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On the Functional Determination of Lexical Categories

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Article abstract

First, we provide evidence from both English and St'át'imcets (Lillooet Salish) that roots must be inherently specified for lexical category, independently of any syntactic environment they might appear in. Then, we address the parametric difference between the English and the Salish systems: in English, the functional category Determiner seems to correlate with the presence of a noun, while in Salish, D strictly correlates with argumenthood and has no correlation with nounhood. We claim that the core difference lies in the nature of nouns. In Salish, all nouns are count nouns which denote sets of atomic individuals. In English, all nouns are mass until made otherwise by an 'individuating' Num head (*a*).

ON THE FUNCTIONAL DETERMINATION
OF LEXICAL CATEGORIES *

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1. Introduction

Recent work (Marantz 1997, Harley and Noyer 1997; see also Borer 1998, Chomsky 1998) proposes that roots have no inherent lexical categorial status. Rather, the categorial status of a root is determined by its syntactic environment. For example, Marantz 1997: 15 claims that

> Roots like √DESTROY and √GROW (to borrow notation from Pesetsky 1995) are category neutral between N and V. When the roots are placed in a nominal environment, the result is a "nominalization"; when the roots are placed in a verbal environment, they become verbs.[1]
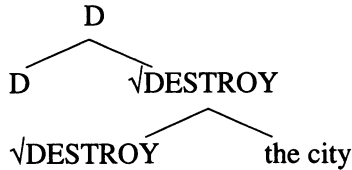
'Nominal environment' refers to the complement of D; 'verbal environment' refers to the complement of v. This is illustrated in (1), from Marantz 1997: 19.

1 For an earlier proposal which also eliminates lexical categorial specifications, see Walinska de Hackbeil 1986. However, for Walinska de Hackbeil, category labels are not determined by syntactic environment, but by semantic category (THING, PROPERTY, etc.), which when combined with X-bar level information gives rise to a lexical category such as N^0 or A^0.

(1) a. the destruction of the city, the city's destruction

$$
\begin{array}{c}
\text{D} \\
\diagup\diagdown \\
\text{D} \qquad \sqrt{\text{DESTROY}} \\
\diagup\diagdown \\
\sqrt{\text{DESTROY}} \qquad \text{the city}
\end{array}
$$

b. John destroyed the city

$$
\begin{array}{c}
v\text{-}1 \\
\diagup\diagdown \\
v\text{-}1 \qquad \sqrt{\text{DESTROY}} \\
\diagup\diagdown \\
\sqrt{\text{DESTROY}} \qquad \text{the city}
\end{array}
$$
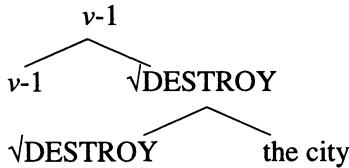
Marantz's proposal forms part of a broader enterprise whose goal is the elimination of redundancy between lexical and functional categories. Since the work of Grimshaw 1991 on extended projections, it has frequently been observed that there is a close match between particular lexical and functional projections: for example, N is typically selected by D, which is typically selected by P (or K), whereas V is selected by v (or Asp), which is then selected by T, which is in turn selected by C. It is obviously tempting to strengthen this selectional relation so that it becomes exceptionless. Instead of a matching relation between independent lexical and functional heads, there will then be a selectional dependency, whereby the category of a functional head fully determines that of a lexical head, or vice-versa.

In principle, this dependency can be established in either direction: the lexical heads N and V can determine the categories D and v/Asp, respectively, or D and v/Asp can determine N and V. Let us call these two options the *functional determination of lexical categories* and the *lexical determination of functional categories*. The two approaches yield different syntactic architectures: the former involves an 'exoskeletal' structure in which functional projections such as D and v/Asp fully determine the categorial status of the lexical projections which they contain, while the latter entails an 'endoskeletal' structure in which lexical categories determine the categorial status of the functional heads which contain them.

While the endoskeletal lexical determination approach was popular in the early years of generative grammar, when functional categories were often taken to be syncategoremic, all current reductionist approaches take the exoskeletal functional determination approach. Under this view, lexical categories are functionally determined in two senses: the first is that of Chomsky's 1982

'functional determination of empty categories', where 'functional' is equivalent to 'contextual'; the second refers to the fact that the relevant context is provided by functional as opposed to lexical heads.

In this paper, we will examine the functional determination hypothesis (FDH) in two very different languages: English and St'át'imcets (Lillooet Salish). We will show that in spite of its conceptual attractions, as well as some initial empirical evidence in its favor, the FDH is incorrect, under either sense of 'functional'.

In the interests of brevity, we will concentrate on the functional determination of N by D; parallel arguments can be constructed for the T / Asp / v / V system. We will provide evidence from both English and Salish that roots must be specified as being either nouns or verbs before they merge with D or v, and indeed independently of any syntactic environment they might appear in. The Salish facts are particularly striking, since Salish languages have provided a paradigm case for those who wish to *dispense* with lexical categories (Kinkade 1983, Jelinek and Demers 1994, Jelinek 1995). The evidence that we will present argues for the universality of the N-V distinction (following Demirdache and Matthewson 1995), and thus in favor of an endoskeletal 'vertebrate' version of phrase structure, rather than the exoskeletal 'invertebrate' version favored by Marantz and related work.

In the second part of the paper, we investigate the source of the differences between English and Salish. We argue that in spite of apparent evidence to the contrary, the D-systems of the two language-types are similar, and that D in both languages functions to create arguments. The core difference between the two language-types relates *not* to a difference at the functional level, but to a difference at the lexical level, in the nature of nouns. In Salish, Ns always denote (characteristic functions of) sets of individuals, as shown both by underived nominals and by N-deriving morphology (Davis 1996, 1997). In contrast, in English, the denotation of N is quite unrestricted, as evidenced by the existence of a wide range of both derived ('nominalized') and underived nouns. We will provide a speculative proposal about how the difference in the nature of nouns in the respective language-types could derive the range of facts discussed in the first part of the paper.

2. English

The functional determination approach makes clear predictions about the distribution of lexical categories. Focusing on the nominal system, it predicts

that the morphological category N will surface if and only if a root is selected by a nominal functional projection (D or possibly Num). Counter-evidence will be equally clear-cut: if N surfaces without D / Num, then alternative explanations will have to be found for its categorial status.

2.1 The functional determination of N

In English, there is a class of lexical items which almost always surface accompanied by an overt determiner. These are the items which are traditionally called 'nouns'. Note that whether the 'noun' is inside an argument (2a and 2b) or a predicate (2c and 2d), a determiner is obligatory.[2]

(2) a. A priest laughed.
     b. * Priest laughed.
     c. I am a priest.
     d. * I am priest.

These basic facts provide initial motivation for the FDH, since as long as a D always accompanies a nominal constituent, the category label 'noun' is interchangeable with 'root selected by D'.

There are two obvious apparent counter-examples to the correlation between 'nouns' and D in English. In both cases, elements which are traditionally regarded as 'nouns' surface without an overt D. These are:

(3) i.   Proper names, and
     ii. Bare plurals and mass nouns.

Proper names are illustrated in (4); in English, they may not co-occur with D:

(4)   (*The) Alphonse is living with (*the) Mary.

Nevertheless, it has been argued that proper names still form part of a D-projection, either by occupying D themselves, or by virtue of a Ø-determiner;

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2 The range of possible Ds differs for predicative and non-predicative environments. For example, strong quantifiers cannot appear inside predicates, as shown in (i). We will return to this issue below.

(i) * The ones who came were most women.

Note also that we regard equational sentences, such as in (ii), as a different case; *the priest* is not functioning predicatively in this example.

(ii) Olivia is the priest.

There are well-known differences between equational sentences and sentences containing predicate nominals, such as the fact that only the former are reversible ('The priest is Olivia'). See for example Williams 1983, Partee 1988.

Longobardi 1994 makes· a strong case for this position on the basis of cross-linguistic comparison between languages with 'bare' proper names and those which take an overt D. On these assumptions, proper names do not provide evidence against the FDH, since D is present and thus available to supply the context for N.

Bare plurals have been the subject of extensive investigation since Carlson 1977; see for example Kratzer 1995, Diesing 1992. Some examples follow.

(5) a. Firemen are brave.
    b. Squirrels ruined my lilacs.

As with proper names, bare plurals are problematic for the FDH, since they apparently contain no determiner.

There are at least two ways in which the FDH can be rescued in the face of this apparent counter-evidence. The first is to assume the existence of a non-overt D, as claimed for example by Longobardi 1994. The second is to postulate an intermediate functional projection between D and N which carries number features, and is responsible for selecting N; such a projection (NumP) is well established in the literature, following the work of Ritter 1991 on Hebrew. On either of these alternatives, bare plurals cease to counter-exemplify the FDH for nominal projections. A similar analysis can hold for mass nouns.[3]

These are the two systematic cases where D fails to accompany a 'noun'; thus, under some reasonable auxiliary assumptions, the FDH seems to account for the distribution of 'N' in English.[4] Moreover, there is one surprising empirical advantage of the FDH over more conventional approaches. This is the case of DPs in predicative environments, as exemplified in (6):

(6) a. I consider [the Prince of Wales a well-meaning nincompoop].
    b. I am a priest.

On the view that Ds are restricted to arguments (see Higginbotham 1985, Longobardi 1994), these cases are notoriously problematic. We must resort to type-shifting mechanisms and/or multiple lexical entries for the determiner and/or the copula. On the other hand, nominal predicates as well as arguments are predicted to surface as DPs by the FDH, since by hypothesis, without a D they would not be nominal.

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3 Note that a third well-known approach to bare plurals, that of Chierchia 1998, in which bare N can function (parametrically) as an argument, is *not* compatible with the FDH.

4 There is in fact a third set of cases where the category 'noun' can be detected without the presence of a D in English; see footnote 10 below.

2.1.1 Counterevidence to the functional determination of N by D

Does this mean, then, that we can dispense with lexical categories in English? The answer is no, but to see why, we have to look at a rather different set of data: unexplained asymmetries in the distribution and meaning of possible Ns.

Consider first the examples in (7-9).

(7) a. √man
     b. √tall

(8) a. John is [a man].
     b. * John is [a tall].

(9) a. [A man] arrived.
     b. * [A tall] arrived.

The FDH predicts that D can combine with any root, whether in predicate or argument position; when selected by D, a root should surface in its 'nominal' guise. But (8b) and (9b) show that the nominal counterpart of *tall* appears to be simply missing. Note that both *tall* and *man* are intransitive, individual-level predicates, so there is no obvious independent semantic or syntactic distinction which can replace a category-based explanation for the missing nominal form.

There are a number of possible moves which proponents of the FDH might make when faced with these facts. First, they might claim that the missing forms constitute an accidental gap: for one reason or another, 'nominal' morphology might be missing for *tall.* But this isn't true: 'adjective-type' predicates almost *always* fail to show up as nominals in the environment of D:

(10) a. * John is [a small/red/happy/clever/handsome/dangerous].
     b. * [A small/red/happy/clever/handsome/dangerous] arrived.

Moreover, there is no independent *morphological* reason why the missing nominals should not show up: zero-derivation of nouns from adjectives *is* possible in a limited number of cases:

(11) a. John is [a Canadian /a human].
     b. [A Canadian/A human] arrived.

What is interesting is that these are *exceptional* cases, subject to various semantic and morphological restrictions. Nouns derived from adjectives

denoting nationalities, for example, are available for adjectives ending in *-(i)an* and *-ese*, but not *-ish* or *-ch;* compare (12) with (13):

(12) a. John is [a Russian/American/Korean/Japanese/Chinese/Vietnamese].
     b. [A Russian/American/Korean/Japanese/Chinese/Vietnamese] arrived.

(13) a. * John is [a Finnish/English/Turkish/French/Dutch].
     b. * [A Finnish/English/Turkish/French/Dutch] arrived.

This kind of sensitivity to particular nominalizing affixes is unexpected under the FDH, which predicts that in the unmarked case every adjective should have a nominal guise when selected by D.

Assume, then, that the data in (8-9) form part of a systematic generalization. A second possible way to rescue the FDH might be to claim that all the adjectives in (10) do indeed have nominal counterparts; however, they are not zero-derived, but end in *-ness,* as shown in (14):

(14) $\sqrt{}$tall   → tallness / D__ $\sqrt{}$happy   → happiness   / D__
     $\sqrt{}$small → smallness / D__ $\sqrt{}$clever   → cleverness   / D__
     $\sqrt{}$red   → redness   / D__ $\sqrt{}$handsome → handsomeness / D__

Since *-ness* is an extremely productive nominalizing suffix, we can indeed create nominals based on all the roots in (10), as predicted by the FDH.

However, we then have to account for two more problems, one semantic and one morphological. The semantic problem is this: nouns such as *redness* do not denote sets of individuals in the same way as both *red* and *man* do (and also labile noun-adjective pairs like *human* and *Canadian*). Instead, nouns like *redness* denote second-order properties. The FDH has nothing to say about this semantic shift – and since it is clearly not a *necessary* corollary of an adjective-type predicate in a D-environment, as witnessed by nouns like *human*, it must be a property of the nominalizing affix *-ness* itself. But if *-ness* is simply the morphological realization of an adjective-type predicate in a nominal (D) environment, then it is hard to see how to account for its quite specific semantic contribution to the nominals which it derives.

This is an instance of a general problem for the FDH, since nominalization encompasses a family of different processes which yield different types of nominals, frequently from the same root, and not infrequently with the same nominalizing suffix (see Grimshaw 1990 for an overview). In order to deal with this, the FDH would presumably have to assume a separate non-nominal counterpart for each of these nominalizations, thus maintaining the generalization that the 'nominal' part of the nominalization is contributed

uniquely by D. But this leads to more distributional problems – there is no adjectival (non-nominal) counterpart for *redness,* for example, except *red,* which, as we have seen, has a different semantics.

The second set of regularities which the FDH seems in principle incapable of dealing with is morphological. The FDH is incapable of distinguishing between derived and non-derived nouns. Now, for theories which deny a derivational morphological component (see e.g. Anderson 1992, Halle and Marantz 1993), this is an advantage; and for certain cases, there is an undeniable conceptual attractiveness to such a position. One such case is 'zero-derivation' or – to put it more neutrally – categorial lability. As pointed out by Haspelmath 1993, English is rich in labile alternations, and here the FDH allows us to dispense with a whole layer of apparently superfluous zero-derivation:

(15)   *zero-derivation*   *FDH*

$[_N$ cry$] + [_V$ Ø$] \rightarrow [_V [_N$ cry$]$ Ø$]$ √cry $\rightarrow [_{N'}$ cry$] / D\_\_$

                                                         √cry $\rightarrow [_{V'}$ cry$] / v\_\_$

The problem is that even in English, zero-derivation is an exceptional case. In the vast majority of morphological operations, both in English and cross-linguistically, one alternant is derived from the other, morphologically and semantically. Take Marantz's own example, the pair *destroy / destruction.* In spite of morphophonological opacity, few would deny that the noun is derived by a relatively productive nominalizing suffix, which appears in a large number of other more or less transparently derived nominals:

(16) | *verb* | *noun* | *verb* | *noun* |
|---|---|---|---|
| derive | derivation | instigate | instigation |
| create | creation | induce | induction |
| erupt | eruption | examine | examination |

The intuition that the noun is derived in these cases is supported by the semantic relationship between the suffix and the root. As Grimshaw 1990 takes pains to point out, the nominalization of an eventive verb such as *destroy* in English can either inherit the verb's event structure, or not. But if the nominal is simply the realization of a root under D, it is hard to see how to account for this variable behaviour. Assuming event structure is entailed by the meaning of the root, then D might be able to suppress it, or transmit it, but it could not do both.[5]

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5 It is of course possible that event structure is supplied by some intermediate projection above the root but below D (say *Asp* or *v*); in that case, the eventive reading is a special case (a 'genuine' nominalization of a verb), and the FDH can be maintained for non-eventive nominal realizations of the root.

One way to save the FDH in the face of these data would be to abandon the claim that it is D which creates nominals, proposing instead that another functional head ('NOMinalizer') is responsible, and assuming that nominalizing suffixes are instantiations of NOM. This would then retain the idea that nominals are created only by functional heads.

This proposal shifts the problem one level lower. If nominalization processes involve functional heads, and if one wants to claim on that basis that there are no lexical categorial distinctions, then one has simply redefined the traditional lexical categorial distinctions as functional categorial distinctions.[6] We have no objection in principle to such an approach, but note that it does not eliminate lexical categorial distinctions: on the contrary, it *preserves* the traditional view that lexical items come in different flavors, before D enters the picture. Moreover, since many nominalizing suffixes are themselves sensitive to the categorial status of the roots to which they attach (see the table in (17), adapted from that in Déchaine 1993 : 33), we still must admit that roots contain lexical categorial properties before functional heads are introduced.

(17) *Nominalization patterns in English*

Input:	V	N	A
	betray-*al*	baker-*y*	honest-*y*
	teach-*er*	prison-*er*	southern-*er*
	rebell-*ion*	despot-*ism*	modern-*ism*
	contain-*ment*	method-*ist*	formal-*ist*
	defend-*ant*	vision-*ary*	rar-*ity*
	steer-*age*	orphan-*age*	happi-*ness*
	assembl-*y*	nation-*hood*	
	annoy-*ance*	librar-*ian*	

While there is some lability in this system (the suffix –*age* selects either N or V, the suffixes –*ism* and –*ist* either N or A, and the suffixes –*er* and –*y* all three), there are clearly also selective nominalizers: -*al*, -*ance*, -*ion*, -*ment*, and –*ant* select only V, -*hood*, -*ian*, and –*ary* only N, and –*ity* and-*ness* only A. This kind of selectivity is a problem for the FDH, since the non-existence of forms like *manness* or *defendist* is mysterious if nominalizing suffixes are functional heads which freely attach to any root to create a nominal with a particular interpretation.

To conclude: while the FDH is capable of handling an impressive range of data showing that N never normally surfaces without D in English, it cannot

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6 This seems to be the position adopted by Borer 1998, for example.

handle the systematic absence of large numbers of expected nominals, nor the distribution and interpretation of the nominalizations which do occur. It thus fails to provide an adequate account of the distribution of nominals in English.

3. Salish

3.1 Salish as a category-neutral system

Lexical category neutrality has a long and distinguished history in Salish linguistics: see e.g. Kuipers 1967, Kinkade 1983, Jelinek and Demers 1982, 1994. This is because, in stark contrast to English, any open-class category in Salish can be a predicate (canonically in clause-initial position), and conversely, any open-class category can serve as an argument, if and only if preceded by a determiner. Examples are given below from St'át'imcets (Lillooet Salish)[7], showing that 'verbal', 'adjectival', and 'nominal' predicates and arguments can be freely interchanged.[8]

(18) a. [t'ak]   ti=nk'yáp=a
         [go. along] DET=coyote=EXIS
         "The/a coyote goes along."

     b. [nk'yap] ti=t'ák=a
         [coyote] DET=go.along=EXIS
         "The one going along is a coyote."   'N' and 'V'

(19) a. [sécsec] ti=nk'yáp=a
         [crazy]   DET=coyote=EXIS
         "The coyote is crazy."

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7 St'át'imcets (s&λáλ̱y̱m̱x̱c&), a.k.a. Lillooet, is a member of the Northern Interior branch of the Salish family, spoken in the south-west interior of British Columbia. It has two major dialects, Upper (Fountain) and Lower (Mount Currie), with a combined total of around 200 remaining fluent speakers. Sadly, this makes it one of the more viable extant Salish languages. The generalizations stated here are either applicable across the Salish family or have not been sufficiently investigated for detailed comparison.

8 The fourth major lexical category in English, that of preposition, is not a lexical category in Salish. Salish systems typically have a very small closed class of preposition-like pro-clitics which crucially cannot be predicative, but invariably attach to (D-marked) arguments. See Jelinek 1993, Davis 1996 for discussion.

b. [nk'yap] ti=sécsec=a
    [coyote] DET=crazy=EXIS
    "The crazy one is a coyote."   'N' and 'A'

(20) a. [t'ak]   ti=sécsec=a
         [go. along] DET=crazy=EXIS
         "The/a crazy one goes along."

   b. [sécsec] ti=t'ák=a
       [crazy]   DET=go.along=EXIS
       "The one going along is crazy."   'V' and A'

Though the predicates in (18-20) are intransitive, the same reversible behavior characterizes transitive predicates:

(21) a. [núk'w7-an-ts-as]   ti=sqáycw=a
         [help-DIR-1SG.OBJ-3ERG] DET=man=EXIS
         "The/a man helped me."

   b. [sqaycw] ti=nuk'w7-an-ts-ás=a
       [man]   DET=help-DIR-1SG.OBJ-3ERG=EXIS
       "The one that helped me is a man."

(22) a. [núk'w7-an-Ø=lhkan]   ti=sqáycw=a
         [help-DIR-3SG.OBJ-1SG.SUBJ] DET=man=EXIS
         "I helped the/a man."

   b. [sqaycw] ti=nuk'w7-an-Ø-án=a
       [man]   DET=help-DIR-3SG.OBJ-1SG.ERG=EXIS
       "The one that I helped is a man."

Reversible elements may even include strongly referential elements such as proper names (23) and independent pronouns (24).

(23) a. [áts'x-en=lhkan]   kw=s=Lisa
         [see-DIR=1SG.SUBJ] DET=NOM=Lisa
         "I saw Lisa."

   b. [(s=)Lisa]   ti=ats'x-en-án-a
       [(NOM=)Lisa] DET=see-DIR=1SG.ERG=EXIS
       "The one I saw is Lisa."

(24) a. [tsícw=kan]   áku7   Sat'=a   s-7ents[9]
    [went=1SG.SUBJ] to.there Lillooet=EXIS NOM-I
    "I went to Lillooet (myself)."

   b. [s-7ents] ti=tsícw=a   áku7   Sát'=a
    [NOM-I] DET=went=EXIS to.there Lillooet=EXIS
    "The one who went to Lillooet is me."

The pattern illustrated in (18-24) is almost completely general (given the right discourse conditions), and holds across the twenty three or so languages in the Salish family. We shall refer to it as *predicate-argument flexibility*.

Now consider the implication of these facts for the functional determination of lexical categories. We appear to need only one category in order to predict the syntactic distribution of any open class category: D. This allows us to eliminate the lexical categories 'noun', 'verb' and 'adjective' in favour of a category-neutral root, interpreted as an argument when selected by D and a predicate otherwise. Thus, Salish appears to provide direct cross-linguistic evidence for the FDH, since it seems to dispense with the need for lexical categorial distinctions altogether.

Interestingly, the Salish evidence for lexical category neutrality is of a different nature than the FDH as outlined by Marantz, for instance. In particular, it is not the case in Salish that the presence of a D causes roots to surface in a nominal guise, while in the absence of D, roots surface in a verbal (or non-nominal) guise. Rather, the Salish situation is that all roots may surface either in the environment of D, or not in the environment of D, without altering their realizations. The evidence for the absence of lexical categories is simply the absence of any distributional restrictions on subclasses of roots.

3.2 Salish evidence for lexical categories

The category-neutral view of Salish has undeniable conceptual attractions; in fact, from the point of view of a semantics based on predicate logic (for which the existence of lexical categorial distinctions is at best superfluous), it almost seems too good to be true.

This is because it *is* too good to be true: it turns out that there is subtle but powerful evidence *for* the existence of lexical categorial distinctions in

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9 Independent pronouns, unlike proper and common nouns, do not require a determiner when they surface as arguments. This could correlate with Longobardi's 1994: 636 claim that pronouns are base-generated in D position.

St'át'imcets, which is all the more compelling in view of the close fit between the distribution of D and argumenthood.

In the next three subsections, we will present various arguments for lexical categorial distinctions in St'át'imcets. While it is difficult to generalize these findings across the whole Salish family (mostly because of a lack of available syntactic data), where (mostly morphological) evidence is available, it seems to support identical conclusions to those we will reach for St'át'imcets.

It is important to emphasize the systematic nature of this evidence. It is not confined to a particular component of the grammar, but is distributed between the syntax proper, the inflectional morphology, and the derivational morphology. As such, it cannot be reduced to either 'morphology' or 'semantics'.

3.2.1 Evidence that N is independent of D

In this section, we will present three syntactic arguments for a noun / non-noun distinction in St'át'imcets that cross-cut the predicate-argument distinction, and thus the distribution of the functional category D. We will make use of a featural system, referring to nouns as [+N] and non-nouns as [-N]; this does not entail any particular theoretical proposal about the status of these features in the lexicon.

The first argument for a [±N] distinction concerns the structure of what we shall call *complex nominal predicates*, following Davis, Lai and Matthewson 1997, and building on the work of Demirdache and Matthewson 1995. Complex nominal predicates contain a head noun and a (potentially unbounded) number of preceding predicate modifiers.

(25) a. [léxlex   smúlhats] kw=s=Maggie
         [intelligent woman]   DET=NOM=Maggie
         "Maggie is an intelligent woman."

     b. [áma léxlex   smúlhats] kw=s=Maggie
         [good intelligent woman]   DET=NOM=Maggie
         "Maggie is a good intelligent woman."

While any individual-level predicate can occupy a non-final position in a complex nominal predicate, the final position can crucially only be occupied by a noun, as shown by the ungrammaticality of the examples in (26):

(26) a. * [áma smúlhats léxlex]   kw=s=Maggie
         [good woman   intelligent] DET=NOM=Maggie
         "Maggie is a good intelligent woman."

b. * [smúlhats áma léxlex]   kw=s=Maggie
       [woman   good intelligent] DET=NOM=Maggie
       "Maggie is a good intelligent woman."

c. * [smúlhats léxlex   áma] kw=s=Maggie
       [woman   intelligent good] DET=NOM=Maggie
       "Maggie is a good intelligent woman."

d. * [léxlex   smúlhats áma] kw=s=Maggie
       [intelligent woman   good] DET=NOM=Maggie
       "Maggie is a good intelligent woman."

Note that as an individual-level predicate, the noun *smúlhats* 'woman' is itself quite capable of appearing in a non-final position in a complex nominal predicate:

(27) [smúlhats kúkwpi7] kw=s=Ruby
     [woman   chief]   DET=NOM=Ruby
     "Ruby is a female chief."

On the other hand, without a noun in final position, complex predicates are always ungrammatical:

(28) a. * [áma   léxlex]   kw=s=Maggie
          [good   intelligent] DET=NOM=Maggie
          "Maggie is a good intelligent (one)."

b. * [léxlex   áma] kw=s=Maggie
       [intelligent good] DET=NOM=Maggie
       "Maggie is an intelligent good (one)."

This shows that the ungrammaticality of the sentences in (26) is not due to restrictions on modifier ordering between members of the same lexical category, of the type illustrated in (29) for English adjectives. The ungrammaticality of (26a-d) can only be explained by the absence of a [+N] element in final position.

(29) a. a big red apple
     b. * a red big apple

Significantly, nominal predicates, like any other predicate in Salish, cannot be headed by a D; therefore, the requirement for a [+N] final element in complex nominal predicates cannot be related to D. However, recall that the FDH predicts that in the absence of D, no lexical item can surface as a noun. In other words,

the FDH has no way of accounting for why lexical classes should show systematically different behavior inside complex predicates.[10]

The second argument comes from an attributive construction consisting of a demonstrative pronoun linked to a following lexical category by a determiner, yielding a meaning paraphrasable as 'this/that x'. As shown in (30), the position following the determiner must be occupied by a [+N] element (Matthewson and Davis 1995).

(30) a. [áts'x-en=lhkan]   ti7   ku=sqaycw
         [see-DIR=1SG.SUBJ] DEIC DET=man
         "I saw that man."

   b. * [áts'x-en=lhkan]   ti7   ku=qwatsáts / tayt   / emhál'qwem'
         [see-DIR=1SG.SUBJ] DEIC DET=leave   / hungry / handsome
         "I saw that one who left / that hungry one / that handsome one."

Note that there is a D *(ku)* present in both (30a) and (30b). Yet one class of predicates ('nouns') is allowed, and another disallowed. The attributive construction thus represents the converse of the complex predicate case: there, a lexical category distinction emerged in spite of the uniform *absence* of D; here, it emerges despite the uniform *presence* of D. This again shows the lack of a link between D and lexical categorial status, contrary to the predictions of the FDH.

The third piece of syntactic evidence for the [±N] distinction comes from relative clauses. In Salish, relative clauses are either headless or headed. Headless relative clauses consist simply of a predicate preceded by a determiner, as illustrated in (18-24) above; there are no restrictions on the category of the predicate. Headed relative clauses come in two types, head-final and head-initial, and both show categorial restrictions on the head element.

Head-final relative clauses in St'át'imcets consist of a D, one or more modifying phrases, and a lexical element, optionally introduced by the determiner *ku*, which corresponds to the head of the relative clause:

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10 A reviewer points out that a similar argument can be made for English on the basis of restrictions inside compounds. While N-N is a productive compound pattern, V-N is not (examples provided by reviewer):

(i) a. picture issue, trial building, curtain tower, courage paper, grass strategy, ...

   b. * sell picture, *destroy trial, *tend curtain, *sit courage, *breathe grass, ...

Thus, in productive compounds, there is a lexical categorial restriction on the first element which cannot be accounted for by the FDH, since no functional category is present inside a compound.

(31) wa7 láti7 [ti=ats'x-en-án=a   (ku=)smúlhats]
     PROG DEIC   [DET=see-DIR-1SG.ERG=DET (DET =)woman]
     "There's the woman I saw."

The bracketed string corresponds to a single constituent; see Demirdache and Matthewson 1995 and Matthewson and Davis 1995 for discussion.

Head-initial relative clauses in St'át'imcets consist of two consecutive DPs, introduced by identical Ds; the first DP corresponds to the head of the relative clause, the second to the modifier:

(32) wa7 láti7 [ti=smúlhats=a   ti=ats'x-en-án=a]
     PROG DEIC   [DET=woman=DET DET=see-DIR-1SG.ERG=DET]
     "There's the woman I saw."

As with the head-final type, the bracketed string corresponds to a single constituent whose components cannot be separated.

The significance of headed relative clauses for the status of lexical categories is this: in both types (head final and head initial), the head position must be occupied by a [+N] element (Demirdache and Matthewson 1995, Matthewson and Davis 1995). This point is illustrated for head-final relative clauses by the examples in (33) and (34): only a nominal predicate may occupy the position of the head. Note that there is nothing semantically incoherent about the disallowed structures: this is a syntactic restriction.

(33) a. ti=ats'x-en-án=a   (ku)=sqaycw
         DET=see-DIR-1SG.CONJ-EXIS (DET)=man
         "the man who I saw"

     b. * ti=sqáycw=a   (ku)=áts'x-en=an
          DET=man=EXIS   (DET)=see-DIR-1SG.CONJ
          "the one I saw who is a man"

(34) a. ti=léxlex=a   smúlhats
         DET=intelligent=EXIS woman
         "the woman who is intelligent"

     b. * ti=smúlhats=a   léxlex
          DET=woman=EXIS   intelligent
          "the intelligent one who is a woman"

The same point is made for head-initial relative clauses by the examples in (35): the head can only belong to a restricted class, which we call [+N].

(35) a. ti=sqáycw=a   ti=ats'x-en=án=a
       DET=man=EXIS DET=see-DIR-1SG.CONJ=EXIS
       "the man who I saw"

   b. * ti=ats'x-en=án=a   ti=sqáycw=a
       DET=see-DIR-1SG.CONJ=EXIS DET=man=EXIS
       "the man who I saw"

Crucially, the restriction on what can be the head of a relative clause cross-cuts, and is therefore independent of, the presence or absence of the functional category D. Head-initial relative clauses, for example, always have a D on the head. The FDH would therefore predict that any root could appear in this position; it would just have to surface in its 'nominal' guise. The only way the FDH could predict the ungrammaticality of (35b) would be if a subclass of roots happened not to have a nominal guise. But we know from headless relative clauses that there is no such restriction: any root can appear as an argument if introduced by a determiner. Thus the relevant restriction cannot be accounted for by appealing to the presence or absence of D.

3.2.2 Evidence that N is independent of nominalization

In the previous section, we demonstrated that certain syntactic processes single out [+N], independently of the presence or absence of D. In this section, we address the possibility that there might be another functional category ('NOM') which might rescue the FDH for Salish.

This possibility is raised by the fact that many nominal predicates in Salish languages are 'nominalized', in the sense that they carry a prefix *s-*, widely glossed as the 'nominalizer'. If this prefix were to correspond to a functional head NOM, then we might be able to say that though D was not responsible for the functional determination of the lexical category N in Salish, NOM might do the job instead.

It turns out, however, that the category [+N] cannot be reduced to the presence or absence of a nominalizer, but cuts across the morphological class of nominalized predicates. This is because nominalization is used in two distinct ways. The first derives a *noun* (a lexical category), as shown in (36a). The second derives a nominalized *clause,* as in (36b). Both types of nominalization are compatible with possessive morphology on the nominalized predicate, leading to systematic ambiguity in a number of cases, as in (36c):

(36) a. [áma]   ti =s-kúza7-sw=a
         [good] DET=NOM-child-2SG.POSS=EXIS
         "Your child is good."

    b. [áma]   ti=s=t'íq=sw=a
         [good] DET=NOM=arrive=2SG.POSS=EXIS
         "Your arriving [i.e. the fact that you have arrived] is good."

    c. [áma]   ti =s-/=t'íq-cal-sw=a
         [good] DET=NOM-/=arrive-ACT-2SG.POSS=EXIS
         "Your bringing [what you have brought / the fact that you have
         brought something] is good."

However, in a predicative environment, only [+N] may take possessive
morphology, whether the nominalizer is absent, as in (37a), or present,
as in (37b,d):

(37) a. [máw-su]   ti =ámh=a
         [cat-2SG.POSS] DET=good=EXIS
         "The good one is your cat."

    b. [s-kúza7-su]   ti =ámh=a
         [NOM=child-2SG.POSS] DET=good=EXIS
         "The good one is your child."

    c. * [s=t'iq=su]   ti=ámh=a
          [NOM=arrive=2SG.POSS] DET=good=EXIS
          "The good one is your arriving [i.e. the fact that you have arrived]."

    d. [s-t'íq-cal-su]   ti=ámh=a
         [NOM-write-ACT-2SG.POSS] DET=good=EXIS
         "The good one is your bringing [i.e. what you have brought]."
         * "The good one is your bringing [i.e. the fact that you have brought
         something]."

    The significance of this contrast lies in the fact that it picks out a class of
[+N] elements which cuts across both the domain of nominalization (since it
excludes nominalized predicates like in (37c)), and the distinction between
derived and non-derived lexical items (since it includes both underived cases
such as in (37a) and derived cases as in (37b,d)). The only way to capture these
facts is to postulate a class of [+N] elements which must be distinguished from

the morphological class of 'nominalized predicate', and thus any putative functional determination by NOM.

3.2.3 Derivational morphological arguments for [+N]

In this section, we provide a number of further arguments for the existence of a distinct class of [+N] elements. In contrast to the previous sections, the arguments here are centered on various morphological processes which target either [+N] or [-N], irrespective of syntactic position. The aim here is to show that the [±N] distinction is not reducible to some independently available semantic distinction (say, 'entity' versus 'event / state'); we do this by showing that affixation possibilities differ according to syntactic class, even between virtually synonymous affixes, or between virtually synonymous roots.

Our first argument contrasts the distribution of the 'inchoative' infix / suffix -7- / -p with the 'developmental' suffix -wíl'c.[11] Both morphemes mean something like 'become', but they differ in their affixation possibilities. Inchoatives are impossible with [+N] (38b), whereas the developmental suffix is unrestricted in its affixation possibilities, and will attach to any class of predicate, including N (39a,b):

(38) a. √t'egw   'hard'   t'egw-p   'become hard'
        √q'uts   'fat'   q'u-7-ts   'become fat'

     b. √sáma7   'white person' *sá7ma7   'become a white person'
        √k'úk'wm'it 'child'   *k'ú-7k'wm'it 'become a child'

(39) a. √q'ix   'hard'   q'ix-wíl'c   'become hard'
        √q'uts   'fat'   q'uq'wts-wíl'c 'become fat'

     b. √sáma7   'white person' sama7-wíl'c   'become a white person'
        √k'úm'it   'child'   k'uk'wm'it-wíl'c 'become a child'

Our second case involves so called 'out-of-control' morphology, which is pervasive in Salish; see Thompson 1985, Demirdache 1997, 1998 for discussion. Here we contrast two kinds of out-of-control marking in St'át'imcets: the clitic combination ka=...=a and the suffix -sút. Both yield a rather complex range of interpretations which depend on the meaning of the target; however, crucially, ka=...=a only applies to [-N], while -sút may apply to any lexical category.

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11 The two alternants of the inchoative affix are phonologically conditioned: the -7- infix occurs with 'strong' roots (those containing a full vowel) whereas the suffix -p occurs with 'weak' roots (those containing only schwa). See van Eijk 1997: 67-72.

In (40a, b) we demonstrate that both *ka=...=a* and *-sút* may attach to the verb *qam't* 'to get hit'. Slightly different meanings result, but both meanings fall within the range exhibited by Salish 'out-of-control' morphemes (see Thompson 1985).

(40) a. qam't-sút
        get.hit-ooc
        "to get hit by accident"

    b. ka=qám't=a
        ooc=get.hit=ooc
        "to get hit suddenly, to manage to get hit"

If we try to add the out-of-control markers to nouns, we find that only -*sút*-affixation is possible. When suffixed to a noun, *-sút* yields a pejorative interpretation paraphrasable as 'acting like, letting oneself behave like...', as shown in (41). *ka=...=a* is ungrammatical with these nouns.

(41) a. k'uk'wm'it-sút   * ka=k'úk'wm'it=a
        child-ooc   ooc=child=EXIS
        "acting like a baby"

    b. sama7-sút   * ka=sám7=a
        white.person-ooc   ooc=white.person=EXIS
        "acting like a white person"

    c. kukwpi7-sút   * ka=kúkwpi7=a
        chief-ooc   ooc=chief=EXIS
        "acting like a chief"

Thus, out-of-control morphology provides a further argument for a [±N] distinction, this time based on the systematic inability of one type of out-of-control marking *(ka=...=a)* to attach to [+N] predicates.[12]

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12 Further evidence that the restriction on *ka=...=a* is a categorial one is provided in (i). (ia) shows *ka=...=a* attached to the predicate *xil-em* 'to do something', yielding an 'ability' reading characteristic of this class of predicates. However, if the same predicate is nominalized, as in (ib), *ka=...=a* may no longer be attached. Moreover, as shown in (ic), *ka=...=a* is also impossible with the near-synonymous predicate *(s-)záy-ten* 'business, what one does', which is inherently nominal (due to the obligatory presence of the instrumental suffix *-ten*).

(i) a. ka=xíl-em=a   b. * ka=s-xíl-em=a   c. * ka=(s-)záy-ten=a
       ooc=do-MID=EXIS   ooc=NOM-do-MID=EXIS   ooc=(NOM)-do-INST=EXIS
       "She/he was able to do it." "She/he was able to do it."   "She/he was able to do it."

Our final case concerns the prefix *(e)s-*, which is derived from the Proto-Salish stative marker, and has cognates in nearly all Salish languages (Kinkade 1996). In several of these languages, including St'át'imcets, Upriver Halkomelem, Thompson River Salish (Thompson and Thompson 1992) and Sechelt (Beaumont 1985), the stative prefix has a differential interpretation depending on the lexical category to which it attaches, as discussed in detail in Burton and Davis 1996. When attached to [–N] predicates, it yields a resulting state interpretation; when attached to nouns, it yields a [¿N] predicate meaning 'have N'. (42-43) show the resulting state interpretation, while (44-45) show the possessive interpretation:

(42) a. mítsaq k=John
        sit   DET=John
        "John sat down/up."

    b. *es*-mítsaq k=John
        STAT-sit   DET=John
        "John is sitting down/up."

(43) a. púlh.elh   ta=qú7=a
        boil(REDUP) DET=water=DET
        "The water is boiling."

    b. *es*-púlh   ta=qú7=a
        STAT-boil   DET=water=DET
        "The water is boiled."

(44) a. kwtámts=lhkan
        husband=1SG.SUBJ
        "I am a husband."

    b. *es*-kwtámts=lhkan
        STAT-husband=1SG.SUBJ
        "I have a husband."

(45) a. sqáxa7=ti7
        dog=DEIC
        "That one is a dog."

    b. *es*-qáxa7=ti7
        STAT-dog=DEIC
        "That one has a dog."

(46-47) show that the predicate resulting from possessive prefixation of *es-* to a noun is non-nominal: in contrast to the noun from which it is derived, it cannot occupy the final position of a complex nominal predicate (see section 3.2.1), nor take possessive morphology in predicate position (3.2.2):

(46) a. [áma kwtamts] k=Strang
        [good husband] DET=Strang
        "Strang is a good husband."

    b. * [áma *es*-kwtámts] k=Martina
        [good STAT-husband]DET=Martina
        "Martina has a good husband."

(47) a. [sqáxa7-s (s=Deb)]   k=Zima
        [dog-3POSS (NOM=Deb)] DET=Zima
        "Zima is her [Deb's] dog."

b. * [es-qáxa7-s (s=Deb)] k=Mark
    [STAT-dog-3POSS (NOM=Deb)] DET=Mark
    "Mark has her [Deb's] dog."

Finally, (48) shows that even where a perfectly plausible possessive interpretation is available with a non-nominal predicate, possessive *es-* may only target [+N] elements:

(48) a. * es-qacw.cw-áw'lh   k=Lémya7
         STAT-break(REDUP)-vehicle DET=Lémya7
         "Lémya7 has a broken-down one [vehicle]."

b. * es-peq-álts=lhkan
    STAT-white=1SG.SUBJ
    "I have a white one [house]."

To summarize, the stative/possessive prefix *es-* systematically distinguishes between nominal and non-nominal predicates; it yields a possessive interpretation if and only if it attaches to nouns, though the output of affixation is itself non-nominal.[13]

In (49) we summarize the category-sensitive morphological operations we have discussed.

(49) *Process*   *Input*   *Output*

Possessive morphology in predicate position   [+N]   [+N]
Inchoative infix / suffix   [-N]   [-N]
Out-of-control clitic combination   [-N]   [-N]
Stative Prefix *es-* (on possessive interpretation)   [+N]   [-N]

It should be emphasized that this is not an exhaustive list; the point of this section has simply been to show that St'át'imcets exhibits lexical category-sensitive operations at every level of the morphology.

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13 A reviewer asks whether this argument could be based on a mistaken reliance on English translations. For example, (44b) could perhaps mean 'I have been husbanded', which when translated into colloquial English happens to contain a possessive rather than a stative predicate.

However, there is an irreducible difference in the semantics of *es*-prefixed nouns and *es*-prefixed verbs. In (42b) and (43b) it is the individual denoted by the subject ('John' and 'the water' respectively) which has undergone the event denoted by the unaffixed predicate (sitting or boiling), and is now in the resulting state of having sat / boiled. In (44b) and (45b), on the other hand, the subject of the *es*-marked predicate is *not* the individual who has the property denoted by the unaffixed predicates *kwtamts* 'husband' or *sqáxa7* 'dog'. If *es-* had a uniform semantics, we could not explain why (44b) does not mean 'I have become a husband' or conversely, why (42b) does not mean that John owns something that is in the state of sitting.

While investigation of lexical category-sensitivity elsewhere in Salish has not been as systematic as in St'át'imcets, similar results have been reported for other languages, including Okanagan (Mattina 1994), Bella Coola (Nater 1984, Beck 1995), and Lushootseed (Beck 1995). Obviously, the details of the morphological operations which show category-sensitivity differ from language to language, but the overall result is nevertheless quite clear: lexical categories constrain morphological operations in Salish, just as they do in English.

3.3 Conclusion: Salish

The preceding sections have shown that while the FDH initially looks plausible for Salish because of predicate-argument flexibility, roots must nevertheless be divided into categorial subclasses with regard to their behaviour in the derivational morphology, the inflectional morphology, and the syntax. In each domain, these subclasses of root manifest themselves independently of the presence or absence of any higher functional head. The FDH cannot account for the Salish data.

4. Lexical categories are universal

In section 2 we argued that the FDH almost works for English, since, unlike the more widespread 'D creates an argument' theory, it correctly captures the robust correlation between D and N. However, we pointed out that systematic regularities in the relation between derivation and meaning cannot be captured under the FDH, and therefore that lexical categorial distinctions must be retained.

In section 3, we turned to Salish. The predicate-argument flexibility data seem to suggest that lexical categorial distinctions are unnecessary in Salish, supporting the FDH. However, in spite of surface evidence for lexical category neutrality, we have shown that Salish possesses lexical categorial distinctions which are divorced from D (or from any functional head).

Interestingly, the types of evidence we adduced for lexical categorial distinctions differ rather strikingly between English and Salish. In English, the FDH fails because it cannot account for systematic restrictions on the realization of 'nominal' forms in the environment of the functional category D. On the other hand, in Salish, the FDH fails because it cannot account for the systematic presence of a [±N] distinction in environments which lack D. In both cases, however, there is initially plausible evidence for the FDH, which masks an underlying need for lexical categorial distinctions.

On the basis of the evidence presented here against the FDH in both English and Salish, we claim that lexical categorial distinctions must be universal. The argument is based on learnability considerations, expanding on ideas in Demirdache and Matthewson 1995.

Suppose that the FDH were a possible hypothesis for the language learner. In English, there would be nothing to prevent a learner who hypothesized the FDH from overgeneralizing the set of possible 'nouns' (i.e., roots under D) to include the cases in (10), repeated in (50):

(50) a.   * John is [a small/red/happy/clever/handsome/dangerous].
     b.   * [A small/red/happy/clever/handsome/dangerous] arrived.

Such overgeneralization would lead to a retreat problem, since only negative evidence could tell the child that the cases in (50) were ungrammatical in English. In fact, children learning English make almost no lexical category mistakes of the type shown in (50) (see Radford 1990 : 42, and references cited therein), indicating that they have learnt the lexical category status of roots quite independently of the distribution of D.

Parallel arguments can be constructed for Salish, where virtually all of the evidence we have adduced for lexical categories involves distributional restrictions which cross-cut the predicate-argument distinction. Thus, if a Salish learner assumed the FDH, we would expect overgeneralization and attendant retreat problems with complex predicates (25-28), attributives (30), and relative clauses (31-35). For example, there would be nothing to stop a learner of St'át'imcets from over-generating complex predicates like those in (28) above, and no way of retreating from a grammar which allows such constructions. Unfortunately, empirical evidence from Salish-learning children is unavailable, but the learnability argument still holds, just as it does in English.

In contrast, if lexical categories are universally available, independently of any particular functional context, these learnability problems will disappear: categorial distinctions will emerge in the absence of positive evidence, as is the case in both English and Salish, whereas category-neutral behavior will be learned on the basis of positive evidence, which is indeed possible for all the category neutral phenomena we have discussed.

5. Differences between English and Salish

Recall the different types of evidence for lexical categories in English and in Salish. In English, D systematically co-occurs with N; this generalization is

what leads researchers like Marantz to propose that nouns are simply roots selected by D. However, we have shown that lexical categorial distinctions reveal themselves in the absence of whole classes of expected nominal and non-nominal manifestations of roots. Thus, one class of roots (e.g., *man, whale, priest)* apparently has nominal versions denoting sets of individuals, while another class of roots (e.g., *tall, red, happy)* systematically lacks them.

In Salish, on the other hand, D always correlates with argumenthood rather than with nounhood. The initial evidence for category neutrality was that there are no distributional restrictions on which subclasses of roots can appear inside arguments and inside predicates (predicate-argument flexibility). The evidence *for* lexical categories is then simply that upon closer inspection, there *are* distributional differences between Ns and non-Ns. And the identifiable subclass of roots which we call [+N] emerges in ways which show that the class [+N] has no correlation with D, or with any functional category.

There are two possible sources for these cross-linguistic differences: differing properties of D, or differing properties of N. In this section, we will argue that the location of the cross-linguistic difference is in N, rather than D. We will show that D performs a similar function in both languages, and we will present independent evidence that Ns differ in Salish from in English. We will conclude with some speculations about how the difference between Ns derives the full range of facts outlined in previous sections.

5.1 Connecting the differences

The correlations we have established for each language are summarized in (51) and (52).

(51) Salish:
   i. Arguments require D and Ds always create arguments.
      Arg <=> D

   ii. Ns do not require Ds and Ds do not require Ns.
      N <≠> D

(52) English:
   i. Arguments require D, but D does not always create an argument.
      Arg => D; D ≠> Arg

   ii. Ns require Ds and Ds require Ns.
      N <=> D

There are two-way correlations between arguments and Ds in Salish (51i), and between nouns and Ds in English (52ii).[14] On the other hand, there is complete dissociation between nouns and Ds in Salish (51ii); neither requires the other. The asymmetrical and therefore potentially most interesting relationship is between arguments and Ds in English (52i). Here, there is a one-way implication only. As noted above, this asymmetrical relationship leads to a problem for theories which claim that the function of D is to create arguments, since such theories cannot easily account for the fact that Ds are even possible on predicate nominals in English, let alone for the fact that they are obligatory:

(53) Olivia is *(a) priest.

One implication of data like (53) is that the differences between English and Salish cannot derive solely from a difference in the properties of D. Rather, the differences in the nature of N are crucial. The reasoning is as follows. The obligatory presence of *a* in (53) is clearly not due to any argument-creating properties of D, since the DP is not functioning as an argument in this sentence. Nor can *a* be necessary because D requires a nominal complement; such a requirement on D would not rule out bare nouns in predicate position. By a process of elimination, it seems that *a* is obligatory in (53) because the noun *priest* requires it.

Now contrast (53) with its St'át'imcets counterpart in (54). Ds are obligatorily absent on predicate nominals in Salish (see section 3.1 above).

(54) (*ti)=naplít(*=a)   kw=s=Olivia
     (*DET)=priest(*=EXIS) DET=NOM=Olivia
     "Olivia is a priest."

Therefore, we hypothesize that there must be a difference between English nouns and Salish nouns, such that English nouns are in some respect defective, requiring the presence of *a* inside predicates. (We will return below to the case of mass nouns and bare plurals, which obviously do not require *a.*)

What is it about English Ns that makes them require a D? To approach an answer to this, we will examine the function of determiners in predicate nominals. What function is *a* performing in (53), and why does the noun *priest* need that function to be performed?

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14 Here we are abstracting away from the exception to the FDH noted in footnote 10.

5.1 The function of *a* in predicate nominals

Consider the difference between adjectival predicates and nominal predicates with determiners, as in (55a) vs. (55b). The sentences appear to be truth-conditionally equivalent, but are intuitively not identical in their meaning.

(55) a. Oliver is Canadian.
     b. Oliver is a Canadian.

One difference seems to be that (55b) induces an implicature that there are other individuals satisfying the predicate (i.e., other Canadians). If Oliver is the only Canadian left on earth, (55b) seems inappropriate; (55a) would still be perfect.[15]

The inference that other Canadians exist is a conversational implicature of (55b) rather than part of its truth-conditional semantics; (56) shows that the inference can be cancelled without contradiction, a well-known diagnostic for implicatures (see Grice 1975 and much subsequent work).

(56) Oliver is a Canadian – in fact, he's the only Canadian!

The most important intuitive difference between (55a) and (55b) seems to be that while (55a) simply attributes to Oliver the property of being Canadian, (55b) attributes to Oliver the property of being a *singular individual* who is Canadian. The 'singularizing' effect of (55b) is supported by the following data, which show that plural subjects are incompatible with a predicate containing *a*.

(57) a. Oliver and Ben are Canadian.
     b. * Oliver and Ben are a Canadian.

The incompatibility of plural subjects with predicate nominals containing *a* suggests that the singularizing effect of *a* (i.e. that the subject of a predicate containing *a* must denote a singular individual)[16] is part of the semantics. Returning to (55a) vs. (55b), the fact that these two sentences are true in exactly the same range of situations is therefore a lucky accident based on the fact that the subject is singular. Predicating 'Canadian' of a singular subject will give rise to truth in exactly the same situations as predicating 'singular individual who is Canadian' of that same singular subject.

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15 As would the equational sentence in (i), where Oliver's uniqueness is overtly signalled by the definite article.
(i) Oliver is the Canadian.

16 This description will require refinement based on data such as in (i).
(i) Maggie, Olivia, and Ben are a team.

So far, we have been comparing adjectival predicates with nominal predicates. For even more minimal pairs, we can consider cases where a nominal predicate manages to surface without the usual indefinite article:

(58) a. I am woman (hear me roar).
     b. I am a woman.

According to the analysis being sketched, (58b) means that I am a singular individual who is a woman. (58a), on the other hand, lacks the indefinite article and therefore lacks the 'singularizing' effect. This correlates with the fact that (58a) seems to imply that I represent the totality of womanhood, rather than that I am a single woman.

In this subsection we have informally described the contribution of *a* when it appears inside predicate nominals. We have suggested that *a* turns the predicate denoted by the noun into a predicate which is true only of singular individuals.[17]

However, this account remains problematic as long as we continue to maintain that *a* functions as an argument-creator on nominals which are not in predicate position. We do not want to have to say that there are two separate lexical entries for *a*, one for inside arguments (where *a* takes a predicate of type <e,t> and creates an argument, of type e or <<e,t>,t>), and one for inside predicates (where *a* 'singularizes' but does not create an argumental type). The purpose of the next subsection is to show how this conceptual problem can be avoided.

5.1.1 *A* is not a determiner

We would like to suggest that we can avoid the unwelcome option of positing two separate lexical entries for *a*, by abandoning the assumption that it is *a* which transforms a predicative NP into an argument in examples such as:

(59) A Canadian approached Oliver.

In other words, let us suppose that determiners *do* always create arguments, but *a* does not belong to the class of determiners. If *a* is not a determiner, then there is in fact no determiner on the predicate nominal in (60).

(60) Oliver is a Canadian.

Salish and English are thus alike in disallowing determiners on predicates. The languages will be even more similar if we adopt the hypothesis that in

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17 The analysis we are sketching seems to conflict with the usual assumption that morphologically singular nouns such as *Canadian* are already true only of singular individuals (i.e., without needing *a* to perform any such 'singularizing' operation). See below for discussion.

both language types, the correlation between Ds and argumenthood is a two-way implication:

(61) English and Salish:
    i. Arguments require D and Ds always create arguments.
        Arg <=> D

All that is required for (61) to be maintained is the postulation of a null D inside indefinite argument phrases in English:[18]

(62) $\emptyset_D$ A Canadian approached Oliver.

If *a* is not a determiner, what is it? It is a functional element which takes as input a predicative NP (of type <e,t>), and produces an output which is still predicative (of type <e,t>). In addition, it 'singularizes' the predicate as described informally above. A possible lexical entry for *a* is given in (63) (the formalism is that of Heim and Kratzer 1998).

(63) Possible lexical entry for *a:*
    $[| a |] = \lambda f \in D_{<e,t>} . \lambda x \in D_e .$ x is a singular individual such that f(x) = 1

This says that *a* is a function from one-place predicates to one-place predicates, such that the resulting predicate is true of all singular individuals which satisfy the original predicate (the common noun).

This proposal generates the right results for the basic cases. In predicate position, nominals with *a* are still predicative and are able to combine directly with a subject argument. In argument position, *a*-phrases contain a null D which converts a predicate of type <e,t> to an argumental type, while also introducing existential quantification (see footnote 11). The situation so far is summarized in (64), and the advantages of claiming that *a* does not occupy D position are summarized in (65).

(64)

	Salish	English
arguments require D	√	√
D always creates an argument	√	√
N requires additional functional element	x	√

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18 The assumption that all arguments in English contain determiners, and therefore the postulation of null determiners with singular indefinites and with bare plurals, is not crucial to the rest of our claims. It is possible that there is parameterization with respect to whether all arguments in all languages contain Ds (see Chierchia 1998 for discussion). However, whatever meaning one normally assigns to the indefinite article in English arguments (such as introducing existential quantification, if one adopts a Russellian approach), we do not want that meaning to be present inside predicate nominals. Therefore, there is some semantic motivation for postulating a null indefinite determiner inside arguments in English, which is the repository of that extra meaning.

(65) i.   No need to have two separate lexical entries for *a*.
      ii. Uniform semantics for determiners as argument-creators.
      iii. Possibility of claiming that D <=> Arg universally.

If *a* does not occupy D position, what position does it occupy? One obvious candidate is Num, given the 'singularizing' function of *a* we have discussed. In this respect, observe that historically, English *a* is derived from the word for 'one', and many languages display homophony between the indefinite article and the number 'one' (for example French, German). Note also that the non-uniqueness implicature, whereby (66a) implicates that other Canadians exist, corresponds to a similar implicature with the numeral *one,* as in (66b).[19]

(66) a.   Oliver is a Canadian.
      b.   Oliver is one Canadian.

Thus, while *a* when inside predicates lacks the other features of indefinite arguments (such as existential quantification), it retains the sense of 'one'. These observations support an analysis of *a* as occupying Num. Our claim that the real indefinite determiner is null in English is also cross-linguistically plausible; many languages (for example Hebrew) possess an overt definite determiner but a null indefinite determiner.

The proposal that *a* is not a determiner, but is closely related to the numeral *one,* was originally made by Perlmutter 1970; many more supporting arguments for the claim can be found in that article. Perlmutter argues that *a* is derived from deep-structure *one* via a rule which obligatorily converts unstressed proclitic *one* to *a(n)*. His analysis differs from ours in that for him, argumental noun phrases containing *a* have no determiner at all, while we have argued that there is a null determiner in these cases.

There are at least three directly relevant phenomena which we have not yet discussed:

(67) i.   *Definite DPs:*
          The Canadian approached Oliver.

      ii. *Bare plurals:*
          Maggie, Oliver and Ben are Canadians.

      iii. *Mass nouns:*
          That stuff is snow.

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19 The implicature of non-uniqueness appears to be stronger with *one* than with *a,* a fact which we do not have an account for at this stage.

With regard to (67i), we assume that the definite determiner *the* performs the 'singularizing' function as well as its usual D function.[20] In this respect, it parallels the quantificational determiner *every,* which is argued by Matthewson 1998 to perform dual functions, a determiner-like 'resource domain narrowing' function and a quantification function. See also Gil 1995 on the 'portmanteau' nature of *every* in languages where it occurs.

We will return to the issue of bare plurals and mass nouns below, after we have examined certain differences between nouns in English and in Salish. The differences we discover in N-denotations will point to a direction for answering the question of what exactly the 'singularization' operation does, and how to deal with mass nouns and plurals.

5.2 Differences in N-denotations

Recall our claim that while English count nouns require a functional element *a* before they can denote predicates of singular individuals, Salish nouns do not require such an element. What is it about English Ns that makes them need to distinguish singular, and why do Salish nouns not need this operation?

Let us first examine Salish nouns, using St'át'imcets data. Davis 1999 has argued that Ns in Salish have a restricted range of denotations. In particular, Salish Ns always denote (characteristic functions of) individual entities:

(68) Examples of St'át'imcets nouns:

sqaycw	'man'	tsitcw	'house'	tmicw	'land'
srap	'tree'	xúlcen	'toe'	szenk	'circle'

There are no St'át'imcets nouns denoting abstract concepts such as 'love', 'happiness', or 'meanness'. There are no St'át'imcets nouns denoting second-order properties such as 'redness'. There are no St'át'imcets nouns denoting events, such as 'destruction', 'arrival', or 'examination'.[21] Nouns in St'át'imcets may only denote (characteristic functions of) sets of concrete entities.

We are not merely claiming that St'át'imcets lacks *underived* nouns denoting things other than individual entities. The generalizations just stated hold also without exception for nominals derived by nominalization processes, as shown by Davis 1999:

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20 For Perlmutter 1970, there is a rule deleting unstressed *one* after *the.*

21 These concepts must be rendered using factive clauses or gerunds ('the fact that is it red', 'his destroying', 'the fact that she loves', etc).

(69) a. ti=s-mets-cál=a
          DET=NOM-write-MID=EXIS
          "the written thing"

     b. ti=s-cwíl'-em=a
          DET=NOM-seek-MID=EXIS
          "the thing sought"

     c. ti=s-náq'w=a
          DET=NOM-steal=EXIS
          "the stolen thing"

Derived nominals in St'át'imcets have only one possible interpretation. They denote the set of individuals corresponding to the internal argument of the verb they are derived from. For example, a derived nominal based on the verb 'write', as in (69a), can only mean 'written thing'.

Here are some examples of impossible nominalizations:

(70) a. * ti=s-cúlel=a
            DET=NOM-run.away=EXIS
            "the escape"

     b. * ti=s-t'éqw-p=a
            DET=NOM -explode-INCH=EXIS
            "the explosion"

     c. * ti=s-páqw=a
            DET=NOM -watch=EXIS
            "the observation"

The data in (68-70) lead us to propose the generalization:

(71) All nouns in St'át'imcets denote sets of individuals.

We intend (71) to be understood in a strict sense, that also excludes mass nouns; we are literally claiming that St'át'imcets Ns denote sets of atomic individuals, and not un-individualized masses. And this appears to be correct. According to Chierchia 1998, mass nouns may not be pluralized, since their structure is already that of a plural (a lattice). Nouns whose English counterparts are mass may freely take plural determiners in St'át'imcets. This suggests that there is no mass-count distinction in St'át'imcets.

(72) a. wa7 i=máq7=a   l-ta=c.wálh=a
         PROG DET.PL=snow-EXIS on-DET=road=EXIS
         "There is snow on the road."

     b. t'ec-s-ás   i=t'éc=a   i=míxalh=a
         sweet-CAUS-3ERG DET.PL=sweet=EXIS DET.PL=bear=EXIS
         "Bears like honey."

     c. ats'x-en i=qú7=a
         see-DIR   DET.PL=water=EXIS
         "Look at the water."

In Salish, then, the syntactic category N represents what we might call the conceptual core of nounhood – the domain of individual entities. In English, on the other hand, the situation is very different. English nouns can denote not only sets of individuals *(priest)*, but also second-order properties *(redness)*, events *(destruction)*, abstract concepts *(love)*, and un-individualized masses *(water)*. Our aim now is to relate this difference in possible noun-denotations to the functional categorial difference between the two language-types, namely that in English, 'singularization' is necessary for all singular count nouns wherever they appear, whereas in Salish, no such operation is required.

Assume that (71) is correct and that in Salish, nouns denote sets of atomic individuals. This predicts that: 1° there will be no separate set of mass nouns, and: 2° an operation will be necessary to enable predication over pluralities. Both of these predictions are upheld; the mass noun data were given in (72), and (73) shows that plurality is overtly encoded in the determiner system, as well as (optionally) on the noun itself.

(73) a. qwatsáts i=smelhmúlhats=a
         leave   DET.PL=woman(PL)=EXIS
         "The women left."

     b. qwatsáts ti=smúlhats=a
         leave   DET=woman=EXIS
         "The woman / *woman left."

     c. smelhmúlhats i=qwatsáts=a
         woman(PL)   DET.PL=leave=EXIS
         "The ones who left were women."

Another way of stating the core generalization is as follows:

(74) In Salish, all nouns are count nouns.

Now what about English? We have claimed that all singular count nouns in English require the presence of a Num head, whether in predicate position or in argument position. Inside predicates, the Num head is realized as *a* for singular. An obvious conclusion from this is that it is only *after* Num has been added that nouns in English denote sets of atomic individuals. Perhaps, then, the function of Num in English is to 'individuate' the denotation of the noun so that it may denote atomic individuals. This 'individuation' is not in itself tied to singularity; *a* is the singular version, while plural Num individuates and in addition pluralizes (creates pluralities which themselves contain atomic individuals).

If nouns in English require 'individuation', this suggests a rather surprising conclusion:

(75)   In English, all nouns are mass nouns.

The reason why we are lead to postulate (75) has to do with work by Chierchia 1998 on the denotation of mass and count nouns. Chierchia claims (1998:9) that 'mass nouns are quite literally the neutralization of the singular / plural distinction'. Mass nouns cannot be pluralized, as noted above, and cannot be directly counted: 'For counting we need to individuate a level at which to count'. Counting requires a set of atoms, and mass nouns do not correspond to sets of atoms.[22]

Our suggestion in (75) means that we are claiming that English nouns parallel Chinese nouns, according to Chierchia's analysis of Chinese: they are all mass, and require individuation before pluralization or counting can take place. In Chinese, the individuating elements are called classifiers; in English, we suggest that they are Num heads. It is interesting in this respect to compare our proposal with remarks by Krifka (1995:406) about count nouns in English. Krifka notes that while mass nouns in English can be treated exactly like nouns in Chinese, count nouns combine directly with a numeral without requiring a classifier. He notes that 'this difference can be captured in two ways - by assuming that either English numerals or English count nouns have a "built-in" classifier.' We are suggesting, on the other hand, that the classifier is not "built in", but comes from a separate functional head, namely Num.

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22 Note that Chierchia claims that in a language where all nouns are mass, plural marking will be absent, and clearly English possesses plural marking. However, our suggestion for English does not contradict Chierchia's correlation, since we claim that nouns are *not* directly pluralized in English, but must be individuated first.

Note that for Chierchia, (mass) nouns in Chinese denote kinds, and as such can be argumental without the need for a determiner. This is not the case in English. On the contrary, it is crucial for us that nouns in English are predicative, and remain so even after the addition of Num. However, predicative mass nouns are not ruled out by Chierchia's system; he notes, for example, that in a language where all nouns are predicative, such as French, 'there is no reason not to expect that some nouns will have a count extension, while others will have a mass one' (1998:17).

The semantic implications of the analysis we have sketched are far-reaching, and we cannot attempt to deal with them in any depth here. We are aware that the claim in (75) runs counter to standard assumptions about English, according to which nouns like *priest* denote sets of singular individuals. We would therefore like to emphasize that the proposal sketched in this subsection requires further research before it can be asserted with confidence. We do believe, however, that it points to a potential answer to the cross-linguistic problem raised by the English and Salish N and D systems. [23]

In the final subsection, we will briefly outline how some of the loose ends of our proposal can be addressed, and point to areas where there are remaining problems.

5.3 Some loose ends

5.3.1 Only weak Qs inside predicate nominals

In footnote 2 above we mentioned that strong quantifiers do not appear inside predicate nominals; we have also adopted the idea that definite determiners are absent from predicate nominals, and that (76b) is an instance of an equational construction.

(76) a.   * The ones who came were most women.
     b.   * Olivia is the priest.

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[23] A reviewer points out that there is plausibly a third type of language, which possesses both inherently count and inherently mass nouns. Drawing on work by Kallulli 1999, the reviewer suggests that Albanian and Mainland Scandinavian may be such languages. In Albanian and Mainland Scandinavian, direct object nouns and predicate nominals do not require D; this could suggest that unlike English nouns, nouns in these languages are not inherently mass and do not require individuation. On the other hand, it may well be the case that nouns in these languages are not subject to the restrictions which have outlined for Salish which cause us to hypothesize that all nouns are count in those languages. This issue must be the subject of future research.

This follows straightforwardly under our analysis, because we are claiming that uniformly, Ds are absent on predicate nominals. In English, just as in Salish, Ds function unambiguously to create argumental types. Assuming that strong quantifiers such as *most* and definite determiners such as *the* occupy D, they are immediately ruled out from predicate position. The only quantificational elements which will be able to appear inside predicate nominals will be those which can be analyzed as adjectives, such as 'weak' quantifiers on their cardinal reading:

(77) Maggie and Olivia are two priests.

5.3.2 Mass nouns

The first loose end concerns mass nouns in English (see (67iii) above). Since we are claiming that *all* nouns start out as mass in English, and that 'individuation' is required only for count nouns, we can simply say that nouns which surface as mass lack the individuation process. This accounts for why mass nouns do not require or even allow *a* when they appear inside predicate nominals.

There is, however, a problem posed by mass nouns which take a definite determiner:

(78) Maggie drank the water.

The problem is that *the* appears on both count and mass nouns in argument position, yet the former require 'individuation' and the latter do not. In other words, inside definites, the mass/count contrast with respect to overt functional heads disappears. Since we have concentrated mainly on predicate nominals and the meaning of *a,* we do not have an answer to this problem at this stage.

There is another potential problem with our claim that English nouns parallel Chinese nouns in being inherently mass and requiring individuation. The problem is that in Chinese, predicate nominals do *not* obligatorily require classifiers. We must leave this issue for future research.

5.3.3 No return to the FDH

The analysis we have outlined entails that wherever count nouns appear in English, there is always a functional head (Num) present. We noted above that simply redefining the particular functional head which N requires (as Num, or Nom, rather than D) would not constitute a rejection of the FDH.

However, the analysis we are advocating does *not* constitute a return to the FDH. The reasons should be clear from perusal of section 2, where we presented semantic and morphological evidence that before *any* functional heads enter the picture, there must be a lexical category 'N'. In addition, the evidence from English predicate nominals shows that it is N which demands Num, and not Num which creates Ns.

6. Summary and conclusions

The ideas put forward in the first part of this paper are summarized here in point form:

(79) a. In English, there is initial evidence for the Functional Determination Hypothesis (FDH): Ns apparently always co-occur with D, in a way which cross-cuts the predicate / argument distinction.

   b. In spite of this, the FDH cannot be right for English, for the following reasons:
   i. There are systematic absences of expected nominals denoting sets of individuals (no nominal version of *tall,* etc).
   ii. There is no way of distinguishing derived from underived Ns; no way of accounting for category sensitivity of many nominalizing affixes.

(80) a. In Salish, there is initial evidence for the FDH:
   No distributional restrictions on which roots can appear in argument or in predicate position.

   b. In spite of this, the FDH cannot be right for Salish:
   i. There are systematic syntactic differences between [+N] and [–N], which cross-cut the presence or absence of D.
   ii. There are morphological processes which target either [+N] or [–N], irrespective of the presence or absence of functional heads.

(81) Lexical categories are universal (learnability argument).

In the second part of the paper, we investigated the source of the cross-linguistic differences between English and Salish. While initially it seemed that both D and N vary in their properties (see (51-52) above), our reasoning led us to a final picture according to which Ds perform the same functions in both language-types. Here is the revised analysis:

(82) In Salish and in English:
    i. Arguments require D and Ds always create arguments.
       Arg <=> D
    ii. Ns do not require Ds and Ds do not require Ns.
       N <≠> D

(83) In English:
    i. Ns require Num and Num requires N.
       N <=> Num

We propose that the points where English and Salish coincide, namely those in (82), are language universals. Our reason is that if such typologically and genetically diverse languages coincide, it is highly likely that we are dealing with universal properties. Obviously, this claim is open to further empirical investigation and falsification.

With respect to (83), we have presented independent evidence that nouns differ between English and Salish, and suggested a way in which the difference between Ns can derive the differences between the functional (D) systems of the respective languages. This more tentative proposal is outlined in (84).

(84) a. In Salish, all nouns are count nouns which denote sets of individuals (in the strict sense: sets of atomic individuals).
     b. In English, nouns do not denote sets of individuals. They are all mass until made otherwise by an 'individuating' Num head.
     c. The difference in Ns is the source of the differences in the functional projections above N (contrary to both the FDH and the Functional Parameterization Hypothesis of Fukui 1986).

There are obviously many unexplored implications of (84). Nevertheless, our analysis accounts for the very different ways in which Salish and English lexical categorial distinctions are manifested, and provides an explanatory framework within which to pursue further cross-linguistic investigation.

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