Limits on pronominal gender: A semantic account of a morphological pattern[*]

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1.   Introduction: Morphological upstaging

It has long been recognized that the dimensions of inflectional contrast observable in a language do not always fully cross-classify. Noyer (1992: 44) gives the French example in (1), in which the agreement on the adjective *heureuse* suggests that the subject of (1) must be, at some level, identifiable as feminine, but the first-person singular subject pronoun *je* does not mark gender—no French first- or second-person pronouns do.

(1)   Je   suis heureuse.
       1SG am happy.FEM
       'I am happy' (said by a speaker whose biosocial gender is feminine[1])

The subject of (1) has the features [1] and [FEM]. From the perspective of Distributed Morphology (DM; Halle and Marantz 1993, 1994, Harley and Noyer 1999), French has two vocabulary items (VIs) that are eligible to spell out this subject: *je,* which would realize [1], and *elle,* which would realize [FEM].[2] The Subset Principle, which standardly chooses between VIs in DM, cannot apply here, because neither VI realizes a subset of the other's features. Following Bonet (1991), Noyer proposes that the choice of which feature to realize follows from a representational hierarchy in which person dominates gender.[3] Noyer's

[1]We adopt Ackerman's (2019) term 'biosocial gender' to describe gender in the world, a property distinct from, though sometimes aligned with, grammatical gender.

[2]Noyer treats third person as unmarked, so *elle* has no [3] feature to make it ineligible for insertion here.

[3]Here, the lower-ranking feature, [FEM], is deleted (i.e. Impoverished). As in a phonological feature geometry, the dependent feature can be delinked without removing the superordinate one, but not *vice versa*.

(1992: 94) Feature Hierarchy Hypothesis proposes that this formal hierarchy governs both Impoverishment and the order in which equally specified VI spell-out rules apply.

We refer to patterns like this, in which one feature is realized at the expense of another for reasons not attributable to the Subset Principle, as **morphological upstaging**. In (1), we say that (first) person upstages (feminine) gender. Our ongoing research project on upstaging investigates the kinds of relations between features implied by patterns of upstaging, asking the questions in (2):

(2)   *Our research questions*

   a.   *The empirical question:* Are there cross-linguistic preferences for realizing some (types of) features over others? And if so, are these categorical, or are they merely tendencies?

   b.   *The theoretical question:* If such cross-linguistic asymmetries between features exist, where do they come from? What is the best way to explain them in the DM framework?

This paper focusses specifically on pronouns, and on how gender interacts with person and number. We find that there is a robust but not categorical tendency for contrasts in gender to be upstaged by first and second person, and by non-singular number. For the interaction between gender and person, we propose that there is an explanation in terms of semantic types and syntactic structure that can account for the cross-linguistic pattern without stipulating an extrinsic feature hierarchy in which person outranks gender. For the interaction between gender and number, we do not yet have such an explanation, and so we cannot rule out the possibility that the ranking of features must be stipulated.

2.   Establishing the empirical pattern

Many linguists have observed that contrasts in grammatical gender are frequently restricted to the third person, and sometimes more narrowly to the third person singular. Siewierska (2013) summarizes the typological situation by saying that pronominal gender oppositions "are characteristic of the third rather than the first or second person" and "of the singular rather than the non-singular." This pattern is described in three of Greenberg's (1966) universals, listed in (3), and Plank and Schellinger (1997: 94) make similar observations.

(3)   Greenberg (1966: 75–76):

   a.   **Universal 44:** If a language has gender distinctions in the first person, it always has gender distinctions in the second or third person, or in both.

   b.   **Universal 37:** A language never has more gender categories in non-singular numbers than in the singular.

   c.   **Universal 45:** If there are any gender distinctions in the plural of the pronoun, there are some gender distinctions in the singular also.

Limits on pronominal gender

ONLY PARTICIPANTS	PARTICIPANTS AND NON-PARTICIPANTS		ONLY NON-PARTICIPANTS
2nd only	1st, 2nd & 3rd	2nd & 3rd only	3rd only
Iraqw	Djingli, Ngandi, Rikbaktsa, Slovenian (Lithuanian) (Spanish)	Arabic, Bandjalang, **Hausa**, Hebrew, Tamazight, Tunica	**Ainu**, Albanian, Arapesh, Asheninca, **Awtuw**, Basque, Catalan, **Chinook**, **Cubeo**, Czech, **Dieri**, **Dutch**, **(Old) English**, **German**, Godie, Greek, Halkomelem, **Hinuq**, Ho, IsiXhosa, Kaingang, Kannada, Latin, Latvian, **Lushootseed**, Marshallese, Mixteco, Mohawk, Pakaasnovos, Palauan, Polish, **Pomo**, Romanian, **Somali**, Sotho, **Swedish**, **Telugu**, **Welsh**, **Wolaytta**, **Xokleng**, Yimas, Zapoteco
1	6	6	42
	12		

Table 1: Gender marking by person in 55 languages. Languages in **bold** mark gender only on singular pronouns.

To investigate patterns of this type, we have collected data from languages for which the relevant facts have been described in published grammars, starting with those covered by Bliss and Ritter's (2009) pronouns database and then adding a few more, bringing our current total to 112. Our initial focus has been on pronominal paradigms, the subject of the present paper, but we have also begun extending our database to verbal agreement marking.

For the purposes of this investigation, we take 'gender marking' in a pronominal system to encompass essentially any distinction other than person/clusivity, number, case, definiteness/deixis, proximity/visibility, and politeness/honorification. 'Gender', for us, is thus a rather broad category, including semantically contentful marking that reflects properties of the referent such as animacy or biosocial gender, but also morphological noun class features that may or may not have any clear semantic correlates.

As shown in Table 1, 55 of the languages in our survey mark gender on at least some pronouns. Of these, 42 mark gender only in non-participant (i.e. third-person) pronouns; one example of this pattern is the Czech paradigm in (4) below. And of the 42 languages that mark gender only in non-participants, 17 mark gender only in the singular, having paradigms like that of Awtuw, shown in (5).

Of the remaining 13 languages that mark gender in pronouns, only one (Iraqw) marks gender in participants but not third persons. Six mark gender in all persons, if we count generously: this number includes Lithuanian and Spanish, each of which has gender marking in first- and second-person pronouns only in compound forms that contain other elements that normally inflect for gender.[4] Six other languages mark gender in second- and third- but not first-person pronouns. The languages in our data set thus conform, for the most part,

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[4]In Spanish, these are the plural forms containing *otros/otras,* etymologically an adjective meaning 'other' (Penny 2002). In Lithuanian, the only first- or second-person pronouns with gender marking are the seldom-used dual forms, which contain the numeral 'two' (Ambrazas 1997: 166, 184–185; see also Plank and Schellinger 1997 on both Spanish and Lithuanian, as well as other languages with similar paradigms).

to the typological generalizations familiar from the literature. There are some exceptions, notably Iraqw, where gender is marked only in participants, and Slovene, where gender is marked in all persons but among participants only in non-singular forms.

(4) *Czech pronouns: Gender marked only in 3rd person*

	SG.	PL.
1	*já*	*my*
2	*ty*	*vy*
3 MASC.	*on*	*oni*
3 FEM.	*ona*	*ony*
3 NEUT.	*ono*	*ona*

(Janda and Townsend 2002)

(5) *Awtuw pronouns: Gender marked only in 3rd person singular*

	SG.	DU.	PL.
1	*wan*	*nan*	*nom*
2	*jen*	*an*	*om*
3 FEM.	*tej*	*ræw*	*rom*
3 NON-FEM.	*rej*		

(Feldman 1986)

In paradigms like (4), gender is upstaged by person, and in ones like (5) it is upstaged both by person and by number. We have so far found no clear cases of gender upstaging person, and only a few of gender upstaging number. (For example, Everett 1998 reports that Wari' systematically makes no number distinctions in the neuter gender, either in the pronoun system or anywhere else.) Our investigation so far thus suggests that there are asymmetries between person and gender, and between number and gender, that are cross-linguistically robust enough to call for an explanation.

3.   The theoretical challenge

When a language systematically neutralizes a morphological contrast in the context of some other marked feature, DM accounts often treat this as Impoverishment, following Bonet (1991). While Impoverishment can capture patterns that span multiple paradigms within a single language, it cannot, by itself, account for cross-linguistic generalizations.

In the case of gender and person, for example, it is possible to use Impoverishment to express how the French pronoun paradigm in (7), where gender is marked only in the third person, systematically differs from the Korana paradigm in (6), which marks gender in all persons. The French pattern can be generated with an Impoverishment rule that deletes the gender feature [FEMININE] in the context of the marked person feature [+participant].

(6) *Korana (Central Khoisan):*
Gender marked in all persons
No impoverishment

	MASC.	FEM.
1st	*tire*	*tita*
2nd	*sats*	*sas*
3rd	*ll'dib*	*ll'dis*

(Siewierska 2013, citing Meinhof 1930)

(7) *French: Gender marked only in 3rd person*
[FEM] → ∅ / [+part]

	MASC.	FEM.
1st	*je*	*je*
2nd	*tu*	*tu*
3rd	*il*	*elle*

To explain the absence of pronoun systems like the one in (8)—which, like French, systematically avoids the the marked feature combination [+participant, FEMININE], but which does so by Impoverishing person rather than gender—an Impoverishment-based account must be enriched with some statement of the relative priority of person and gender, such as the feature hierarchy posited by Noyer (1992).

(8)   *Unattested: Person marked only in masculine gender*
       [±part] → ∅ / [FEM]

	MASC.	FEM.
1st	*je*	*elle*
2nd	*tu*	*elle*
3rd	*il*	*elle*

One alternative to proposing such a hierarchy would be to deny the need for any formal explanation of the typological pattern, instead attributing it to functional pressures. Perhaps gender is simply less important in first- and second-person pronouns than it is in third-person ones, where it is more likely to be useful in disambiguating the intended referent. Though there may be some truth in this, we do not find it satisfactory as an explanation, as it makes no testable predictions about whether any language will or will not have gender marking on participant pronouns. It is also essentially a *post hoc* theory. If one tried to make a functionalist prediction about the interaction between gender and person *a priori*, one might just as easily expect that gender marking would be preferred in first- and second-person pronouns, because encoding and reinforcing socially relevant properties of the discourse participants is an important function of conversation. After all, many languages have pronoun systems that reflect not only the genders of the speaker and the addressee, but also their relative social status and the relationship between them. (Japanese is one well-known example; see Okamoto and Smith 2004 and McCready 2019.)

Feature hierarchies like Bonet's (1991) and Noyer's (1992) are a more formal approach, but still not an explanatory one: they essentially just stipulate that some features take precedence over others. They are certainly a useful descriptive tool, and they have been employed in various forms in much work in morphology, both inside and outside the DM framework we assume here.[5] Some hierarchies order features that express different values of the same dimension of contrast (such as Zwicky's 1 > 2 > 3 person hierarchy); others (also) order different categories of features, such as Bonet's hierarchy and feature geometries inspired by it. Some hierarchies are merely statements about the relative priority assigned to different features; others are also hypotheses about how features are organized in morphosyntactic representations. Formal feature hierarchies also have the potential to make connections between different formal operations: for example, Noyer's (1992) hierarchy determines not only the direction of Impoverishment, but also the ordering of affixes and the order of application of morphological rules. However, if an independently motivated explanation for the

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[5]In addition to those already cited see, for example, Silverstein (1976), Zwicky (1977), Moravcsik (1978), Lumsden (1987, 1992), and Harley and Ritter (2002).

range of attested patterns of upstaging can be found, it should be preferred over stipulating that UG imposes a particular hierarchical ordering on the features involved.

4.   Gender *vs.* person: Our proposal

We argue that such an independently motivated explanation exists at least in the case of the interaction between gender and person. Specifically, we propose that there are two possible configurations for gender and person features in the syntax of pronouns: one in which gender is below person, and can combine with all possible values of the person features, and one in which gender is above person, and can combine only with non-participants. This account draws inspiration from Ritter's (1993) proposal that the locus of gender can vary (cf. Kramer 2015, 2016), adopting what Cowper and Hall (2014, 2017) have called a 'neo-parametric' approach to morphosyntactic representations. In this view, interpretable formal features and their syntactic configurations are not universal, but are acquired by a mechanism that is part of UG. The syntactic configuration of features is constrained in several ways, in particular by requirements of feature-checking and semantic composition—in other words, by what Chomsky (1995) calls interface conditions.

   Our proposal builds on our earlier work on Heiltsuk (Bjorkman et al. 2019) and Marshallese (Cowper and Hall 2022), in which we have claimed that participant and non-participant bundles of person features have different semantic types. §4.1 summarizes our treatment of Heiltsuk; §4.2 shows how the semantic types predict that whether participant pronouns admit contrasts in gender depends on the syntactic configuration of the features.

4.1   Person and location in Heiltsuk

In Heiltsuk,[6] demonstratives and third-person pronouns exhibit person-based locational distinctions ('this here with me' *vs.* 'that there with you' *vs.* 'that [elsewhere]'), along with an orthogonal distinction of (in)visibility. There are no forms that locate a referent relative to a third person ('that there with them'). Our account (Bjorkman et al. 2019) assumes Harbour's (2016) ontology of persons, which comprises a unique author i, a unique addressee u, and any number of others $\{o, o', o''', \dots\}$; two binary person features [±author], [±participant] (Harbour 2016, Cowper and Hall 2019); and a locative element χ, adapted from Harbour (2016). Our denotation for χ, in (9), identifies it as a function from an entity x to an $\langle e, t \rangle$ predicate denoting the property of being near x.

(9) $[\![\chi]\!] = \lambda x . \lambda y . \text{NEAR}(y, x)$

   The syntactic head bearing person features is labelled π. We argue that participant π heads are of type e, and can therefore compose semantically with the $\langle e, \langle e, t \rangle \rangle$ element χ. There are three possible participant π heads, shown in (10).

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[6]Heiltsuk (Wakashan), known as Haíɫzaqvḷa by its speakers, is the language of the Heiltsuk nation, located on the Pacific coast in the province of British Columbia. Our data are from Rath (1981).

(10)   a. $\begin{bmatrix} +\text{author} \\ -\text{participant} \end{bmatrix} = i$ b. $\begin{bmatrix} -\text{author} \\ +\text{participant} \end{bmatrix} = u$ c. $\begin{bmatrix} +\text{author} \\ +\text{participant} \end{bmatrix} = iu$

We further propose that the third-person π head [$-$author, $-$participant] denotes not an individual, but the *property* of not being a discourse participant, as in (11).

(11) $\begin{bmatrix} -\text{author} \\ -\text{participant} \end{bmatrix} = \lambda x . x \in \{o, o', o'', o''', \ldots\}$

Under these assumptions, a Heiltsuk participant πP can be an argument by itself, as in (12), but a third-person πP needs a D head to derive an e-type argument, as shown in (13). This is the structure of the non–person-oriented pronouns and demonstratives. Person-oriented pronouns and demonstratives have the structure in (14). Locative χ composes with a participant π head, giving an $\langle e, t \rangle$ predicate that then combines with a D, but cannot compose directly with a non-participant πP, which accounts for the absence of demonstratives expressing a locative orientation to third persons.

(12)   *'you'*

πP
$\begin{bmatrix} -\text{author} \\ +\text{participant} \end{bmatrix}$
e

(13)   *'she/he/they/it' /*
'that [elsewhere]'

DP
e

D πP
$\langle\langle e,t\rangle, e\rangle$ $\begin{bmatrix} -\text{auth.} \\ -\text{part.} \end{bmatrix}$
                      $\langle e, t \rangle$

(14)   *'this near me'*:

DP
e

D πP
$\langle\langle e,t\rangle, e\rangle$ $\langle e, t \rangle$

χ π
$\langle e, \langle e,t\rangle\rangle$ $\begin{bmatrix} +\text{auth.} \\ +\text{part.} \end{bmatrix}$
                              e

4.2   Where gender comes in

With the above account of Heiltsuk as a point of departure, we now return to the interaction between person and gender, and the typological asymmetry between them. We propose that gender features are of type $\langle\langle e, t\rangle, \langle e, t\rangle\rangle$, as in (15).[7] This means they can compose with third-person πPs, which are of type $\langle e, t \rangle$, but not with participant πPs, which are of type e.

(15)   a. $[\![\text{MASC}]\!] = \lambda F.\lambda x.F(x) \, \& \, \text{MASCULINE}(x)$
       b. $[\![\text{FEM}]\!] = \lambda F.\lambda x.F(x) \, \& \, \text{FEMININE}(x)$

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[7]Predicates like MASCULINE(x) and FEMININE(x) may be evaluated based on grammatical and/or biosocial or conceptual gender (*sensu* Ackerman 2019), depending on the system of a particular language. We assume that gender features in general have the same compositional properties. If gender/animacy/noun class in a given language is best analyzed in different terms—as for example animacy in Blackfoot has been treated as a form of nominal aspect by Ritter (2014)—it would fall outside the scope of our proposal.

This accounts straightforwardly for languages that mark gender only on third-person pronouns, but not for those languages that also mark gender on participant pronouns. To account for these languages, it is necessary to look in more detail at the internal structure of pronouns, in particular the structure inside what we have represented above as πP.

We assume that all personal pronouns have a nominal core, to which we assign the syntactic category label n and the semantic type $\langle e, t \rangle$. Modifying the denotations we assumed in Bjorkman et al. 2019, we posit that π heads do not directly denote the author, the addressee, or others. Instead, the π head takes n as its complement, deriving πPs. Participant π heads—i.e., those bearing at least one of [+author] or [+participant]—are of type $\langle \langle e, t \rangle, e \rangle$, while third-person π heads are of type $\langle \langle e, t \rangle, \langle e, t \rangle \rangle$. This derives the two types of πPs described in §4.1, but with a more articulated structure.

This pronominal structure can include gender in either of two positions. Gender features can be high, composing after the π head, or they can be low, composing directly with n. If gender features are high, they can combine with $\langle e, t \rangle$-type third-person πPs, as in (16), but not with e-type participant πPs. In (17), semantic composition of [FEMININE] with a second-person πP fails because their types are incompatible: first- and second-person pronouns in such a system must lack gender features, as in (18).[8]

(16) *Gender above 3rd person ('she')* (17) *Ill-formed: gender above 2nd person* (18) *2nd person with no gender ('you')*
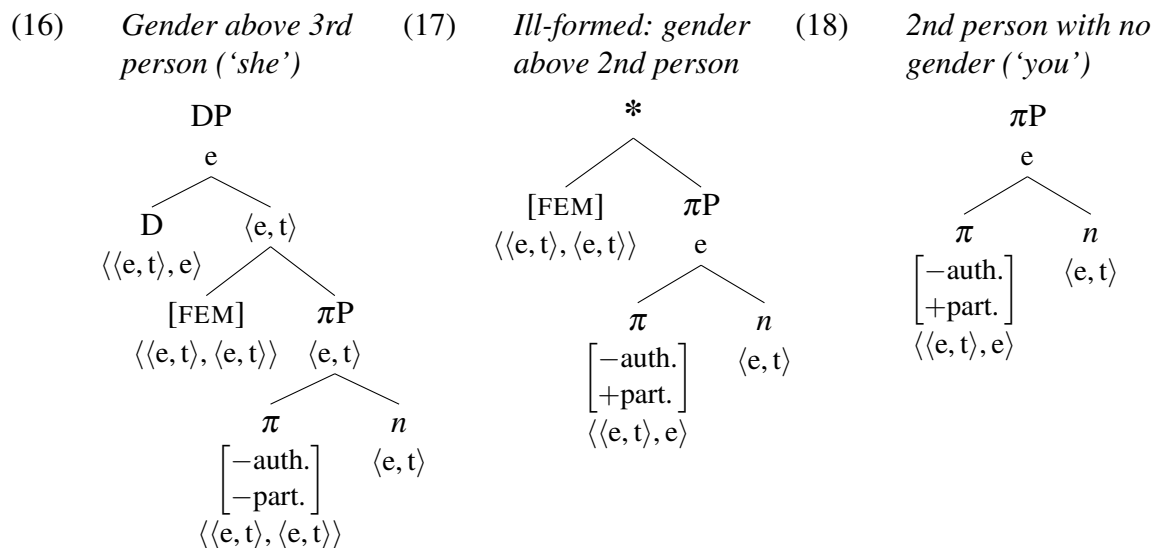
If gender features are low, however, they will compose directly with the nominal core n, giving a new $\langle e, t \rangle$ predicate that can compose with any possible π head. Gender can be marked both on third persons, as in (19), and on participants, as in (20).

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[8] We assume that type-shifting operations, even if used in other contexts, are unavailable inside pronouns.

(19) *3rd-person pronoun with low gender ('she')*

```
              DP
              e
         ┌────┴────┐
         D         πP
    ⟨⟨e,t⟩,e⟩     ⟨e,t⟩
              ┌────┴────┐
              π        ⟨e,t⟩
         ⎡−auth.⎤   ┌───┴───┐
         ⎣−part.⎦ [FEM]      n
      ⟨⟨e,t⟩,⟨e,t⟩⟩ ⟨⟨e,t⟩,⟨e,t⟩⟩ ⟨e,t⟩
```
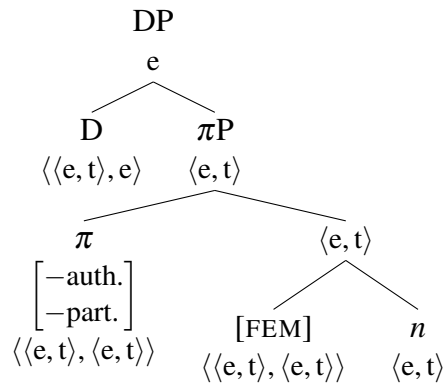
(20) *2nd-person pronoun with low gender ('you.*FEM*')*

```
              πP
              e
        ┌─────┴─────┐
        π          ⟨e,t⟩
   ⎡−auth.⎤     ┌───┴───┐
   ⎣+part.⎦  [FEM]       n
  ⟨⟨e,t⟩,e⟩ ⟨⟨e,t⟩,⟨e,t⟩⟩ ⟨e,t⟩
```

These structures and semantic types capture two asymmetries. One is the asymmetry between participants and third persons. In systems with high gender, person features that pick out participants will block gender features from composing, but third-person features will not. This means that first and second person can upstage gender, but third person cannot.[9] The other asymmetry is between person and gender. Because gender features are of type $\langle\langle e, t\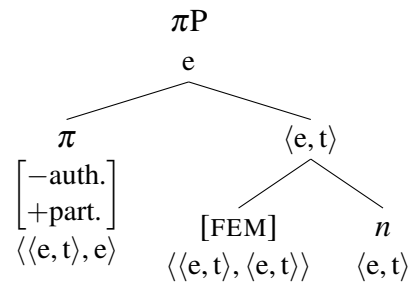rangle, \langle e, t\rangle\rangle$, they cannot change the constituent with which they combine into something that is semantically incompatible with person features, even when gender is low. This means that person can upstage gender, but gender cannot upstage person.

4.3 Consequences and predictions

The account above derives two types of systems: languages with low gender, in which all pronouns can be marked for gender, and languages with high gender, in which only third-person pronouns can be marked for gender. Of the 55 languages in our data set with gender marking, 48 clearly fall into one of these two categories. Forty-two languages mark gender only in the third person, and six mark gender in all persons. This leaves seven languages, of which six mark gender in second- and third-person pronouns but not in first-person pronouns, and one (Iraqw) marks gender only in second-person pronouns. Under our account, these languages would be analyzed as having low gender, and thus as having the potential for gender marking in all persons. The absence of gender in first-person pronouns in all of these languages (and in third-person pronouns in Iraqw) is not specifically accounted for by our representations; we would have to attribute it to accidental language-particular syncretism.

Because our account of pronoun paradigms is based on the locus of gender features in nominals, it can be tested against independent evidence bearing on the position of gender in full DPs in any given language. For example, Hebrew pronouns mark gender distinctions in the second person as well as in the third, as in the possessive clitic paradigm in (21).

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[9]We have assumed a binary person feature system, following Harbour (2016) and Cowper and Hall (2019), but our reasons for doing so are not critical to our account of upstaging. In a monovalent feature system, the fact that only third-person π does not change the semantic type of n could plausibly be made to follow from its being the only person with no marked features.

(21)　*Hebrew singular possessive clitic pronouns*

	MASC.	FEM.
1st	*i*	*i*
2nd	*xa*	*ex*
3rd	*o*	*a*

(Glinert 1989)

Under our account, the presence of gender contrasts in (any) participant pronouns implies that gender should be low in Hebrew nominals, and indeed this is what Ritter (1993) has argued for full DPs in Hebrew. (Her evidence comes from the fact that gender on Hebrew nouns behaves more like a derivational property than like an inflectional one, both semantically and in how it interacts with agreement.)

Unlike accounts that use Impoverishment, our proposal entails that in languages where participant pronouns systematically show no gender contrasts in their morphological realizations, these pronouns also lack gender features in their syntactic representations. This means, for example, that the gender marking on *heureuse* in the French sentence in (1) does not come from syntactic agreement with a [FEMININE] feature on the subject pronoun itself, but must have some other basis. It may be directly inserted to reflect the biosocial gender of the referent, or it may agree with some covert element elsewhere in the structure. In any case, the need for some such mechanism is independently exhibited by other cases of 'semantic agreement' for gender, as in the Russian example in (22), where the feminine suffix on the verb *prišla* indicates that the subject refers to a woman even though the grammatical gender of the noun *vrač* triggers masculine agreement on the adjective *zubnoj*.

(22)　Zubn-oj　　vrač　prišl-a.
　　　dental-MASC doctor came-FEM
　　　'The [female] dentist came.' (Ackerman 2019: 7)

5.　Gender *vs.* number: Some observations

The analysis above offers a way of accounting for the cross-linguistic tendency for gender contrasts to be neutralized in first- and second-person pronouns without stipulating that UG prefers to Impoverish gender rather than person—indeed, without invoking Impoverishment at all. But what about the interaction of gender with number?

Of the 55 languages in our sample that mark gender on pronouns, 19 mark it only in the singular. Seventeen of these are languages that also restrict gender marking in pronouns to the third person. Only two of the languages with gender marking on participant pronouns restrict it to the singular. Finally, only two languages in our data set—Marshallese and Palauan—mark gender only in the plural. In general, then, gender marking in pronouns is much more commonly restricted to the singular than to the plural.

Table 2 shows the distribution of gender marking by number among languages that mark gender only in the third person. (The first column, which lists languages where there

ALL NUMBERS	SINGULAR ONLY	PLURAL ONLY
Albanian, Arapesh, Asheninca, Basque, Catalan, Czech, Godie, Greek, Halkomelem, Ho, IsiXhosa, Kaingang, Kannada, Latin, Latvian, Mixteco, Mohawk, Pakaasnovos, Polish, Romanian, Sotho, Yimas, Zapoteco	Ainu, Awtuw, Chinook, Cubeo, Dieri, Dutch, (Old) English, German, Hinuq, Lushootseed, Pomo, Somali, Swedish, Telugu, Welsh, Wolaytta, Xokleng	Marshallese, Palauan
23	17	2

Table 2: Gender marking by number in languages with gender marked only in 3rd person

is no upstaging of gender by number, includes languages where third-person pronouns do not show any number contrasts at all.)

Is the tendency for non-singular number to upstage gender amenable to an explanation similar to the one we proposed in §4 for the interaction between gender and person? The most obviously analogous approach would be to suggest that if number composes with n before gender does, then only singulars will be semantically compatible with gender, but if number is above gender, the two will be able to combine freely. This would accord with the intuition that the properties denoted by gender features apply more naturally and straightforwardly to single individuals than they do to pluralities. Intuitively, a representation like (23a) would mean something like 'group of feminine entities', while (23b) would mean 'feminine group of entities'—perhaps a less readily interpretable scope relation.

(23) a. PLURAL(FEM(n))

[PLURAL]   FEM(n)

[FEM] n

b. FEM(PLURAL(n))

[FEM]   PLURAL(n)

[PLURAL] n
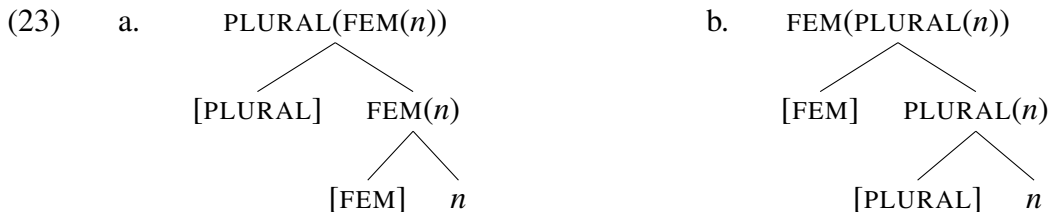
But there are reasons to be skeptical of such an approach. First, 'gender' as we have been using the term here is not a semantically uniform category: although we assume that all gender features can be adequately represented as $\langle\langle e, t\rangle, \langle e, t\rangle\rangle$ functions, their substantive content varies. Some may have meanings that are entirely compatible with pluralities; others—ones corresponding to largely arbitrary noun classes—may have no substantive semantic content at all. And on the other side of the semantic equation, the difference between singular and non-singular number does not clearly map to a difference in semantic type that would make plurals incompatible with modification. For example, Harbour (2014: 192) treats all number features as combining with type $\langle e, t\rangle$ to produce $\langle e, t\rangle$.

There is also more cross-linguistic variation in grammatical number systems than there is in person. Harbour (2016) makes a compelling typological and theoretical case that there are universally only two person features ([±author] and [±participant]), which have fixed

denotations and can be used to derive a total of five distinct systems of person contrasts.[10] Moreover, the categories these features can represent all have sharp boundaries defined by the inclusion or exclusion of *i* and *u*. Number systems, on the other hand, are more diverse, and some include fuzzy categories like 'paucal' and 'greater plural'. It is thus not clear that the representation of number is cross-linguistically consistent enough that parametric variation in its scope relative to gender could neatly generate two possible types of languages, of which only one allowed gender contrasts in non-singular numbers.

Indeed, the relevant distinction may not be between singular and non-singular at all, but between unmarked and marked number. In Marshallese, for example, demonstratives mark a contrast between human and non-human referents in the plural that is neutralized in the singular. Cowper and Hall (2022) argue that singular is the marked number in Marshallese, encoded by a privative feature [ATOMIC] in complementary distribution with [±human].

If the relevant property of numbers that preclude gender contrasts is featural markedness rather than semantic incompatibility, then Impoverishment conditioned by the marked feature is more plausible than an account parallel to the one in §4. Though further investigation of the paradigmatic relationship between gender and number is needed, it may ultimately be necessary to stipulate, as Lumsden (1987) and Noyer (1992) do, that number takes precedence over gender when the grammar cannot realize both.

6. Conclusions

We have shown that the cross-linguistic tendency of person to upstage gender can be derived from semantic types and parametric variation in syntactic structure; if this approach is on the right track, it eliminates the need to posit that the preference for realizing person is hard-coded in UG. For gender and number, on the other hand, such a stipulation may still be necessary.

Though many DM accounts of the neutralization of morphological contrasts rely on Impoverishment, the preference for number over gender need not be implemented in this way. It might instead be merely a way of resolving ties—cases in which the Subset Principle fails to decide which VI to insert. One condition of Noyer's (1992: 93) Spell-Out Ordering Hypothesis, quoted in (24), uses the feature hierarchy to choose between VIs whose specifications are not in a superset–subset relation:

(24)   If the structural descriptions are disjoint or overlapping, then the rule referring to the hierarchically higher feature applies first.

In the Awtuw paradigm in (5), for example, this would would order (25a) before (25b), meaning that a third-person feminine plural would be spelled out as *rom* rather than as *tej*.

(25)   a.   *rom* ⇔ [PL]   b.   *tej* ⇔ [FEM]

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[10]Viz., 'monopartition' (the absence of any person contrasts at all), two bipartitions (participant *vs.* nonparticipant and speaker *vs.* non-speaker), tripartition (1/2/3), and quadripartition (1EXCL/1INCL/2/3).

To see whether the preference for realizing number over gender—or any other cross-linguistically robust upstaging pattern—really needs to be enshrined in a universal feature hierarchy, we intend to continue our typological investigations.

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