms of modification, Baker (2003: 16) distinguishes them by claiming that they are neither referential (in contrast to nouns) nor predicative (in contrast to verbs). Furthermore, Baker (2003: 15) suggests that claims that there are three pragmatic functions are not empirically motivated but simply reflect a need to provide each of the three major lexical categories with its own distinguishing function. In striking contrast to Baker, other lumpers argue that modification is superfluous since adnominal adjectives can be regarded as having a referential function while predicative adjectives can

be regarded as having a predicative function (e.g., Anderson 1989: 18–19; Braine 1987: 70; Chomsky 1970; Langacker 1987b: 68; Muysken and van Riemsdijk 1986: 2; Thompson 1988: 181). Despite their differences, there is one obvious benefit that all lumping approaches share — in getting rid of modification, such approaches avoid the intractable problem of having to explain the difference between predication and modification (cf. Section 2 above). A recurrent problem with such approaches, however, is that they struggle to differentiate adjectives from other lexical categories in terms of pragmatic functions. Thus, while Baker's definition of adjectives allows him to distinguish them from nouns and verbs, for instance, it leaves him unable to distinguish them either from adverbs or prepositions (both of which are also regarded by Baker as being neither referential nor predicative). Similarly, the view that adjectives can be either referential or predicative suggests that adjectives form subcategories of nouns and verbs rather than a distinct category of their own. This approach may work for languages where adjectives gravitate towards the noun category (e.g., Quechua) or the verb category (e.g., Mandarin Chinese) but it is less viable for languages such as English where the adjective category is quite distinct (cf. Wetzer 1992).

In contrast to lumping approaches, "splitters" have argued not only for the existence of the three pragmatic functions of reference, predication and modification but for a number of other functions as well. These new functions are often postulated in order to provide distinct functions for words belonging to categories other than nouns, verbs and adjectives. Thus, Croft (1991: 111; cf. also Croft 1990) postulates three novel pragmatic functions of categorizing, situating and selecting. Categorizing names or denotes an entity and is performed by lexical roots in combination with grammatical devices such as gender, transitivity and aspect markers. Situating places objects in space and actions in time and is achieved by grammatical devices such as prepositions, tense marking and demonstratives. Finally, selecting distinguishes an entity from other entities of the same type and is carried out by partitive constructions, generic articles and certain types of adverbs and prepositions. New pragmatic functions may also arise when the standard functions are split into subvarieties. Thus, Croft (1991: 131) argues that adjectives perform two distinct types of modification — restrictive modification which "mimics . . . reference" and nonrestrictive modification which "mimics . . . predication" (cf. also Ferris 1993: 10). Similarly, Huddleston (2002: 266) distinguishes between ascriptive predication in which the predicative phrase ascribes a property to a referential subject and specifying predication in which the predicative phrase specifies the value of the variable denoted by the subject (e.g., *The chief culprit was Kim*). A key advantage of

the splitting approach is that whereas lumpers often lack sufficient pragmatic functions to be able to capture lexical category distinctions (e.g., between adjectives and adverbs), splitters can always capture such distinctions by postulating new pragmatic functions whenever they are required. Thus, we can counter Baker's (2003: 194) lumping argument that not all adjectives modify by following Croft (1991: 131) in postulating multiple pragmatic functions for adjectives — not only modification but also predication and whatever other functions are necessary to capture their behavior. A problem for the splitters is that the splitting process carries on indefinitely and there is no nonarbitrary basis for bringing it to an end. As Croft (2001: 82; cf. also Beck 2006: 115) notes, for instance, in any given language, we can seize upon finer and finer grammatical distinctions and use them to create an endless supply of new lexical categories. Similarly, we can point to ever finer functional distinctions and use these to postulate the existence of new pragmatic functions. A further problem for splitting approaches is that they fail to capture the unity of lexical categories. Thus, the claim that some adjectives modify while others predicate provides us by itself with no basis for grouping these two sets of words into a single category of adjectives. Instead, it suggests that predicative adjectives should instead be grouped together with other predicative words such as verbs.

In sum, pragmatic accounts of lexical categories differ as to the number of pragmatic functions they posit. Typically, such accounts posit the three pragmatic functions of reference, predication and modification. However, lumping accounts posit only two functions and splitting accounts postulate more than three functions. While lumping accounts fail to motivate a sufficient number of lexical category distinctions splitting accounts fail to yield unified lexical categories. Wherever we choose to place ourselves on the continuum between lumping and splitting accounts our choice is vulnerable to accusations of arbitrariness and a lack of empirical support.

5. Conclusion

In this article, pragmatic accounts of lexical categories have been assessed and it has been suggested that there are a variety of different problems with such accounts. This variety of different problems can be grouped into two fundamental problems. The first such problem stems from the definitions of pragmatic functions provided in these accounts. As explored in Sections 2 and 3, such definitions are typically far too vague.

In the case of predication and modification this vagueness results in the definitions being virtually indistinguishable from one another. If both predication and modification both denote nothing more than the act of ascribing a property, then it is simply vacuous to claim that verbs differ from adjectives insofar as the former predicate while the latter modify. A further problem with such vague definitions is that they are far too inclusive. Specifically, they apply not only to words from the intended lexical category but also to words from all other lexical categories. Thus, we can find examples of nouns which predicate and modify as well as refer and so on for all of the other lexical categories. Indeed, as noted in Section 4.1., such vague definitions are so inclusive that they can be applied not only to words but also to a variety of other linguistic units including nonconstituents such as *Ed loves*. Such excessive inclusivity renders the definitions incapable of discriminating between words from different lexical categories. In the case of reference, the definitions employed in pragmatic accounts tend to be not only excessively inclusive but also excessively exclusive since there are a great number of nouns which are nonreferential under any definition of reference. As noted in Sections 2.2. and 3.2., various attempts have been made to render the definitions of the pragmatic functions more precise and specific and consequently less inclusive. However, such definitions typically fail to exclude members of other categories and are prone to excluding members of their own categories as well. Accepting that definitions of pragmatic functions are highly problematic, an anonymous reviewer of this paper has made the (to the best of my knowledge) novel suggestion that pragmatic functions might best be defined ostensively by pointing to prototypical examples. The reviewer argues that such ostensive definition is possible because nobody would dispute the pragmatic function that these prototypical examples perform. While I would concede that this is an interesting suggestion, however, I feel that such an approach is not without its problems. As I observed in Section 3.1., for instance, many linguists believe that all verbs and adjectives refer (e.g., Anderson 1989: 18–19; Broschart 1997: 155–156; Croft 1991: 131; Déchaine 1993: 39; Muysken and van Riemsdijk 1986; Thompson 1988: 181; Vogel 2000: 259; Wunderlich 1996: 12–13). If this is the case, we might point at prototypical adjectives and verbs in the hope of exemplifying modification and predication only to find ourselves exemplifying reference. Moreover, in the absence of any explicit definitions of pragmatic functions, there would seem to be little hope of determining which pragmatic functions were actually being exemplified by the adjectives and verbs we were pointing to.

The second fundamental problem with pragmatic accounts of lexical categories is that they suffer from a lack of empirical support. In contrast

to features of language such as tense or case, there is little explicit marking of pragmatic functions in language. It is because of this near complete absence of direct evidence that linguists are able to dispute even whether a given lexical category performs a given pragmatic function at all. As noted in Section 1, for instance, linguists disagree over whether adjectives modify (e.g., Croft 2001), refer and predicate (e.g., Anderson 1989) or neither refer nor predicate (e.g., Baker 2003). Similarly, disputes over the number of pragmatic functions (cf. Section 4.3. above), over the size of the units that perform pragmatic functions (cf. Section 4.1. above) and over how the pragmatic functions should be defined (cf. Sections 2 and 3 above) are all in large part a product of an absence of direct evidence. At least for reference some such direct evidence can occasionally be found. Thus, Hopper and Thompson (1980: 258) observe that, in Hungarian, whether an object is referential or not will determine its word order while Koptjevskaja-Tamm (1993: 67) notes that genitive phrases in Turkish differ according to whether the possessor noun is referential or not. Such direct evidence rarely features in pragmatic accounts of lexical categories, however, and there seems to be little concern amongst proponents of such accounts at its absence. Proponents of such accounts often seem to feel that it is just intuitively obvious and unarguable that, for instance, adjectives modify and thus that such a point does not need demonstrating. In part, this reflects the fact that definitions of modification and predication are typically so vacuous that it is difficult to deny that they apply to a given word or phrase. Yet even with such vacuous definitions linguists' intuitions are prone to differ as the dispute over whether adjectives modify, refer or predicate illustrates. Clearly direct evidence is needed to resolve such a dispute just as it is needed to resolve the dispute over whether lexical categories other than adjectives can modify. The one proponent of such accounts to voice concern over the lack of evidence is Baker (2003: 15). Yet whilst Baker proposes a variety of diagnostics for testing for pragmatic functions it is difficult to be certain that these diagnostics do succeed in testing for the functions — particularly given the intangible nature of pragmatic functions. Why, for instance, should we take the ability to occur as an argument phrase as diagnostic of referentiality when so many argument phrases are (at least intuitively) nonreferential? In the absence of direct evidence or reliable diagnostic tests it would seem that there is little prospect of resolving the many basic disputes over pragmatic functions.

In summary, it has been demonstrated that there are problems with pragmatic approaches to lexical categories which are as severe as those which afflict semantic and morphosyntactic approaches. Further critical analysis and, in particular, more empirical evidence is required before it

can be determined whether these problems are insuperable and thus whether a pragmatic account of the lexical categories can ever be viable.

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Notes

1. I would like to acknowledge the support of Mark Baker (Rutgers University), William Croft (University of New Mexico) and Matthew Pires (Université de Franche-Comté) all of whom provided me with detailed and informative comments regarding particular sections of this article. I would also like to thank the two anonymous reviewers who put a tremendous amount of time and effort into providing me with very thorough and insightful reviews of this article. Any remaining errors are of course entirely my own responsibility. Correspondence address: Faculty of Social Sciences, the Open University in the West Midlands, 66 High Street, Harborne, Birmingham B17 9NB, United Kingdom. E-mail: drmcsmith@hotmail.com.
2. I will likewise follow this widespread assumption that pragmatic functions are exhibited by specific word tokens occurring in actual discourse rather than by abstract word forms in the lexicon and statements in this article regarding lexical categories should be interpreted as referring to specific word tokens occurring in actual discourse even where this is not specifically indicated.
3. Despite being rather vague and noncommittal over the issue of whether it is words or phrases which perform the pragmatic functions, pragmatic accounts of lexical categories are generally written as if it is words rather than phrases which perform the pragmatic functions (perhaps because they are accounts of lexical rather than phrasal categories). Thus, they will state that nouns rather than NPs refer etc unless absolutely required to do otherwise. I will follow this convention here and deviate from it only when I am referring to an author who has employed the terms NP, VP or AP. As I explain in Section 4.1. I am agnostic over the issue of whether it is words or phrases which perform the pragmatic functions since I do not believe we have the necessary diagnostic tools with which to decide between these two alternatives and I do not find the arguments that have been advanced in support of either position compelling.
4. Croft (1991: 78) does describe the infinitive in *I want to eat supper* as ''not a typical referent'' but this does not clarify the matter.
5. Whether proper names denote as well as refer has of course been a perennial source of debate amongst philosophers of language (cf. Miller 1998; Morris 2007). Because this issue is tangential to the concerns of the current paper, it will not be addressed here.
6. An anonymous reviewer of this paper argues that *explosion* possesses a criterion of identity whereas *exploded* does not. In Section 3.2., I argue that verbs can form antecedents for anaphoric expressions such as *do so*, pronouns such as *le*, incorporated nouns and other verbs — all of which suggests that we can judge whether what a word refers to is the same as what a verb has referred to and thus that verbs can have standards of sameness and a criterion of identity.
7. An anonymous reviewer of this paper observes that proponents of a discourse-oriented approach to reference such as Hopper and Thompson (1984) would view the underlined nouns in Examples (26b), (26c), (26e), (26f) and (26j) as referential.

8. It should also be noted that some authors combine traditional and discourse approaches to reference. Thus, Croft (1991: 51–52) draws on the traditional approach to reference of Searle (1969: 26). Also, however, Croft (1991: 118) draws on the discourse approach to reference of Du Bois (1980: 208).
9. Baker (2003: 136) considers the contrast between the following sentences:

   (i) *John will give Mary the flower that he promised - to her.* (NP)
   (ii) **Chris is not clever that Pat is -.* (AP)

   Baker (2003: 137) claims that "connecting a relative clause to its head involves making an identity claim" and that a sentence such as (i) "says that what John gave to Mary was the *same flower* as that he promised to her. Since there is a sameness claim, there must be a standard of sameness, which is provided by the head of the relative. Therefore the head must have a criterion of identity . . ." By this reasoning, the superlative adjective in must also possess a criterion of identity since it too is modified by a relative clause. This is clearly a problem for Baker's account since it states that what distinguishes nouns from other lexical categories such as adjectives is a criterion of identity.
10. Baker (personal communication) claims that when *the* occurs with nouns it is a determiner but that when it occurs with superlative adjectives it is a degree head. He further claims that these two instances of *the* are distinct words which are historically related. One problem with this view is the fact that many languages besides English (e.g., French, German, Italian etc) also use determiners in superlative adjective constructions. It would be a remarkable coincidence if all of these languages happened to mark nouns and superlative adjectives using two distinct words which shared the same form.
11. Thanks to Matthew Pires for providing me with this example.
12. Coordinated VPs also raise a number of problems. It could be argued that in an English sentence such as:

    (i) *Dave peeled and chopped the onions.*

    there are two distinct VPs and thus two distinct acts of predication. Consider the case of a language such as Paamese however. As Durie (1997: 294) observes, examples of loosely coordinated VPs similar to Example (i) can be found in Paamese. Also, however, examples of verb compounding can be found in Paamese in which two verbs are integrated to form a single phonological word. It might be argued that the loosely coordinated VP in Paamese involves two distinct acts of predication while the compound VP involves only one. A problem arises, however, insofar as Paamese also exhibits both core and nuclear serialization. These processes result in the formation of complex VPs in which the two verbs are neither as loosely integrated as the verbs in (i) nor as tightly integrated as the verbs in a compound VP (with core serialization resulting in VPs in which the verbs are more loosely integrated than the verbs in a VP resulting from nuclear serialization). It is uncertain how we could determine how many acts of predication are involved in a Paamese VP resulting from core or nuclear serialization processes or whether a pragmatic account could capture the subtle distinctions exhibited along the spectrum of different Paamese VP types.
13. Croft (personal communication) has confirmed to me that he accepts that complement clauses modify like relative clauses when they are attached to noun phrases.
14. An anonymous reviewer of this paper has made the interesting suggestion that the two pragmatic functions of *defeat* may stack onto one another so that "at the higher level it refers, while at a lower (embedded) level, it predicates".

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