The Origin of Nominal Classification
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1. Introduction. Greenberg (1978) proposes that gender agreement markers are diachronically renewed, or created in the first place, by numeral classifiers turning into demonstratives turning into articles. A numeral classification system is thus the crucial trigger for the rise and continued existence of gender systems. This scenario is an appealing one in that it explains the rise of the elaborate, shape-based, classifying gender systems of the Niger-Congo family in Africa, a cross-linguistically unusual type of system and one thus in need of explanation. However, while this analysis has a good deal of a priori plausibility and explains exactly that which is most in need of explanation, the typological and geographical distribution of gender in the world's languages raise questions about its typological plausibility. The present study examines gender systems and other types of nominal classification in the light of two broader concerns -- *whole-language typology*, the investigation of typological features in relation to other parts of the language's grammar, and *geography*, the study of location and areality -- and suggests a different origin for gender systems. I will follow Greenberg 1978, Weitenberg 1987, and Corbett 1987 in basing my analysis on the structural properties of noun classes rather than their semantics, and Greenberg 1978 in assuming that what requires historical explanation is the rise of the formal markers for gender and their participation in agreement rules, not the semantics of the classes.

This study is part of a larger project on the typological and geographical distribution of grammatical structures. It samples the world's languages geographically, by choosing a representative sample of continental and subcontinental areas (provided they are adequately described); then, within each selected geographical area, it takes a total sample (i.e. gives an exhaustive survey) of the surviving language families, choosing one well-described language from each family of the age of the major Indo-European branches. The database consists of 119 languages from the following areas: North America, Mesoamerica, northern Eurasia, the ancient Near East, sub-Saharan Africa, Australia, and the central Pacific (Micronesia and Melanesia). 40 of these languages -- one-third of the sample -- have gender or other nominal classification. They are shown, by area and with relevant grammatical information, in the Appendix.

I will use the following terms. *Agreement* is the copying or similar overt duplication of grammatical features, specifically the duplication of gender from a gender-bearing noun on another word in the sentence. It is necessary to distinguish three *levels of categorization*, any or all of which may be marked by agreement or other inflection in a given language. At the lowest level of categorization, the *concord class* is the most concrete and specific formal categorization a noun can have in a given language. For instance, Luganda *o-mu-ti* 'tree' and *e-mi-ti* 'trees' represent two distinct concord classes. Typically, the singular and plural forms of a single word will belong to two different concord classes in such a language. *Gender* is a more abstract notion: a given word usually belongs to only one gender, so that singular-plural concord class pairings constitute genders and the Luganda word for 'tree' can be said to belong to a gender marked by concord class *-mu-* in the singular and *-mi-* in the plural. A gender is thus a

grouping of concord classes, which are assigned by some principle (here, and typically, singular vs. plural). A *macrogender* is a set of genders assigned by some principle, usually natural gender (sex or animacy). There are thus three levels at which nouns may be categorized, each higher level describable as rules or principles for assigning the categorizations of the next lower level: a macrogender assigns grammatical genders according to natural gender, and a gender assigns concord classes according to number. The following examples illustrate the notions of concord class, gender, and macrogender for Chechen.

Noun	Gloss	Concord marker	Gender	Macrogender
vaša	'brother'	v	masculine	human
vežarí:	'brothers'	b		
jíša	'sister'	j	feminine	human
jížarí:	'sisters'	b		
ɬiexarxuo	'teacher'	v, j	masc/fem	human
ɬiexarxuoj	'teachers'	b		
bworz	'wolf'	j	J	
bjerzaloj	'wolves'	j		
bwos	'color'	b	B	
bjesnaš	'colors'	d		
surt	'picture'	d	D	
súrtaš	'pictures'	d		

The Chechen system is not unlike that of a Bantu language, except that Chechen has four concord markers which combine in different ways to yield six genders (closely related Batsbi combines the same four markers in more ways and has eight genders), while in Bantu languages the number of concord classes is greater than the number of genders. (Another language which has more genders than concord classes is Wishram; others with more concord classes than genders are Orig, Maung, and Nasioi.)

Not all languages distinguish all three levels, so a single generic term will usually suffice. I will use *gender* both as the label for categorizations in languages not distinguishing three levels and as an analytic generalization whenever it is not necessary to talk specifically about concord classes or macrogenders. 'Class', 'classification', and 'categorization' will have looser meanings, referring to any kind of subgrouping within nouns, including those not relevant to gender. In making typological comparisons, e.g. of the number of classes, I have attempted to count specifically gender classes in the strict sense (although this runs against the grain of grammatical tradition in some areas: for example, the Africanist tradition generally counts concord classes, not genders, for the Niger-Congo languages).

Since languages mark gender agreement in a variety of different places -- on

articles, on attributive adjectives, on the noun itself, on verbs, etc. -- I will speak of the *locus of gender marking*. The table below shows the range of possible loci of marking stated in terms of whether the word bearing the gender marker is the syntactic head or a syntactic dependent of the gender-bearing noun. This kind of breakdown is relevant because, as will be argued below, the directionality of agreement -- from heads or to heads -- seems to be one of the factors limiting or favoring the rise of gender systems.

Loci of gender marking (relative to the gender-bearing noun). Gender markers are underlined.

a. On neither head nor dependent

On the noun itself:	Luganda	o-<u>mu</u>-ntu 'man' o-<u>ku</u>-tu 'ear'	a-<u>ba</u>-ntu 'men' a-<u>ma</u>-tu 'ears'
On anaphoric pronouns:	French	il 'he' elle 'she'	

b. On a syntactic dependent

Article or determiner:	French	<u>la</u> maison	<u>le</u> nom
	Dyirbal	<u>bayi</u> yara man	<u>balan</u> dugumbil woman
Attributive adjective:	Russian	nov-<u>aja</u> kniga 'new book' nov-<u>yj</u> dom 'new house'	
Possessor:	Maung	<u>mada</u> nahi mada larnalg Art-V I Art-V ear (V) 'my ear'	

c. On a syntactic head

Possessed:	Maung	wulag-biridj da ŋalmar IV-GEN mouth IV cave 'mouth of cave'
Verb:	Chechen	san vaša ču-<u>ye</u>lira 'my brother came in' san jiša ču-<u>je</u>lira 'my sister came in' my Bro/Si in-came

2. Typology of nominal categorization. Patterns of nominal categorization manifested by the languages in my sample can be broken down into four categories, plus one anomalous type sharing features of two categories. This taxonomy is based primarily on the consideration of what word requires agreement (or analogous formal response) in some other word. To distinguish this principle from various kinds of government, etc., I speak of the *mandating* of agreement. We thus have three structural factors to monitor: which word lexically *bears* gender, which word is the locus of agreement or *responds* to classification of some other word, and which word *mandates* agreement or some other response. To a considerable extent, the semantics of the categories and the number of

classes follow from these purely structural principles of mandating, bearing, and responding to nominal classification.

For each of the types of categorization to be given here, the defining properties are listed first, then secondary or incidental properties.

2.1. **Gender** systems have the following properties:

Gender is borne by nouns, in which it is lexically inherent. It is mandated by the loci of agreement themselves: certain contexts, certain parts of speech, and certain construction types require agreement in a given language, and there is a good deal of variation from language to language in what contexts require agreement.

There are few classes, typically in the range of 2 to 8. The mean is 3.9 in my 40 languages. The mode, interestingly, is 2, with 18 two-gender languages.

The classes almost always include a masculine/feminine or human/nonhuman opposition.

They are marked by agreement, either within the NP headed by the gender-bearing noun or outside of it on the verb or a head noun or on an anaphoric or personal pronoun. They may or may not be marked on the gender-bearing nouns themselves (in 18 of the 40 languages they are marked on the nouns). Most languages mark gender in more than one place. For instance, Burushaski marks it on pronouns, attributive adjectives, and verbs, and to a lesser extent on the noun itself; Elamite marks it on the noun and the adjective; Wishram marks it on the noun, on pronouns, on head nouns in possessive phrases, and on verbs; languages like Luganda and Fula mark it in almost every locus surveyed here (as well as others, such as adverbs and numerals). In some languages it is marked only on dependents (e.g. French, Akkadian, Nasioi), in some it is marked only on heads (Cree, Gitksan), but in most it is marked on some combination of dependents and heads.

Gender classification of nouns is largely arbitrary, except within the human macrogender if there is one.

Gender classification of nouns is lexically fixed, except within macrogenders in which it is determined by natural gender and may be fluid. The Chechen word for 'teacher', shown above, is an example of fluid gender classification in the human macrogender.

The languages with gender have moderate to high morphological complexity. Although in principle isolating languages could use separate particles or grammatical words to mark gender (as many isolating languages do to mark number: Dryer 1987), no isolating language in my sample (and no isolating language outside of it I am aware of) does this. However, non-isolating languages do sometimes use separate grammatical words to mark gender: the gender-marking words of Dyirbal, described above as articles, as well as the articles of French, are examples. It is presumably the notion of agreement, rather than the notion of nominal categorization, that is incompatible with the isolating type.

Gender is strongly areal. Most of the languages having gender occur in what I will call 'hotbeds', which I define as areas in which most languages have gender, gender is found in languages of more than one family, and the formal implementation of gender -- the number of classes, the loci of marking, prefixal or suffixal marking, etc. -- takes more than one form. (This definition precludes, e.g., regarding the territory of the Algonquian languages, all of which have a uniformly implemented gender distinction, as a gender hotbed. It does allow Europe to be regarded as a gender hotbed: although the presence of gender in Europe is due entirely to the spread of Indo-European, a daughter stock of Indo-European is comparable to the Algonquian family in age, and the formal implementation of

gender differs from branch to branch in modern Indo-European.) Gender hotbeds occur in Africa (where languages of the Afroasiatic, Niger-Kordofanian, Nilo-Saharan, and Khoisan families exhibit gender); in the ancient Near East (Elamite, Sumerian, perhaps Hattic, Hittite, and Semitic languages such as Akkadian); and in northern Australia (where most of the northern Australian families have gender). These hotbeds are ancient, while the one in Europe is more recent, as just noted.

Languages with gender located outside of hotbeds will be called *outliers*. Of the 40 languages with gender in my sample, 14 are outliers and 26 in hotbeds. Outliers often give evidence of distant or former connection with hotbeds: for instance, Tunica and Yuchi both have gender and suggest an earlier hotbed in the American Southeast; the Northeast Caucasian languages may represent the periphery of the gender hotbed of the ancient Near East; the gender of Burushaski my have areal connections to the gender of Indo-European languages in the area (in my sample, Waigali of the Kafir branch of Indo-Iranian); and so on. The figure of 14 outliers includes the clear outliers (e.g. Ket, Wishram) and the less clear instances.

2.2. **Numeral classifier** systems have the following properties. (My survey of numeral classification was not particularly systematic, and I rely on Allan 1977 for some of this description.)

Numeral classification is mandated by numerals (and occasionally also possible or required in other construction types, e.g. with demonstratives).

The classes are not marked by what one could call agreement. Usually there is a separate word which is called a classifier; less often (e.g. in Nasioi in my sample) the classifier is fused to the numeral so that there are several shape-based numeral classes.

There are many classes, minimally 20 and up to around 200.

The classes almost always involve shape categories.

Classification is fluid and quite clearly semantic.

The languages with numeral classifiers are generally more or less isolating in type.

Numeral classifiers are also strongly areal in distribution, perhaps more strongly so than gender. Apparently there are only two hotbeds of numeral classification: a large one centered in Southeast Asia and extending well into the Pacific, and a smaller one centered in Mesoamerica and extending into the western Amazon basin. I know of no outliers other than Yurok and the Algonquian languages (and they are genetically related).

2.3. **Predicate classification systems**. The classic example of predicate classification, and the only example in my sample where it is systematic, is provided by the Athabaskan languages, where the stem of the verb responds to the shape classification of the S/O. Predicate classification is mandated by the verb. The classification is fluid and quite clearly semantic, and both the fluidity and the particular semantic classes resemble those of numeral classifier systems.

2.4. **Covert animacy systems** involve the special, sometimes almost gender-like, treatment of animate or human nouns. (I will use the term 'animate' loosely here for convenience. The actual membership of the class can vary from language to language: all animates; higher animates; humans only; kin terms only.) They have the following properties.

There is no agreement, hence no mandating of agreement. Animacy is borne by nouns and marked only in selection, neutralization, and the like. For instance, in a number of languages animate nouns are privileged to function as subjects of both transitive and intransitive verbs while inanimates cannot be subjects of transitives (e.g. Hittite and

Diegueño in my sample). Distinctions in number often apply only to animates: for instance, in Washo plural marking is regularly used only for nouns referring to humans; in Karok, Gitksan, and Nasioi, only human nouns can take plural marking; Chitimacha distinguishes singular from plural in only about thirty nouns, which include kin terms and other human nouns. (These and other examples are discussed again in §4.4 below.) A subset of animates -- kin terms -- with or without other nouns takes inalienable possession in many languages (see §4.1 above). Animate nouns may be marked by distinctive declension classes, including distinctive patterns of case neutralization (e.g. Russian, where in the first declension the animate nouns syncretize genitive and accusative while inanimates syncretize nominative and accusative; for the place of animacy in the Russian gender system see Mel'cuk 1980, Corbett 1987).

In some sense there is only one class: the closed or delimitable set of human or animate nouns. The non-human or inanimate nouns have the nature of a residual category rather than a positive class.

Covert animacy systems occur in languages of all morphological and syntactic types. They have no demonstrable areality. They represent a cognitive universal -- the hierarchy described by Silverstein 1976 -- which is likely to crop up in formal marking wherever the opportunity presents itself.

2.5. **None of the above.** There are other kinds of categorization of nouns which are not relevant to this study, such as declension classes and alienable/inalienable possession (except that either may be relevant insofar as it helps implement a gender or animacy system).

2.6. **Anomalies.** The following three examples combine the features of gender and numeral classification.

In languages of the Niger-Congo family (Luganda and Fula in my sample), the gender systems are anomalous. There are many classes (12 or more genders, 20 or more concord classes), some of which are clearly based on shape. There is a certain amount of fluid classification. Gender marking is used on numerals. The number and semanticity of the classes, and the use with numerals, suggest numeral classifiers; but there is agreement, multiple marking in the sentence, marking elsewhere than on or with numerals, and sufficient lexical fixation to justify regarding these systems as gender.

In Yagua and other languages of the western Amazon (Payne 1986, 1987), not in my sample, numeral classification shows similarities to gender. Classes are numerous, shape-based, and used primarily with numerals; but classifiers are also affixed to modifying adjectives in the NP and to predicate nominals. The Yagua system and the Niger-Congo systems are similar in many ways, although the Yagua system is closer to numeral classifiers while the Niger-Congo pattern is closer to gender.

Chamorro has a type of numeral classification which resembles gender in involving few classes and centering on animacy rather than shape. Contemporary Chamorro uses Spanish numerals and has no classification, but Costenoble 1940 was able to find elderly speakers who remembered the native system. They had three numeral systems, for animates, inanimates, and linear measures. This example is pathological in some respects -- the subsystem was dying, and may not have been elicited in its entirety -- but nonetheless it provides us with an example of an anomalous system showing properties of both gender and numeral classifier systems.

3.0. Distribution. The following table shows the frequencies of various loci of gender marking and two morphosyntactic typological features, for four groups of

languages: the entire sample of 119 languages; the 40 gender languages; only the gender outliers; only the hotbed gender languages. Marking type is the overall morphosyntactic type of the language as defined in Nichols 1986: D = predominantly dependent-marking, dbl = double or split marking, H = predominantly head-marking. Alignment is the dominant clause structure: accusative, ergative, stative-active, or hierarchical (= H; this is the alignment type in which the marking of grammatical relations is so strongly influenced by person-number categories that it is difficult to classify it as one of the other types).

Languages	no. langs.	Locus of gender: Neut.	Dep.	Head	Marking type: D	dbl	H	Alignment: Acc	Erg	St-A	H
All	119				35	45	36	68	24	16	5
Gender	40	34	35	30	10	20	8	22	8	5	3
Outliers	14	9	11	17	3	5	6	2	6	4	2
Hotbeds	26	25	24	13	7	15	2	20	2	1	1

These figures show that the favored places, cross-linguistically, for marking gender are on modifying adjectives in the NP (24 instances in my sample) and on the verb (24); the noun itself (18) and personal or anaphoric pronouns (16) are also common. Gender agreement on articles or similar words is not common (8 instances), if only because articles themselves are not found in all languages. Marking of possession on the head (possessed) noun in a possessive construction is cross-linguistically common, but rarely (6 instances) involves gender agreement; usually there is person-number agreement. As noted above, dependent-marked, head-marked, and neutrally marked patterns of gender agreement are about equally common, with a slight dispreference for head marking (34 : 34 : 30). The same balance is found in the two-gender languages and in the languages with many genders.

There are interesting differences between languages in gender hotbeds and outlier languages. In neither head/dependent marking nor alignment do gender languages stand out among the world's languages: there is some preference for the double-marking type and a strong preference for the accusative type in both sets of languages. The same tendencies are visible, in somewhat exaggerated form, in the gender languages in hotbeds. The outliers, however, are distinctive: they favor head marking and non-accusative alignments. The loci of gender marking are also distinctive: gender languages overall give roughly equal preference to head, dependent, and neutral marking of gender, with a slight disfavoring of head marking, but the hotbed languages disfavor head marking while the outliers favor it. Finally, the languages with elaborate gender classification occur only in hotbeds (languages with 10 or more genders occur only in Africa).

The most general conclusion to be drawn is that the areal pressure of a hotbed favors gender marking regardless of circumstances, while outside of hotbeds gender is not common and seems to be favored by a set of typological properties which are unusual, individually and as a set. Especially since a number of gender outliers are language isolates whose histories are unknown, it is difficult to tell whether the distinctive type features of the outliers are to be regarded as factors favoring the survival of gender or factors favoring its rise. If we assume they are factors favoring its rise, or more generally that, as factors favoring gender, they are somehow relevant to understanding its

rise, we can say that marking of gender on the noun itself is much less important than marking in agreement (9 instances to 11 + 17), that head-marking agreement is more conducive to gender than dependent-marking agreement (17 to 11), and that languages with a good deal of head marking and non-accusative alignment are conducive to gender. (Head marking and non-accusative alignment are themselves associated, as my larger project has shown.)

The factors probably to be associated with the rise of gender in languages, then, are, most importantly, location in or near a hotbed, and then a preference for head-marking morphology and non-accusative alignment.

4. Crossover between gender and numeral classification. Greenberg's explanation of the rise of gender requires the possibility of transition from one type of classification to the other, but in fact there is very little evidence for this in my sample. Gender and numeral classification rarely cooccur in languages; the only language in my sample with both is Nasioi, and Payne 1987 mentions western Amazonian languages which have both. Furthermore, gender hotbeds and numeral classification hotbeds almost never overlap (and when they do it is overlap of peripheries, not overlap of centers, as in India as described by Emeneau 1980). Therefore, if we look to numeral classification as a source of gender systems we disregard geography.

The only clear evidence for a possible transition from numeral classification to gender comes from the western Amazon. Languages like Yagua could eventually become Bantu-like in their gender systems, if the use of classifiers on modifying and predicative parts of speech were expanded to more loci, if classification became clearly a matter of agreement (e.g. if marking in more than one place per sentence became common), and if use with numerals became optional or restricted (e.g. to only some numerals, as it is in Bantu languages). Thus an origin in numeral classification could conceivably explain the distinctive nature of the Niger-Congo gender systems. However, that gender exists at all in Niger-Congo can be explained by geographical factors: Africa is a gender hotbed, and we would expect to find gender systems in this family.

My field work in Northeast Caucasian languages suggests that native speakers expect gender classification of inanimates to be based on shape, even when they demonstrably are not. Chechen speakers will sometimes point out that words of the B gender refer to round objects, as some of them in fact do, although many do not and names of many round objects belong to other classes. If there is a speaker expectation that gender classes will be shape-based, then analogical reclassifications over time will probably lead to just such a situation. Therefore I propose the following scenario for the rise of elaborate and shape-based gender systems like those of central Africa: The language already has gender. The system is sufficiently elaborate that there is more than one class of inanimates. The morphological implementation of gender favors speaker awareness: e.g., the gender classes may be marked by transparently agglutinative affixes; fluid gender marking in a human macrogender may suggest that the markers are fully semantic and interchangeable; etc. The poetic canon may exploit gender as a basis for metaphor and simile (as that of Chechen does). It is significant that in this Chechen example the folk expectation of shape-based semanticity for gender centers on round objects, a category that figures prominently in shape-based numeral classification and renewal of classifier systems (Greenberg, this volume; also Allan 1977:301).

There is no evidence at all in my database for a transition from gender to numeral classifiers. The closest we come is the moribund Chamorro counting system, which

collapses to a three-way, animacy-based opposition reminiscent of gender classification but does not thereby give rise to gender.

In summary, then, the only evidence for crossover between systems -- the anomalous Niger-Congo and western Amazon shape-based elaboration of genders -- could conceivably come from regrammaticalization of numeral classifiers; but there is equally compelling evidence that gender systems can be semanticized under the right set of conditions. In any event, crossover between systems seems unable to account for the rise of gender outside of hotbeds; and for any comprehensive account it is the outliers that most require explanation (since every hotbed must have been founded by what was then an outlier).

5. Evidence for the spontaneous rise of gender. What we need to explain is the rise of the non-elaborate gender system in the outlier language. Since minimal gender systems always seem to focus on oppositions like animate/inanimate, human/nonhuman, and masculine/feminine, it makes the most sense to seek the origin of gender in the grammaticalization of covert animacy subsystems. Since these involve a universal cognitive hierarchy always available for potential implementation, grammaticalization could presumably take place wherever morphological circumstances were right, i.e. in the absence of a hotbed. I suggest that all we need is a covert animacy system, a potentially recruitable formal distinction, and pre-existent agreement patterns for gender to arise. The following are some examples illustrating the actual or plausible or potential rise of gender in this way.

(1) Spontaneous generation of categories: Gender arises out of number agreement. This seems to have happened in the Kiowa-Tanoan family, where nouns have inherent number, an affix switches the inherent number, and lexical classes of nouns are thereby set up. (For Kiowa see Watkins 1984:78ff.)

(2) Spontaneous generation of fillers. Markers in a person/number-based agreement system can easily be renewed by substitution of independent pronominal forms for the affixal pronominal forms. (For instance, some languages of the Numic branch of Uto-Aztecan replace inherited *i-*, first person singular prefix and clitic, with the independent form *ŋy* 'I'.) If third-person pronouns make any animacy distinction, then if they renew old affixes a gender system will thereby be set up.

(3) Spontaneous generation of slots. Cliticization of pronouns can be the first step in development of an agreement system; if the pronouns make any animacy distinctions, or if renewal implements an animacy distinction, gender agreement is thereby set up. Or agreement may develop by reanalysis of roots or stems as containing agreeing affixes: elsewhere I have argued (Nichols, in press) that accidental alliteration of frozen former prefixes in verbs with noun initials gave rise to gender agreement, and hence to gender, in Northeast Caucasian.

In all of these scenarios, lexical classification of nouns is the consequence rather than the cause of agreement. In all of them, agreement (typically in person-number) is pre-existent, and when it picks up or formally renews relevant pronominal or formal categories, gender classification of nouns is thereby set up. I know of no example where gender-like lexical classification of nominals clearly preceded the rise of agreement.

Once an agreement system is set up, gender classes can expand; and they may also semanticize, as they have in the Niger-Congo family and as may be imminent in Northeast Caucasian. The opposite development is reduction of classes, loss of agreement, and loss of the gender system, as has happened in English.

6. Conclusions. It is important to make clear what does and what does not require explanation on the interpretation given here. There is a group of changes for which the mechanism needs to be described but the ultimate motivation for the rise of gender does not need individual explanation. Rise of nominal classification per se is one such example: the classes are epiphenomenal to the agreement rules (although once a gender system is set up the principle of classification may become a driving force to expand and semanticize the system). The rise of gender in a language in a hotbed is inherently likely and does not require explanation; we need only seek the mechanism of implementation. The rise of animacy-based classes is also inherently likely; if classification materializes, it will almost certainly seize on the universal animacy hierarchy, which any language is likely to grammaticalize, if only covertly, in some form somewhere. Small gender systems are to be expected; it is the large and elaborate systems that are unusual and require explanation. (I have argued that they are secondary developments of smaller systems.)

On the other hand, the following changes require not only an account of the historical mechanics but an explanation of motivation as well. The rise of numeral classifiers, which are much more strongly areal than genders, requires explanation; the mechanism is obviously grammaticalization of semantically generic nouns, but why this kind of grammaticalization should center so firmly on numerals, with almost no tendency to expansion, needs explanation. The rise of complex gender systems, and those based on shape, requires explanation, and I have offered one above. The rise of gender systems in outliers requires explanation; I have suggested that it is the (potential, even likely, but by no means automatic) consequence of covert grammaticalization of animacy, availability of recruitable formal markers, a pre-existent agreement mechanism, and the right kind of morphosyntax.

In summary, establishing and motivating the origin of a gender system requires reference to geography (was the protolanguage in a hotbed?), morphological type (was there inflectional morphology? agreement?), and morphosyntactic type (was it head-marking or not? accusative or not?), i.e. to areal, contextual, and structural factors. The right semantic classification will be the automatic consequence of these formal factors.

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Legend to Appendix: "Y" = yes, occurs. Under H/D type: "H" = predominantly head-marking, "2" = double or split marking, "D" = dependent marking. Under Alignment: "N" = neutral, "A" = accusative, "E" = ergative, "S" = stative-active, "H" = hierarchical.

Appendix: Languages having genders

	Genders	Neutral N	Neutral Pro	Dependent Art	Dependent Adj	Dependent N	Head N	Head V	H/D type	Align-ment	Out-lier?
NORTH AMERICA											
Cree	2						Y	Y	H	H	Y
Gitksan	2							Y	2	E	Y
Kiowa	4	?						Y	H	H	Y
Quileute	2		Y	Y				Y	2	A	Y
Tunica	2	Y		Y			Y	Y	H	S	Y
Wishram	6	Y	Y				Y	Y	H	E	Y
Yuchi	5		Y	Y			Y	Y	H	S	Y
NORTHERN EURASIA											
Burushaski	4	y	Y		Y			Y	2	E	Y
Chechen	6	y			Y			Y	D	E	Y
French (coll)	2		Y	Y	Y				2	A	
Ket	3				Y		Y	Y	2	S	Y
Russian	3	Y	Y		Y			Y	D	A	
Waigali	2				Y			Y	D	E	Y
ANCIENT NEAR EAST											
Akkadian	2	Y			Y				D	A	
Elamite	2	Y			Y				2	S	
Hittite	2	Y	Y		Y				D	A	
Sumerian	2		Y					Y	2	E	
AFRICA											
Amharic	2		Y					Y	D	A	
Dizi	2	Y	Y		Y				D	A	
Fula	15?	Y	Y		Y	Y		Y	2	A	
Hausa	2				Y			Y	2	A	
!Kung	5		Y						2	N	
Luganda	12	Y	Y		Y	Y		Y	H	A	
Maasai	2	Y							2	A	
Nama	3	Y	Y					Y	D	A	
Orig	6	Y			Y				2	A	
Oromo	2		Y		Y			Y	D	A	
Sandawe	2				Y				2	A	
OCEANIA											
Konua	2	Y		Y				Y	H	A	Y
Nasioi	7			Y	Y				2	S	Y

	Genders	Neutral N	Neutral Pro	Dependent Art	Dependent Adj	Dependent N	Head N	Head V	H/D type	Align-ment	Out-lier?
AUSTRALIA											
Djingili	4				Y				D	E	
Dyirbal	4			Y					D	E	Y
Gunwinggu	4	Y			Y				2	A	
Malak-Malak	4	Y			Y			Y	2	A	
Mangarayi	3	Y			Y				2	A	
Maung	5			Y	Y	Y		Y	2	A?	
Nunggubuyu	6	Y	Y		Y			Y	2	H	
Tiwi	2				Y			Y	H	A	
Ungarinjin	5		Y				Y		2	3	
Warndarang	6	Y	Y		Y				H	A	
TOTAL		18	18	8	25	3	6	24			

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