Remarks on features
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Abstract

This paper pursues the idea that uniterpretable features are not present in syntax, but are instead a product of the interfaces. In particular, it argues that formal feature values belong to PF only, i.e., that they are not syntactic objects but PF 'translations' of more abstract syntactic structures and correlations. It follows that case is nonexistent in syntax and it also follows that agreement is a PF copying process, differing radically from abstract, syntactic Agree. Accordingly, most of the work of traditional syntax happens in PF and is thus invisible to the semantic interface, SF, that is, the computation proceeds on the PF side after transfer.

1. Introduction[*]

If the syntactic computation proceeds in a single cycle (Chomsky 2000 *et seq.*), it must be interpretable to both the interfaces, that is, semantic form and perceptible form, SF and PF, for short, where *perceptible form* refers to PF in a broad sense, including the 'sign form' of sign languages.

From this general interpretability or legibility condition, it follows that syntax cannot produce any information that is visible but uninterpretable to the interfaces. By necessity, however, linguistic objects contain features that are interpretable to only one of the interfaces, like +HUMAN and [-glottal]. Chomsky's solution to this *Interpretablity Puzzle* is basically to have uninterpretable features removed or eliminated prior to or under the operation transfer, that hands the derivation over to the interfaces. In this work, I will pursue the 'obvious' alternative, namely, that uninterpretable features are not present in syntax, but are instead a product of the interfaces or of their interplay with language external motoric and conceptual subsystems. Such features are functional in a broad sense, but superfluous from a narrow syntactic perspective. Syntax itself contains features that get interpreted or valued through matching (Sigurðsson 2004a, 2004b, 2004c, 2006b), but it contains no features that remain uninterpreted and thus need to be deleted.[1]

It is a truism that individual languages systematically express categories like Tense, Person, Number, etc., by overt elements. Regardless of whether the elements in question are

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[*] For useful discussions, comments and/or help with data, thanks to Christer Platzack, David Adger, Eiríkur Rögnvaldsson, Heidi Quinn, Thórhallur Eythórsson, and Verner Egerland.

[1] See in particular Sigurðsson (2006b), where it is argued that syntax operates with abstract features and roots, ROOT$_{99}$, etc., that do not get any phonological feature values (uninterpretable to SF) until on the PF side, meaning that the 'lexicon' in the traditional sense is stored on the PF side.

suprasegmental patterns, morphemes, words, phrases or whole clauses, they are parts of the audible or visible form of language and thus products of PF in the broad sense. It is commonly assumed that these PF products somehow reflect elements of a more abstract and general system traditionally referred to as syntax, and I will here adopt this traditional view. The central question that arises is how exactly these PF elements relate to the putative underlying syntactic objects. I believe it is fair to say that the most general assumption is that syntactic features are interpreted or translated in a fairly straightforward manner by morphological categories, such that for instance English present and past tense are direct exponents of syntactic Tense, say, simply the two morphological values of the T head of the clausal TP projection that are lexically and parametrically available in English, standing in a direct two-to-one relationship with T. This conception is not often explicitly stated or formulated, and different ideas abound in the literature, but, I believe it is nonetheless fair to say it is the prevailing conception in many or even most generative approaches.

I shall here pursue a different approach, where the so-called formal features belong to broad PF only. On this view, there is for instance no syntactic masculine feature, no syntactic nominative case feature, and so on. Rather, morphological features of this sort are complex PF-translations of abstract syntactic relations.

It follows from the present approach that morphological agreement cannot be a narrowly syntactic phenomenon. Another important consequence is that the standard economy argument (see, e.g., Chomsky 1995) loses much of its force, that is, there is no simple mapping from syntax to morphology and hence also no general economy in PF translations of syntax. Syntax as such is sensitive to economy and so is PF as such, but PF does not heed or preserve syntactic economy, as it were.

In view of the variation observed in the languages of the world, it might seem obvious that their common denominator, Universal Grammar or Narrow Syntax, cannot possibly operate with complex entities that are physically present in individual languages, like for instance agreement features in oral languages or the eyebrow markers of questions in sign languages. The state of the art is however such that the 'obvious' conclusion that Narrow Syntax must be 'atomic' and therefore cannot operate with entities overtly expressed in the grammars of individual languages is everything but obvious to most linguists. It must be argued for.

In support of the approach pursued here, I will present and discuss data on gender, number and case from Icelandic and some other languages. Many of these data are well-

known and simple, but have nonetheless been neglected in mainstream generative approaches. It is high time that these facts be taken seriously and accounted for in some coherent manner.

2. Gender: some observations

Gender is a mixed category. Many languages have relatively transparent gender systems, based on central categories like MALE, FEMALE, ANIMATE, HUMAN. There are however also some languages that base their gender systems on less expected categories, like the NON-FLESH FOOD category in Dyirbal or the LIQUID category in Fula or Fulfulde (Corbett 1991:30–31).[2] More importantly for our purposes, there are also many languages that have a largely arbitrary gender system. I will illustrate the pervasive arbitrariness of many gender systems with examples from mainly Icelandic and German.

Both Icelandic and German have the common three gender system type, consisting of masculine, feminine and neuter. As in most gender languages, many nouns denoting people and domestic animals have natural gender. In a three gender system this will be masculine for adult male beings, feminine for adult female beings and often neuter for young animals, which are thereby treated as not yet sex-differentiable. This is illustrated in (1) for some Icelandic nouns:

(1)   *Maculine*   *Feminine*   *Neuter*

         maður 'man'   kona 'woman'   barn 'child'

         strákur 'boy'   stelpa 'girl'

         hestur 'horse'   meri 'mare'   folald 'foal'

         hrútur 'ram'   ær 'sheep'   lamb 'lamb'

         tarfur 'bull'   kýr 'cow'

         etc.

Most nouns, however, do not have natural gender. Consider (2):

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[2] In Corbett's approach, these are gender categories in the languages in question, since they enter into agreement relations (including pronominal reference), as opposed to classifiers in classifier languages. I adopt this understanding here for convenience, but it is not of any importance for what I have to say.

(2)   *Maculine*   *Feminine*   *Neuter*

         bátur 'boat'   skúta 'yacht'   skip 'ship'

         stóll 'chair'   hilla 'shelf'   borð 'table'

         kafli 'chapter'   bók 'book'   blað '(news)paper'

         kofi 'hut'   höll 'palace'   hús 'house'

         fótur 'foot'   hönd 'hand'   læri 'thigh'

         kappi 'champion'   hetja 'hero'   poppgoð 'pop idol'

         hlébarði 'leopard'   gaupa 'lynx'   ljón 'lion'

         þorskur 'cod'   ýsa 'haddock'   hrognkelsi 'lumpfish'

         svanur 'swan'   álft 'swan'

         etc.

For these and most other nouns, gender is evidently a plain classificational feature with no semantic import.[3] That is, it is like a phonological feature in making a distinction between items without itself adding or reflecting any semantics.[4]

There are several further kinds of clear evidence that the grammatical gender of most nouns does not belong to or affect their semantics. One simple type of evidence is that one and the same noun may have different genders for different speakers (see Kvaran 2005:173):

(3)   sykur 'sugar':   M or N

         skúr 'shower of rain':   F or M

         bjúga 'sausage'   N or F

         fress 'tomcat'   N or M

         etc.

Another indication of the semantic emptiness of formal gender is that one and the same noun may have different genders in the singular and plural, a phenomenon known as inqoarate genders (Corbett 1991:170):

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[3] In the narrow sense. Gender may have psychological effects, an interesting issue that is however not relevant in the present context.

[4] Making overt distinctions of this sort is not only a derivational cost but also a communicative gain, much as it is a gain to phonologically distinguish between e.g. *cable* and *table*.

(4)   foreldri ‘parent’, sg.:   N

          foreldrar ‘parents’, pl.:   M

          fótur ‘foot’, sg.:   M

          fætur ‘feet’, pl.:   F (for some speakers)

Yet another indication of formal gender's semantic vacuousness is the fact that even closely related languages, with the same gender system type, show numerous gender contrasts. Consider the German-Icelandic constrasts in (5):

(5)   *German*   *Icelandic*

      ‘horse’:   Pferd, N   hestur, M

      ‘lion’   Löwe, M   ljón, N

      ‘lynx’   Luchs, M   gaupa, F

      ‘sea’:   Meer, N   sjór, M (poetic: mar, M)

      ‘cloud’   Wolke, F   ský, N

      ‘autumn’   Herbst, M   haust, N

      ‘table’:   Tisch, M   borð, N

      ‘shelf’:   Regal, N   hilla, F

      ‘train’   Zug, M   lest, F

      ‘car’:   Auto, N   bíll, M

      ‘telephone’:   Telefon, N   sími, M

      ‘bank’:   Bank, F   banki, M

      ‘boat’:   Boot, N   bátur, M

      ‘book’   Buch, N   bók, F

      etc.

Gender mismatches of this sort between these two closely related languages are strikingly pervasive, so this list could easily be made much longer.

The grammatical gender of most nouns in formal gender languages like Icelandic and German is clearly invisible to the semantic interface. Two interpretations of this fact come into question. First, the gender feature might be present in syntax but eliminated under transfer, as are agreeing features in most minimalist approaches. Second, the gender feature

might not be present in syntax, in which case it would have to be added after transfer to PF. It is this second standpoint that I am taking here.[5]

The prevailing assumption, I believe, is that formal gender does belong to syntax (cf. the notion 'syntactic gender agreement' in Corbett 1991, see also the approach in e.g. Kayne 2005). However, it is not optimal engineering to first provide all nouns with some specific gender feature and then to delete the same feature of most nouns under transfer to SF. Notice also that this putative feature deletion does not involve agreement, of course. Moreover, if grammar deletes the feminine feature of German *Bank* 'bank' and the masculine feature of Icelandic *banki* under transfer to SF, it is unclear how it would avoid deleting the gender of natural gender nouns like German *Mann* and *Frau* and Icelandic *maður* 'man' and *kona* 'woman'.

We have to sharply distinguish between the semantic FEMALE/MALE or HE/SHE features and grammatical or formal gender features. Most nouns that have semantic gender, either HE or SHE, have natural formal gender, but there are many exceptions, higlighting that semantic and formal gender are distinct features even in animate nouns. This is illustrated with only a few Icelandic examples in (6):

(6) *Maculine*   *Feminine*   *Neuter*
     kvenmaður 'woman'   karlugla 'fool of a man'   karlmenni '(strong) man'
     kvenskörungur 'powerful woman' mannfýla 'bastard of a man'   fljóð 'girl' (poetic)
     stelpukjáni 'fool of a girl'   karlpersóna 'male person'   naut 'bull'
     etc.

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[5] There might seem to be a third alternative here, such that grammatical gender is just a formal classifier, unrelated to or at least independent of semantic gender. On this approach, one might want to say that the formal gender classifier of all nouns is deleted under transfer to SF, whereas their semantic gender is not, and, conversely, that semantic gender is deleted under transfer to PF whereas formal gender is not. As we shall see, however, semantic gender is PF visible in certain cases. Evidently, also, it is not the case that formal gender is generally independent of semantic gender. Rather, it is a 'PF-translation' of semantic gender, showing sloppiness that is typical of the overt, socially conventionalized PF side of language. Saying that grammatical features come in pairs in syntax, consisting of a semantic and a formal member, is tantamount to saying that the form-meaning relationship of language must be taken as an unexplainable axiom, which, in turn, raises the question of why the form member of such pairs should vary across languages. In effect, this standpoint would take us back to pre-Chomskyan structuralism, with Universal Grammar as an impossible subject of inquiry.

Thus, saying that formal gender is a syntatic feature that is generally SF uninterpretable except when it combines with another feature, like ANIMATE or HUMAN, does not help. On the contrary, that approach would make numerous wrong predictions, since most Icelandic nouns denoting professions and nationalities are masculine, regardless of the sex of the person referred to, an issue I will return to shortly.

Corbett (1991) refers to nouns like the ones in (6) as HYBRID NOUNS. Many such nouns are compounds or suffixed. Derivational morphology usually overrides semantic gender features, as seen in e.g. the famous German neuter noun for 'girl', *Mädchen*, where *-chen* is a derivational morpheme deciding the formal, neuter gender of the derived noun, irrespective of the noun's semantic gender.

Formal gender features are normally visible through agreement but they are often only indirectly visible on the noun itself, through its effects on the selection of case/number endings (that is, through its effects on inflectional classification). Thus, feminine *ausa* 'scoop, ladle' is *aus**u*** in the oblique singular cases and *aus**ur*** in nominative and accusative plural, whereas neuter *auga* 'eye' is the same in the other singular cases and *aug**u*** in nominative and accusative plural:

(7)

	F 'scoop'	N 'eye'
Sg.Nom	ausa	auga
Sg.Acc/Dat/Gen	aus**u**	aug**a**
Pl.Nom/Acc	aus**ur**	aug**u**
Pl.Dat	ausum	augum
Pl.Gen	ausna	augna

For a handful of kinship nouns, though, no such effects of gender on case/number endings are observed, that is, *bróðir, dóttir, faðir, móðir, systir* 'brother, daughter, father, mother, sister', which all inflect the same:[6]

(8)

	'mother'	'brother'
Sg.Nom	móðir	bróðir
Sg.Acc/Dat/Gen	móður	bróður

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[6] As opposed to *sonur* 'son', *mamma* 'mom', *pabbi* 'dad' and many other kinship terms.

Pl.Nom/Acc	mæður	bræður
Pl.Dat	mæðrum	bræðrum
Pl.Gen	mæðra	bræðra

Thus, these few kinship terms seem to be exceptional in having only a semantic gender feature and no formal gender feature. An alternative way of stating this is to say that these nouns have a zero formal gender feature that is interpreted as formal masculine vs. feminine by agreement morphology. See further below.

Most nouns in a formal gender language like Icelandic evidently select and incorporate a formal gender feature (+/- M, +/- F), even when they have semantic gender. As we shall see shortly, this has the effect that semantic gender becomes invisible to PF when a noun has a specified formal gender feature. This incorporation of formal gender may be thought of as a 'word formation' process, as it were (cf. Josefsson 1998), but, rather than taking place in Narrow Syntax, it takes place after transfer to PF. That is, lexicalization, combining phonetic material with formal features, is post-syntactic, syntax in contrast operating with only abstract features and roots. Thus, morphology is all post-syntactic.[7]

We can distinguish between four classes of Icelandic nouns in terms of semantic and formal gender, as sketched in (9):

(9) A. Nouns that have both semantic and formal gender

A1. Natural gender nouns

A2. Hybrid nouns, with contrasting semantic and formal genders

B. Nouns that have only formal gender

C. A handful of kinship terms that have semantic gender and a zero formal gender

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[7] See further Sigurðsson (2006b). Splitting or distributing morphology between 'lexical' roots and functional elements violates Minimal Design (Chomsky's Strong Minimalist Thesis).

This is illustrated in (10):

(10)			*Semantic gender*	*Formal gender*
	A1.	kona 'woman'	SHE	F
	A2.	kvenmaður 'woman'	SHE	M
	B.	ausa 'scoop'	Ø	F
	C.	móðir 'mother'	SHE	Ø

B-type nouns, with no semantic gender, are by far the most numerous ones, but the natural gender type in A1 is also common, of course.

In the rare (Icelandic) case of a zero formal gender feature, agreement morphology interprets it as masculine vs. feminine in accordance with the semantic gender of the noun in question. Thus, *móðir* 'mother' triggers feminine agreement whereas *bróðir* 'brother' triggers masculine agreement:

(11) Móðir mín er gáf**uð** og bróðir m**inn** er líka gáfað**ur**.
mother my.F is smart.F and brother my.M is also smart.M
'My mother is smart and my brother is also smart.'

Similarly, first and second person pronouns have zero formal gender, also triggering this kind of 'natural agreement':

(12) a. (María sagði:) Ég er gáf**uð**.
(Mary said:) I am smart.F
  b. (Haraldur sagði:) Ég er gáfa**ður**.
(Harold said:) I am smart.M

In formal gender languages, a masculine hybrid noun that is used to refer to a woman may either be referred to as *he* or *she* in discourse. A well-known and much cited example is masculine *vrač*, the Russian noun meaning 'doctor', which can be referred to in discourse as either *on* 'he' or *ona* 'she' when denoting a female doctor (Corbett 1991:232). The same applies to Icelandic *læknir* 'doctor'. Similarly, the Icelandic masculine noun *forseti* 'president' is usually referred to with *hann* 'he', but when Iceland's president was a woman, Vigdís Finnbogadóttir, *hún* 'she' could also be used:

(13) a. Núna gengur forsetinn   í   salinn. **Hún** er í   bláum kjól.
          now   walks president.the in hall.the. she is in blue   dress
          'The president now enters the hall. She is wearing a blue dress.'

    b. Núna gengur forsetinn   í   salinn. **Hann** er í   bláum kjól.
          now   walks president.the in hall.the. he   is in blue   dress

There seems to be a rather general preference for the formal gender to control pronominal reference in Icelandic, but in this particular context of a typical female behavior, the feminine pronoun is in fact much preferred.

    Some languages, including German and most Romance varieties, make numerous derivational sex-distinctions in nouns denoting professions and nationalities. Consider (14):

(14)

	Italian		*German*		*Icelandic*	
	MALE	FEMALE	MALE	FEMALE	MALE	FEMALE
'doctor'	medico	medica	Artz	Ärtz**in**	læknir	= læknir
'lawyer'	avocato	avocatessa	Anvalt	Anwält**in**	lögmaður	= lögmaður
'musicant'	musicista	= musicista	Musiker	Musiker**in**	músíkant	= músíkant
'baron(ess)'	barone	baronessa	Baron	Baron**in**	barón	barónessa
'Italian'	italiano	italiana	Italiener	Italiener**in**	Ítali	= Ítali
'Icelander'	islandese	= islandese	Isländer	Isländer**in**	Íslendingur	= Íslendingur
'Englishman'	inglese	= inglese	Engländer	Engländer**in**	Englendingur	= Englendingur
etc.						

Grammaticized sex-marking of this sort is a very general trait of German, somewhat less so of Italian and largely absent from Icelandic. One way of analysing this difference is to say that almost all Icelandic nouns and many Italian nouns denoting professions and nationalities of women have a silent feminine marker, call it SHE, corresponding to the overt –*in* marker in German. If so, one can say that the variation betwen masculine and feminine pronominal reference in (13) reflects this duality, as sketched in (15) (where I do not show the definite article -*nn*):

(15) a. ... /forseti+Ø.M/ ... Hann / *Hún ...

    b. ... /forseti+SHE.M/ ... Hann / Hún ...

At some level of abstraction, this is presumably the correct analysis. The silent marker SHE can be taken to be the semantic gender feature of any noun that has female semantics, for instance the hybrid noun *kvenmaður* 'woman' in (10)A2 above (literally 'woman-person'):

(16) a. * /kvenmaður+Ø.M/
     b.   /kvenmaður+SHE.M/

The difference between *forseti* and *kvenmaður*, then, is that the silent SHE marker is obligatory in *kvenmaður* but only optional in *forseti*, i.e., there are in a sense two *forseti* nouns but only one *kvenmaður* noun. In the same fashion, Italian nouns like *islandese* and *inglese* have an optional SHE marker, but at the same time they differ from Icelandic hybrid nouns in only having a zero formal gender feature:

(17) a.   /inglese+Ø.ø/
     b.   /inglese+SHE.ø/

Accordingly, agreement morphology 'sees' the semantic gender feature in Italian, whereas (clause-internal) agreement is controlled by the specified formal gender feature in Icelandic:

(18) a.   Mary è **una** inglese   simpatic**a**.
          Mary is an   Englishman sympathetic
          'Mary is a sympathetic Englishmen.'
     b.   John è **un** inglese simpatic**o**.

(19) a.   Mary er viðkunnanleg**ur**/*viðkunnanleg Englendingur.
          Mary is sympathetic.M/*F   Englishman.M
     b.   John er viðkunnanleg**ur** Englendingur.

That is, in the precence of a specified formal gender, as in masculine *Englendingur*, semantic gender becomes PF invisible. As we saw above, however, Icelandic first and second person pronouns and a handful of kinship terms are like Italian nouns of the *inglese* class in not having a specified formal gender feature, cf. the agreement facts in (11) and (12) above. Thus, both languages operate with both semantic and formal gender, that is, they both have nominals that are specified for only semantic gender (HE or SHE), nominals that are specified

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for only formal gender and nominals that that are specified for formal as well as semantic gender.

Some languages, including for example Finnish, Hungarian, languages of the Philippines and many languages of the Americas, lack gender as an overt category, whereas Fula or Fulfulde (Niger-Congo) has been claimed to have "about twenty genders" (Corbett 1991:191), triggering different agreement patterns (thus being grammaticized in a way that differs from classifiers in classifier languages, which do not trigger agreement). Reasonably, however, all languages have access to the semantic categories, on which gender systems are based, including MALE, FEMALE, ANIMATE and HUMAN. Even though Icelandic and Finnish have not grammaticized the category of LIQUIDS, as has Fula/Fulfulde, or the category of INSECTS, as has one of the Daly languages in northern Australia (Corbett 1991:30–31), it does not seem to make much sense to assume that languages differ syntactically with respect to these categories. Rather, genders are *lexical classification features*, serving the general purpose of reducing ambiguity on the PF side of language. If so, gender agreement must also belong to PF rather than to Narrow Syntax, an issue I will return to.[8]

As in many other formal gender languages (see Corbett 1991:51ff), gender selection in Icelandic is frequently affected by phonological factors, most roots in *-óC* or *-iC*, for instance, combining with feminine gender, most nouns with the *-un* suffix also combining with feminine, and so on.[9] That is, gender selection is affected by phonologial factors, and it shows 'combinatory tendencies' that resemble tendencies commonly seen in phonotactics. Moreover, gender feeds phonological processes like the so-called *u*-mutation, shifting [a] to [œ] or [Y] under certain conditions (see Rögnvaldsson 1981 for a detailed account):

(20) a.   [a] → [œ] in (mostly) stressed syllables

b.   [a] → [Y] elsewhere

The relevant conditions are somewhat varying, but, strikingly, there are cases where they regularly and productively involve 'knowledge' of gender, as illustrated in (21):

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[8] On the antecedent movement approach to pronominal binding pursued in Kayne (2002), gender agreement can be analyzed as clause-bounded across the board (which it cannot in other approaches, as far as I can see). All other problems remain, though, and Kayne's approach also has its own, rather serious internal problems, so I will not discuss this here.

[9] *Bók* 'book', *rót* 'root', *vík* 'small bay', *hlíð* 'slope', *verslun* 'shop', *hönnun* 'design', and so on.

(21) a. *lat-* [la:t$^{(h)}$-] 'lazy' → *löt* [lœ:t$^{(h)}$] in **F.SG.NOM** & **N.PL.NOM/ACC**

b. *byrjað-* [pIrjað-] 'begun' → *byrjuð* [pIrjYð] in **F.SG.NOM** & **N.PL.NOM/ACC**

Facts of this sort do not provide an umabiguous argument against gender being syntactic, but they at least show that gender is visible to phonological processes.

Before proceeding to other features, let us briefly summarize our central findings for gender. A noun may either have or not have semantic gender. Limiting ourselves to only FEMALE vs. MALE or HE vs. SHE, leaving, ANIMATE, HUMAN, and so on out of the discussion, this gives us the three possibilities in (22):

(22) a. HE

b. SHE

c. -HE, -SHE

Now, if morphology would heed or preserve syntactic economy, this would be all that is needed in three gender languages like Icelandic and German. As we have seen, however, that is very far from being the case. A fact that has not been generally appreciated is that morphology reinterprets these feature values or 'translates' them, as it were, into its own terms. Thus, as we have seen, each of the feature settings in (22) may combine with all three formal genders. In addition, a few elements, including the first and second person pronouns, have a zero or an unspecified formal gender feature, their semantic gender thus being interpreted by agreement morphology as if it were formal. The relevant facts are summarized in (23):

(23)   *Semantic G*   *Formal G*
a.	HE	a1.	M	hrútur 'ram'
		a2.	F	mannfýla 'bastard of a man'
		a3.	N	naut 'bull'
		a4.	Ø	ég 'I'; bróðir 'brother'
b.	SHE	b1.	M	kvenmaður 'woman'
		b2.	F	kona 'woman'
		b3.	N	fljóð 'girl' (poetic)
		b4.	Ø	ég 'I'; móðir 'mother'
c.	-HE, -SHE	b1.	M	bátur 'boat'
		b2.	F	skúta 'yacht'
		b3.	N	skip 'ship'

For formal gender, then, it is evident that morphology is not just a reproduction or preservation of syntax/semantics, as it were, but an autonomous system, translating syntax into its own terms.

It is of some interest here to notice that even closely related languages may have very different gender systems. Swedish, for instance, generally makes a two-way distinction in its agreement system, between common and neuter gender, but a four-way distinction in its singular pronominal system, as illustrated in (24) in a somewhat simplified fashion:

(24) han 'he': MALE HUMANS (plus some other small categories)

    hon 'she': FEMALE HUMANS (plus some other small categories)

    den 'it': most non-neuter NON-HUMAN nouns

    det 'it': neuter nouns

Thus, the distinction between +/-HUMAN has been grammaticized in the Swedish pronominal gender system, whereas it has not in the Icelandic system. Generally, gender is a much more 'natural' or transparent category in Swedish than it is in Icelandic and German.[10]

Semantic features like HUMAN, ANIMATE, FEMALE, LIQUID, INSECT, etc., map differently onto different grammars, some languages being grammatically silent (but typically not lexically silent) about certain features that other languages grammaticize. Also, even when two closely related languages opt for grammaticizing two related features such as HUMAN and FEMALE they typically map these features differently onto formal features like masculine and feminine. Such mapping differences are responsible for much of the typological or parametric variation between languages. Plausibly, there is a universal cartography of syntactico-semantic features like HUMAN, ANIMATE, FEMALE, etc., that are the building blocks of nouns, such that a formal feature like masculine is a PF translation or interpretation of a part of a complex feature tree structure, expressing different parts of the tree structure in different languages, often arbitrarily so but sometimes in a more predictable or transparent manner.

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[10] The Swedish gender system has other interesting properties, alien to Icelandic, that I will however not address here (but see Källström 1993, Teleman et al. 1999, Josefsson 2006).

3. A note on number

Number is usually a 'better behaved' category than gender, as it were, that is, most semantically plural nouns are also morphologically plural. Nevertheless, there are also numerous mismatches, illustrating that we need to distinguish between semantic and formal number. Consider the following Icelandic *pluralia tantum* and *singularia tantum* nouns, that is to say, 'plural only' and 'singular only' nouns:

(25)   *Plural only*   *Singular only*
             hjón 'married couple'   fólk 'people',
             jól 'Christmas'   stóð 'pack of horses',
             páskar 'easter'   ös 'crowd, throng'
             lög 'law'   fyndni 'humor',
             laun 'salary'   hugrekki 'courage'
             buxur 'trouses'   barátta 'struggle'
             innanökur 'internal pain(s)'   kjöt 'meat'
             aftökur 'extremely bad wether'   smjör 'butter'

As for many related languages, this list could be made much longer (cf. Thráinsson 1983, Kvaran 2005:174–175; Corbett 2000), but these examples suffice to illustrate the point.

It is evident that the plural feature of e.g. *jól* 'Christmas' or the singular feature of e.g. *fólk* 'people' are invisible to the semantic interface, that is, these nouns have 'reverse' number semantics, as it were. Nonetheless, it is the formal number feature that controls all kinds of agreement, regardless of the actual number of Christmases or people one may be talking about. This is illustrated in (26):[11]

(26) a.   Lengst**u**   jó**lin**   **v**oru   skemmtileg**ust**.
           longest.PL Christmas.the.PL   were.PL   most-fun.PL
           'The longest Christmas was the most fun.'
     b.   Gaml**a**   fólk**ið**   **v**ar   skemmtileg**ast**.
           old.SG   people.the.SG   was.SG   most-fun.SG
           'The old people were the most fun.'

Thus, morphology sees formal number while the semantic interface does not.

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[11] Any other forms would be ungrammatical here. Pronominal reference across clause boundaries is normally also controlled by the formal number, although plural reference to *singularia tantum* nouns seems to be acceptable to some speakers.

Semantic number is a complex phenomenon, not only involving number or plurality as such but also categories like individuation, countability, distributivity, collectivity and definiteness (see Corbett 2000). In relatively simple number systems like the English or the Icelandic one, the grammatical singular / plural distinction most commonly relates to the basic notion of ONE IN NUMBER, **1**, and MORE THAN ONE IN NUMBER, **>1**. Referring to this notion as semantic number for Icelandic, thereby allowing us the simplification of disregarding all other semantic categories, we get the six mappings in (27), exhausting the logical possibilities:

(27)   *Semantic N*   *Formal N*

    a.   1   SG   hestur 'horse'

    b.   >1   SG   fólk 'people'

    c.   Ø   SG   hugrekki 'courage'

    d.   1   PL   jól 'Christmas', buxur 'trouses'

    e.   >1   PL   hestar 'horses', jól 'Christmas' buxur 'trouses'

    f.   Ø   PL   innantökur 'internal pain(s)'

Again, it is immediately clear that morphology is not a one-to-one reproduction or preservation of syntax/semantics, but an autonomous system, translating syntax into its own terms. The features ONE and MORE THAN ONE are clearly interpretable to the semantic interface, and they are often straigtforwardly translated into the language of morphology. For morphology, however, the most central interest is not to serve or satisfy syntax or processing, but to see to it that any noun have some value for formal number, sometimes regardless of the noun's number semantics or even in direct contrast with it. Anomalies of this sort often have a natural historical explanation, but from the point of view of language aquisition that is of course immaterial. It is evident that *morphology is selfish*, serving its own local interests in addition to and above the interests of processing. The reason why language is organized like this is arguably that "humans are endowed with innate syntactic elements and structures that are independent of whether or how they are expressed" (Sigurðsson 2004a:251), that is, processing is to a large extent internally given. A certain amount of mismatch between the form of a message and it's semantic interpretation is a built in property of natural languages, as opposed to artificial languages.[12]

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[12] Plausibly, this is the basic reason why language is subject to constant and irresistible change.

An alternative take on the semantics-morphology incongruity in (27) would be to say that formal number is a syntactic feature that may however arbitrarily or chaotically opt for being invisible to the semantic interface or even for being reversely interpreted. If so, it is pointless to discuss the organization of language, so I will not consider this view here.

4. A note on case: the No Case Generalization

Icelandic attributive and predicative agreement of adjectives, quantifiers and past participles involves not only gender and number but also case, as illustrated in (28); the suffixed definite article also agrees in the same way, but, for simplicity, I do not indicate this:

(28) a. Báð**ir**   <u>mennirnir</u> höfðu verið kos**nir**.
        both   men.the   had   been   elected
        N.M.PL   N.M.PL   3PL   N.M.PL

   b. Ég taldi   báð**a**   <u>mennina</u> hafa   verið   kos**na**.
        I   believed   both   men.the   have   been   elected
              A.M.PL   A.M.PL   INF   A.M.PL

If gender and number are morphological PF translations of abstract syntactic objects or structures, then case in agreement configurations of this sort must also be post-syntactic, an issue I will return to. In a simple morphophonological sense, this is trivially obvious, but I claim that case is radically non-syntactic in the sense that there are no syntacic features like +/-NOM, nor are there any 'deep' case features.[13] See also Platzack (2006).

    If case was a property or a feature of Narrow Syntax, we would expect closely related languages to be more or less identical with respect to case-marking, but that expectation is of course not borne out. This is abundantly evident for many case-rich languages, both synchronically and diachronically, e.g. Icelandic and German, Russian and Polish, Latin, Romanian and Italian, to mention only a few well-known Indo-European languages. Even closely related case-poor languages like Danish and Swedish show some striking differences with respect to case-marking, as in (29):

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[13] I'm here abandoning the assumption in Sigurðsson (2003) that language has some deep cases in the Fillmorian sense.

(29) a. Det er **os**.   Danish

        it is us.ACC

        'It is us.'

   b. Det är **vi**.   Swedish

        it is we.NOM

        'It is us.'

Arguably, there is no Narrow Syntax difference between Danish *Det er os* and its Swedish translation *Det är vi*. Rather, it seems that exactly the same syntactic structure gets different interpretations or translations in PF morphology. In recent work on variation of this sort across the Germanic languages (Sigurðsson 2006a), I come to the conclusion that the so-called 'structural' cases (regular nominatives and accusatives in accusative systems) must be understood as PF features serving the purpose to overtly distinguish either between the arguments or between the DPs of a predicate, where nominative is simply CASE1 and accusative CASE2.[14] The argument distinguishing strategy is prevailing in e.g. Icelandic, German and Swedish, while the DP distinguishing strategy is in e.g. English and Danish. On this approach, it becomes at least partly understandable that many speakers of English, Danish and some other languages have extended the diacritic function of the cases (in colloquial speech) so as to even distinguish between adjacent DPs. Consider the following results from an extensive study on case-marking in New Zealand English (Heidi Quinn p.c., see further Quinn 2005). The 90 informants that took part in the survey were asked to fill the slots with the preferred pronominal forms, in for instance the sentences in (30) and (31):[15]

(30) [__ and ___] have just taken part in one of these workshops on Asian food.

   a. He and I ...   45/91   =   49%

   b. Him and I ...   35/91   =   38%

   c. Me and him ...   9/91   =   10%

   d. Him and me ...   2/91   =   2%

   e. I and he ...   0/91

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[14] This captures NOM-ACC conversion phenomena, as in passives.

[15] Many thanks to Heidi Quinn for these data (which are not found in this form in her book). 91 and 92 are the numbers of relevant answers given by the 90 informants.

f.	I and him ...	0/91	
g.	Me and he ...	0/91	
h.	He and me ...	0/91	

(31)　　　If Morris is late, would you mind taking [__ and __] to the airport?

a.	... him and I ...	30/92	=	33%
b.	... him and me ...	29/92	=	32%
c.	... me and him ...	27/92	=	29%
d.	... he and I ...	4/92	=	4%
e.	... I and he ...	0/92		
f.	... I and him ...	0/92		
g.	... me and he ...	0/92		
h.	... he and me ...	0/92		

If English subject and object case was decided by syntactic argument features like +NOM and +ACC, this kind of variation would be hard or impossible to explain. According to Quinn (2005), the case variation found in coordinates relates to a morphological distinction between weak and strong pronouns in English and is at least partly influenced by the relative phonological heaviness or 'robustness' of strong pronoun forms. Evidently, the 'structural' cases, better referred to as the *relational cases* (see Sigurðsson 2006a), are diactritic features in PF.

　　Case is always a PF interpretation or expression of a complex syntactic correlation, that is, there seems never to be a one-to-one correlation between a particular morphological case and a single feature in syntax. Thus, the Icelandic dative is used for multiple purposes, marking at least the following nine types of elements (Sigurðsson 2003:230):

(32)			
	a.	Quirky subjects	(e.g. '**me** feels good' = 'I feel good')
	b.	Indirect objects	(e.g. 'she gave **me** the book')
	c.	Direct objects	(e.g. 'she invited **me**')
	d.	Free benefactives	(e.g. 'she wrote **me** a poem')
	e.	Possessors	(e.g. 'she looked into eyes **me**' = 'into my eyes')
	f.	Prepositional objects	(e.g. 'she stayed by **me**')
	g.	Objects of adjectives	(e.g. 'she was **me** nice' = 'nice to me')
	h.	Instrumental NPs	(e.g. 'she stuck him **a knife**' = 'with a knife')
	i.	Other NP adverbials	(e.g. 'she was **me** older' = 'older than me')

All these elements may however be differently marked, that is, with different cases or with prepositions, depending on various factors. In spite of this, it is possible to formulate many nice generalizations about the distribution of the dative and the other cases in Icelandic (see Jónsson 2003, 2005), as in other case languages, but the relevant point here is that all such generalizations are *complex statements*, involving many factors. Thus, not all agents are nominative, not all subjects are agentive and not all subjects are DPs, but the complex statement in (33) holds true:[16]

(33) If   a.   X is a DP

&   b.   X is a subject

&   c.   X is an agent

then d.   X is morphologically nominative

Similarly, one can formulate several complex statements for nominative non-subjects, including nominative objects and nominative predicates. However, saying that all these complex statements together in fact *are* syntactic +NOM is just a pointless word-game, blurring instead of increasing our understanding of grammar. Renaming the cases, saying for instance that nominative "is Tense" in a disguise, is even farther off the track. The core of the matter is that syntax does not operate with case features, that is, the NO CASE GENERALIZATION in (34) holds:

(34) *Syntax has no case features*, that is, it has no rule or process saying "you carry nominative case in morphology if and only if you are +NOM in syntax, you carry dative case in morphology if and only if you are +DAT in syntax", and so on.

Actually, it seems to be a fundamental property of language that it *never* applies one-to-one mappings of this sort between any levels or derivational stages. Assuming that it does is a contradiction in terms, since it suggests that the derivation is in fact non-derivational, a kind of a game that simply reproduces an input as an equivalent albeit a differently looking output.

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[16] But notice that 'subject' is not a primitive of language, so (33) is actually a metalinguistic statement, on notions of classical grammar and not on language. In other words, even complex statements like (33) are simplifications.

The alleged syntactic effects of nominative case are real, of course, but they are not brought about by case but by matching and valuation of *interpretable* features, above all Person in accusative systems (Sigurðsson 2003 and subsequent work) but often Aspect, Tense or Focus in different systems (cf. Miyagawa 2004).

Nichols (1990) contains an interesting study of dependency marking with respect to the typological notions of A(gent)-S(ubject)-P(atient). In her sample of 155 (relevant) languages, 148 or 95,5% had some such marking, and these in turn split into about equally large groups, with and without case-marking (see Nichols 1990:90).

Proponents of case features in Universal Grammar might want to use statistics like these as an argument in favor of their standpoint, but so might their opponents:

- If case is *not* part of UG, why is it so common in the languages of the world?
- If case *is* part of UG, why is it absent from so many of the languages of the world?

Case is but one of many available strategies for PF marking the relations between an argument and its linguistic environment. Consider the following list of simple facts:

- The most common strategy, across languages and constructions, is not to make any PF marking at all.
- Closely related languages, with the same basic case system, like Icelandic and German, often use different cases to mark the (to the best of our knowledge) same syntactic relation.
- Even within one and the same language, there may be extensive variation in case-marking, depending on either linguistic or social variables (constructions, dialects, idiolects, ...).
- Where one language uses case to mark a relation, another language may opt for suprasegmental marking (cf. Sigurðsson 2003:326 on Swedish) or marking of non-argument members of the relevant syntactic relation (prepositions, particles, verbs, complementizers, adverbs, ...).

I believe we should look for an understanding of these facts in PF, the medium that 'broadcasts' Narrow Syntax. Narrow Syntax itself is a much more abstract or 'semantic' system that does not operate with PF visible units like inflectional features in oral languages

or facial expressions in signed languages, nor does it have features that stand in simple one-to-one mapping relations to elements in the perceptible form of language.

Understandably, it is tempting to seek explanations in Narrow Syntax, since Narrow Syntax explanations should hold generally, across languages, and are thus more ambitious and elegant than alternative accounts could ever be. In hastily seeking such explanations, however, generative linguistics has too often been overzealous, producing 'generalizations' that bear on wishful thinking and other human shortcomings rather than on language.

5. A note on agreement

While person evidently differs from gender, number and case in being a syntactic category, its values, 1st, 2nd and 3rd person, are not syntactic objects. Rather, they are PF expressions, not of individual objects or features in syntax but of complex matching correlations, as I have argued elsewhere (Sigurðsson 2004a, 2004b). Much the same applies to Tense values.

If formal feature values are strictly speaking non-syntactic, then morphological agreement must be non-syntactic as well, and this is what I have argued for in considerable detail in recent work (Sigurðsson 2004c, 2006b). If so, morphological agreement is only an indirect reflection of abstract, syntactic Agree. Reasonably, there is a syntactic Agree or Selection correlation between any two syntactic elements that are merged. However, as is evident, only some such correlations are overtly expressed by morphological agreement. Consider the following simple facts from a few Germanic languages:

(35) a. They would be elected. English

b. Sie **würden** gewählt sein. German
   they would.3PL elected be

c. De skulle bli **valda**. Swedish
   they would be elected.PL

d. Þeir **mundu** verða **valdir**. Icelandic
   they would.3PL be elected.NOM.M.PL

English shows no agreement at all here, German has finite verb agreement only, Swedish has only plural agreement of the predicative participle, and Icelandic has finite verb agreement as well as case, gender and number agreement of the participle.[17]

There does not seem to be any syntactic motivation for having or not having these agreement types. Rather, they are more or less arbitrary PF options that languages choose between, and the truth of the matter is that we have little understanding or knowledge of why they do so.

Even internally to individual languages there is abundant evidence that morphological agreement does not usually relate to semantics or directly to syntax, instead involving processes or 'adjustments' that are internal to morphology or broad PF. Consider the variation in (36), discussed by Rögnvaldsson (1982):

(36) a.   <u>Við</u>   hl**ö**kk**um** til jólanna.
          we.NOM lough.1PL to Christmas.the
          'We look forward to Christmas.'

     b.   <u>Okkur</u>   hl**a**kk**ar**   til jólanna.
          us.DAT   lough.3SG to Christmas.the
          'We look forward to Christmas.'

In the standard (36a), the subject is nominative, triggering regular, full agreement in person and number of the finite verb. In the common but substandard (36b), on the other hand, the verb *hlakka til* 'look forward to' takes a dative subject and this non-nominative case selection automatically 'switches off' the person and number agreement of the verb, which thus shows up in the default 3rd person singular instead of 1st person plural. This is in full accordance with the well-known fact that phi-feature specified nominative subjects trigger finite verb agreement in Icelandic, whereas the finite verb regularly shows up in the default 3rd person singular in the absence of a nominative argument (see, e.g., Sigurðsson 2004c and the references cited there). Tellingly, however, both versions in (36) seem to have the same semantics, as highlighted by the fact that many speakers can use them both, not depending on semantics but on social factors (as far as can be judged).[18] For these speakers, clauses with the

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[17] Standard Swedish (as opposed to many colloquial varieties) also has gender (or sexus) attributive agreement in the singular.

[18] Thanks to Eríkur Rögnvaldsson for reminding me of the import of facts of this sort.

verb *hlakka til* may either show up with a nominative or a dative subject, and the presence vs. absence of full agreement is an automatic morphological reaction to the case selection, independent of the underlying semantic/syntactic structure. To an extent, this is in fact reminiscent of phonological assimilation processes across word or constituent boundaries: these processes are fed by syntax, leading to adjacency of the sounds involved, but they do not take place in syntax nor are they directly controlled by syntactic factors.

Consider also the fact that Modern Icelandic has agreement of participles selected by *vera* 'be', as opposed to participles selected by *hafa* 'have', as illustrated in (37):

(37) a.   Þær   <u>eru</u>   ekki   les**nar**.
           they.F   are   not   read.NOM.F.PL
           'They are not being read (by somebody). / They are not well-read.'

     b.   Bækurnar   <u>hafa</u>   þær   ekki   les**ið**.
           books.the.F   have   they.F   not   read.DEFAULT(=NOM/ACC.N.SG)
           'The books, they have not read.'

In Old Norse, on the other hand, participles selected by *hafa* 'have' could but did not have to agree with direct objects (see Nygaard 1906:188). Again, there does not seem to be any syntactic reason for the variation. In particular, it does not correlate with word order, as related phenomena do in some other languages.[19]

Similarly, person agreement does not spread from finite verbs to non-finite verb forms in Icelandic, or, to my knowledge, in other Indo-European languages, while it does in some Bantu languages. Compare the Swahili example in (38a), here adapted from Carstens (2001:150), and the Icelandic one in (38b):

(38) a.   <u>Juma</u>   **a**likuwa   **a**mepika   chakula.
           Juma   3SG.was   3SG.cooked   food
           'Juma had cooked food.'

     b.   <u>Við</u>   höfð**um**   gert/*gert**um**   mat.
           we   had.1PL   made.ø/*1PL   food

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[19] In this respect, Old Norse was similar to Fruilian, a Rhaeto-Romance language spoken in north-eastern Italy (see Paoli 2006).

These are only a handful of practically innumerable agreement differences between as well as within languages. It seems most likely to me that differences of this sort should not be explained in syntactic terms but in terms of morphological feature copying processes that apply differently in different languages and language varieties.

These copying processes are typically abstract, but there is evidence that that they are sometimes affected by purely phonological factors. Thus, Icelandic adjectives generally have 144 inflectional possibilities or 'slots',[20] commonly expressed by 30 distinct forms for each adjective. Strikingly, all this richness is blocked in case the adjective has a *stem ending in an unstressed vowel*, all such adjectives being entirely indeclinable.[21]

There are however well-known cases where agreement has semantic correlates, for example certain instances of secondary predicate agreement in Icelandic, as in (39) (from Sigurðsson 2006b:214):

(39) a. <u>Prestarnir</u>   hittu biskupinn   drukk**nir**.
      priests.the.N.M.PL met   bishop.the.A.M.SG drunk.N.M.PL
      'The priests met the bishop drunk (i.e. the priests were drunk).'

    b. Prestarnir   hittu <u>biskupinn</u>   drukk**inn**.
      priests.the.N.M.PL   met bishop.the.A.M.SG drunk.A.M.SG
      'The priests met the bishop drunk (i.e. the bishop was drunk).'

However, this does not mean that the underlying syntactico-semantic structures cannot be expressed without agreement morphology in other languages, it only means that individual languages make use of whatever overt tools they happen to have at their disposal, for the purpose of reducing ambiguity in PF.[22]

6. Concluding remarks on the 'syntactic' PF

Morphological agreement or feature copying involves copying of values like MASCULINE and PLURAL and not or not necessarily of the phonological shape of these values, as for intance

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[20] 4 cases x 3 genders x 2 numbers x 3 degrees x 2 (indefinite or 'strong' vs. definite or 'weak').

[21] *Hissa* 'surprized', *fullvalda* 'sovereign', *hugsi* 'pendent, (deep) in though', *brosandi* 'smiling', *passandi* 'fitting, appropriate', *sveitó* 'provincial', and so on.

[22] Thráinsson (1975) is an interesting study of how inflectional morphology radically reduces ambiguity in Icelandic gapping constructions, as compared to English.

seen by the phonological mismatch between the plural marker *-ar* of *prestar* in (39) and the plural marker *-ir* of the suffixed article and the secondary predicate adjective. Thus, the processes involved operate with abstract objects, that are later transformed into or translated as physical, phonetic objects by operations in shallow PF. Moreover, these abstract PF agreement processes operate in a 'syntactic manner', as it were, applying feature matching, observing minimality and showing intervention effects, as highlighted by recent research on Icelandic dative intervention, for instance in the works of Holmberg and Hróarsdóttir (2003), Hiraiwa (2005), Nomura (2005), Chomsky (2005) and Sigurðsson and Holmberg (2006). These circumstances suggest that agreement morphology is able to 'see' syntax, even though it takes place after transfer and thus operates with elements that are out of sight for the semantic interface, such as formal gender, number and case values. If so, the computation proceeds on the PF side after transfer, yielding a reversed Y-model, as it were.[23]

On the present approach, broad PF cannot be part of Universal Grammar (see Sigurðsson 2004a). Rather, Universal Grammar (or Universal Narrow Syntax) interacts with motoric systems which provide audible and/or visible means to produce or 'broadcast' complex symbols that are processable as incomplete expressions or translations of Narrow Syntax. On this view, it might seem unexpected that many morphological and other typological generalizations hold across languages that, to the best of our knowledge, are unrelated or are at least not evidently related. There are however many factors to be taken into consideration here. One is that our knowledge of language history is extremely limited. For all we know, the world's oral languages might all be the descendants of say 1 or 10 or 100 out of say 5.000 languages that existed say 40.000 years ago, each spoken by only a tiny group of people. The gap between our knowledge and the potential facts in this field is so huge that we can hardly even speculate about how morphologial and typological regularities might have come into being in the remote past. Another factor to consider is that physiological properties may well impose universal constraints and features on individual grammars without belonging to Universal Grammar. That is, being universal in oral or even also in signed languages does not entail being part of Universal Grammar as such. A third factor is that given Universal Grammar one would expect some similarities between different translations or mappings from this common system onto individual PF grammars. Thus, if *abstract* Person, Number and Tense are features of Universal Grammar, as seems reasonable (see Sigurðsson 2004a, 2004b

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[23] Indirectly suggesting that covert movement (in 'LF') should be eliminated from the model, an issue I shall not address here, though (but see Kayne 1998).

on Person and Tense), it is not unexpected that more or less inaccurate indicators or exponents of these abstract categories get marked or highlighted in otherwise unrelated grammars. However, as we have seen, only a quick glance immediately reveals that the mappings of syntactic/semantic features onto even closely related languages, like the Germanic ones, are amazingly varied (see further Sigurðsson 2004c).

Even if broad PF, including the 'sign form' of sign languages, is not part of Universal Grammar, it is evidently a highly sophisticated system. Much of our knowledge of grammar or grammars is about the elements and processes of this system. About Narrow Syntax, on the other hand, we know *very* little, and the main reason why that is so is that we can only study it indirectly, through the interfaces. If it is the case that formal feature values belong to PF only, then we know even less about Narrow Syntax than many linguists have been hoping or optimistically assuming. However, realizing that one knows less than one previously thought is usually a sign of progress.

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