The origin of the Proto-Indo-European gender system: Typological considerations

Silvia Luraghi
University of Pavia

Gender fulfills two different functions, i.e. nominal classification and cross-reference of constituents through agreement. Besides the generally acknowledged possibility of a grammaticalization process that may lead classifiers to become gender markers, gender systems may also arise as a consequence of special agreement patterns connected with differential marking of core arguments. It is argued that different origins of gender systems imply higher relevance of either function of gender in individual languages, and that this may have consequences on the values of gender within specific gender systems.

Keywords: Proto-Indo-European, number of genders, agreement, genders vs. classifiers, origin of gender systems, topic-worthiness

1. Introduction[1]

The origin of gender systems is certainly not a well understood phenomenon. A reason lies in the heterogeneous nature of gender markers whose origin is known: sources for gender markers are numerous, and of different types (Aikhenvald 2004; see section 3.4). In addition, the history and the development of many gender systems can at best be reconstructed, but not directly observed. Lack of parallel developments clearly attested in different language families results in reconstructions often remaining speculative.

This is the case of the development of the PIE gender system. In spite of general agreement regarding the relatively recent character of the sex-

[1] I thank Vit Bubenik and Brian Joseph for their helpful comments on an earlier version of this article.

Folia Linguistica 45/2 (2011), 435–464.
ISSN 0165–4004, E-ISSN 1614–7308
DOI 10.1515/FLIN.2011.016

based three-gender system known from most Indo-European languages, held to have replaced an earlier animacy-based two-gender system, how exactly this development came about has been a matter of discussion for over a century. In addition, studies have often concentrated on the rise of the feminine gender, i.e. on the extension of the gender system, without focusing on the origin of the two-gender system, which deserves separate treatment in the view of commonly held opinions on the general issue of possible origins of gender systems.

Here I consider both the rise of the two-gender system and its extension. Since research has mainly focused on the rise of the feminine, I start by reviewing the latest results regarding this issue. Indeed, in spite of new reconstructions, problems persist, especially regarding possible semantic motivations connected with the origin of the third gender. A current opinion views it as motivated by a split within the inanimate gender. Following this approach, the earliest stage of the three-gender system comprised animate, inanimate/abstract or collective (the latter possibly animate, section 3.1), and inanimate/concrete (Matasović 2004: 165–173). Apart from possible motivation for inanimate/abstract to be re-interpreted as feminine, which heavily depends on the reconstruction of otherwise unattested animate collectives, this reconstruction raises the question whether such a system has a typological likelihood, especially considering its origin as a development of an earlier animacy-based system.

In Luraghi (2009b), I proposed a typologically adequate reconstruction that avoids unlikely semantic motivation for the rise of the feminine gender. I argued that apparently the only possible semantic motivation for a gender that ranks immediately after animacy or at the same level as animacy is sex, and only if a system has a two-fold distinction between masculine and feminine further distinctions may appear among inanimates. Since some gender systems, such as those known from several African languages, apparently contradict this claim, this point needs further elaboration.

In this article, I pursue further the typological aspects of my reconstruction, by comparing the PIE gender system with gender systems of other language families, also in the light of what is known about their origin. I argue that gender systems may arise in different ways and from different types of morphological material. Different origins result in gender systems having different primary functions: this fact in its turn may determine which semantic features may motivate genders.

The article is structured as follows. In section 2 I summarize current research regarding the reconstruction of the PIE gender system. In section 3 I discuss possible semantic motivation for different types of nominal classification devices, including genders and classifiers. Section 4 is devoted to the description of types of gender system attested in the world's languages and compare them with the PIE gender system. In section 5 I frame the Indo-European evidence within current theories on the rise of gender systems and agreement. In section 6 I argue that different historical developments respond to different primary functions of gender and agreement. Section 7 contains a summary of the main findings.

2. The gender system of PIE

2.1. State of the art and open questions

The ancient Indo-European languages attest to a sex-based three-gender system, which includes masculine, feminine and neuter. As early as Brugmann (1891), it became clear that this system was a late development from an earlier two-gender system, commonly held to be animacy-based, which morphologically consisted of (following the terminology of the three-gender system) the masculine and the neuter, while the feminine gender was later formed through the addition of a special suffix, which Brugmann reconstructed as *-*ā*, and is currently noted as *-*h_2* (or *-*(e)h_2*) (see Matasović 2004: 164 on further arguments regarding the late origin of the feminine gender). The suffix was originally used in the derivation of deverbal abstract nouns; it also gave rise to the inflectional ending of the nominative/accusative plural of neuter nouns. Extension to neuter was (and remains) explained in connection with frequent polysemy of abstract nouns, and consequently of abstract affixes, which tend to extend to collective: the nominative/accusative plural neuter, which triggers singular agreement in some languages, such as e.g. Ancient Greek, is considered to have acquired a count plural value only secondarily, as a development from an earlier collective value (see Luraghi 2009a on the possible connection of abstract with collective). Finding such a semantic motivation for extension to feminine was much more difficult, and remains an open question.

In Brugmann's times, all known IE languages displayed gender systems which included the feminine (or at least traces of the original three-gender

system), but when Hittite was deciphered at the beginning of the twentieth century its two-gender system, with no unambiguous traces of feminine even in pronouns, raised more questions than it helped answer. For several decades, Hittitologists, and consequently Indo-Europeanists, were divided into proponents of the *Schwundhypothese* and of the opposite *Herkunfthypothese* (Luraghi 1997: 190–191). According to the former, the feminine gender (and numerous other categories commonly reconstructed for PIE) were not attested in Hittite and in general in Anatolian having disappeared at an earlier stage, while the latter held that such categories were a later creation, which followed the split of Anatolian from the rest of the IE family. At least as far as gender is concerned, it is now commonly agreed that Anatolian has not lost the feminine gender, simply because it never had one (several decades of discussion on gender in Anatolian are summarized in Ledo-Lemos 2003: 41–94 and Matasović 2004: 36–41).

One of the problems raised by Anatolian lies in the relation between the two developments of the *-*h₂* suffix, that is, nominative–accusative neuter plural via collective, and feminine. Since Anatolian does not have the feminine gender, but has the nominative/accusative neuter plural ending, scholars thought that extension to collective must have preceded extension to feminine, in order to accommodate the Anatolian data. One of the most popular theories in this regard explains the putative extension from collective to feminine as due to the influence of some feminine collective nouns, later reinterpreted as singular (e.g. Tichy 1993, Matasović 2004). This theory is at odds with the well known fact that no traces of feminine collectives are attested anywhere in the Indo-European languages.[2]

2.2. Possible answers: The morphological development of *-*h₂*

In Luraghi (2009a) I suggested that the problem of a possible semantic relation between collective and feminine can easily be eliminated through careful consideration of the morphological development of the suffix. If one considers that the suffix was derivational to start with, and tries to

[2] Tichy (1993) reconstructs the form **h₂wid^{h}éweh₂*, an ancient collective which in origin indicated the relatives of a dead person, and later 'widow': however, the collective meaning is a reconstruction, as in all Indo-European languages that contain it, this word means 'widow'. Thus, it cannot be taken as evidence for the creation of the feminine gender out of animate collective nouns (as Matasović 2004: 167 does), because there is no evidence for its existence.

Table 1. The development of PIE *-h_2 (from Luraghi 2009a)

1.	Derivational suffix (non-obligatory)
2a.	Neuter nouns: inflectional suffix (nominative/accusative plural, obligatory)
2b. i.	*-ā-* stems: marker of inflectional class ('theme vowel', obligatory)
ii.	First-class adjectives: marker of inflectional class and feminine gender (obligatory)

connect the two developments with each other, one does not only have to deal with the semantic problems raised by the relation between abstract, collective and feminine, but also with a number of morphological issues (section 3.1). Indeed, the suffix underwent two completely different morphological developments, which can hardly be connected with each other, changing into an inflectional ending on the one hand, and into the marker of an inflectional class (*-ā* stems) on the other. In this second development, the suffix apparently never passed through an inflectional stage. The two developments are represented in Table 1.

The problem with previous reconstructions lies in the assumption of a chronological order between stages (2a) and (2b). In Luraghi (2009a) instead I argued that, while stage (1) indeed preceded stages (2a) and (2b), the latter reflect two separate developments, which happened independently of one another, and can be summarized as follows (Luraghi 2009b):

– (2a): a derivational suffix turns into an inflectional one, preserving (part of) its meaning;
– (2b): a non-obligatory, meaningful suffix turns into a theme vowel, i.e. a purely grammatical, obligatory item, also interpreted as the marker of a noun class (i.e. of a grammatical gender).

Such a view does not raise any morphological problems; in addition, it accommodates the Anatolian data without the need of any ad hoc solutions.[3] Having eliminated the question of a possible semantic relation

[3] I refer to the fact that, as noted at the end of section 2.1, the suffix had already turned into the ending of the nominative–accusative neuter plural in Anatolian, even though there is no evidence for feminine gender, which most likely developed in the other Indo-European languages after the split of the Anatolian branch. If the two processes were connected, one should set up a chronology which would necessarily imply deriving the feminine gender from the collective. To the contrary, if one views the two changes as separately motivated there is no need for an explanation of how the collective turned into a feminine.

between collective and feminine, it remains to be explained how the suffix of abstract nouns was reinterpreted as the marker of the feminine gender.

In Luraghi (2009a) I offered an explanation in line with common assumptions on the relation between gender and degrees of individuation in PIE. Such an explanation (section 3.1) involves reconstructing an intermediary stage with a non-sex based three-gender system. Since such a system seems typologically unlikely, I attempted a different explanation in Luraghi (2009b), and suggested that the feminine gender originated from a split within the animate gender. The split provided a semantic motivation for the morphologically motivated class of suffixed nouns (mainly deverbal action nouns), which had become available in the meantime. Such class became a gender (i.e. it started triggering agreement with demonstratives and later with adjectives, section 6.1) only when it was identified as feminine, without an intermediate stage at which the new gender was motivated by degrees of individuation.

This approach has the advantage of not requiring semantic motivations connecting feminine with any other meanings of the suffix *-h_2. Besides, it takes into account the tendency of gender systems to have more than one gender for inanimates only if they have two genders for human nouns (i.e. if they are sex-based, see section 4.1 for discussion about non-sex-based systems). However, even accepting this reconstruction, it remains true that individuation plays a role in gender systems of the Indo-European languages. I discuss this issue in the next section.

3. Semantic motivation for the PIE gender system and beyond

3.1. Animacy and individuation in PIE

Semantic motivation for the PIE gender system is usually indicated in a combination of animacy and (degrees of) individuation. The connection between gender and animacy is quite obvious: nouns that denote human beings are masculine or feminine in the three-gender system, and they belonged to the animate gender in the reconstructed two-gender system, as well as in Anatolian. Neuter nouns with animate referents require some extra explanation (section 3.3), but they do not in general blur the association of gender with animacy, in particular the association of neuter with inanimate. However, the fact that nouns with inanimate referents are by no means limited to the neuter gender stimulated various hypotheses regard-

ing other semantically-based principles of classification, among which is the possible connection between gender and individuation.[4] Such a connection has been explored by Ostrowski (1985), who argued not only that the distinction between animate and inanimate (= neuter) was partly a reflex of a distinction between highly and lowly individuated entities, but also that inflectional classes of neuter nouns reflected further degrees of increasing individuation.

Ostrowki's approach has not been pursued further, especially because, even though it may be that nouns belonging to different inflectional classes ranked differently on an individuation scale, such groups did not have reflexes in agreement, and thus cannot be considered genders. However, the idea that the PIE neuter gender was motivated by a low degree of individuation to a greater extent than by referential animacy is generally accepted. Recently, it has been implemented in Matasović (2004). According to Matasović, the early PIE inanimate gender basically included only mass nouns, such as nouns of substances and fluids, and some abstract nouns, while nouns denoting many inanimate objects were animate, as were some other abstract nouns. Thus, the cut-off point between animate and inanimate was located at the lower edge of the animacy hierarchy (section 3.2). Later, the third gender was created, consisting of collective nouns which were reinterpreted as feminine, and of a number of substantivized possessive adjectives, possibly referring to female entities (humans and animals).

The role assigned to collectives in this theory deserves discussion. In the first place, Matasović considers ancient neuter collectives such feminine nouns as Greek *tomḗ* 'cut', *trophḗ* 'food', which he views as neuter plural forms of original adjectives (2004: 168). In the second place, he views as crucial the fact that allegedly various collectives denoted human beings, and were later reinterpreted as referring only to females. This latter argument, as noted in section 2.1, cannot be proved, as the Indo-European languages do not provide any evidence for it: indeed, the only evidence adduced by proponents of this theory is constituted by reconstructed forms, which result in a circular argument. As for Greek nouns in *-ā* (Attic–Ionic *-ē*), they are usually considered deverbal action nouns (Chantraine 1979: 18–26) or deadjectival abstract nouns (Gagnepain 1959).[5]

[4] See Fodor (1959) for early theories on the motivation for gender assignment in PIE.

[5] Gagnepain (1959) remarks that the closeness of the relation between these nouns and verbs is usually overestimated (p. 12), and argues for a deadjectival origin, based on the /o/

Following Matasović's approach, these nouns, which pattern after other (numerous) action nouns uncontroversially based on verbs (fn. 5), were originally collective. Their frequently abstract meaning should then imply a change of the suffix from abstract to collective and then back to abstract, which introduces an unnecessary complication (apart from morphological problems, discussed below).

The reason why Matasović tends to maximize the number of feminine nouns which originated as neuter collectives rests on his assumption of a connection between the two developments of the ancient *-h_2 suffix summarized in Table 1, i.e. ending of the nominative/accusative neuter plural (via collective) and marker of the feminine gender. As I remarked in section 2.2, however, this connection is not only unnecessary from the semantic point of view, but also raises problems, considering the nature of the two morphological outcomes. To explain a large number of feminine nouns as earlier neuter collectives, one has to assume that the collective suffix had already acquired its role within the neuter gender, while still being derivational. However, as Clackson puts it, "it is not clear how the collective ending *-h_2 could at once become the marker of a new declension class, but retain its old function as the marker of neuter plural." (2007: 107, see Luraghi 2009b). Note that the presence of the suffix as an inflectional ending in Anatolian, which mirrors a stage at which the feminine gender had not yet developed, raises additional problems with the alleged morphological development, which can only be removed if one assumes that the suffix underwent two separate developments, as I suggested in section 2.2 and note 3.

Apart from the role of collectives, which most likely was insignificant in the formation of the feminine gender, Matasović's reconstruction raises further problems. In the first place, assuming the PIE neuter gender as only

vocalism of the stem. In any case, nouns in this group are semantically and formally parallel to other action nouns, whose deverbal origin is undeniable, such as *arpagḗ* 'robbery' from *arpázō* 'carry away', or *komidḗ* 'attendance' from *komízō* 'take care of'; thus, whatever their base of derivation and the relative chronology of the formation of adjectives and nouns, there is no reason to consider them collective forms, rather than abstract derivatives. The traditional view looks quite convincing: it implies, e.g. that a form such as the above mentioned *tomḗ* was in origin an abstract noun either based on the verb *témnō* 'cut', or on the adjective *tomós* 'cutting', rather than its collective form. The fact that Greek nouns in -*ā* /-*ē* often indicate concrete objects is not surprising, given the well-known tendency of deverbal action nouns to develop concrete meanings, often reflecting the argument structure of the verb base (Luraghi 2009b).

constituted by mass nouns, is a too wide generalization: while it is true that mass nouns are basically neuter in the Indo-European languages, neuter gender also includes several nouns that refer to concrete countable entities, such as instruments and tools. Matasović (2004: 80–163) also provides a detailed and accurate list of reconstructed forms with gender, but for a very large number of reconstructed forms gender is uncertain, as it varies in the Indo-European languages (that gender of inanimates can change quite unpredictably is shown by developments in the Romance languages). The fact that uncountable nouns tend to be neuter in the Indo-European languages reflects their position at the bottom of the animacy hierarchy (section 3.2), but it does not imply that the neuter gender did not also contain several other types of inanimate nouns.

3.2. The animacy hierarchy, levels of representation and gender

Degrees of animacy affect various morphosyntactic features of nouns and pronouns, such as case marking. A possible version of the animacy hierarchy is given in (1).

(1) *The animacy hierarchy*
First- and second-person pronouns > third-person pronouns > proper names > human common noun > nonhuman animate common noun > inanimate common noun. (Croft 2003: 130)

In other versions more distinctions are introduced in the higher part of the scale (e.g. kin terms are held to rank higher than other human nouns); however, apparently no language points toward further elaboration in the lower part of the hierarchy. In other words, there seem to be no distinctions among inanimates. However, distinctions do exist that concern the cut-off point of animacy in individual languages: so e.g. nouns that denote natural phenomena are often included among animate, while mass nouns and other uncountables are virtually always inanimate.

The fact that distinctions are available at the higher edge of the scale is not surprising: the animacy scale only partly reflects referential animacy, it rather reflects other features that most often accompany animacy, such as individuation or topic-worthiness (Comrie 1989: 189–195). Clearly, speech act participants (hence first and second person pronouns) are most individuated and topic-worthy in communication events; the fact that speech act participants are animate is an obvious consequence of

language being a human activity. Because humans mostly speak of other humans, inanimate entities are less topic-worthy, but this has little to do with referential animacy, as shown by the well known fact that animals are most often treated as inanimate, unless they have some special importance (e.g. for reproduction). Topic-worthiness reflects, among other things, the fact that humans are capable of acting, while inanimate entities usually are not.[6]

Cross-linguistic studies regarding differences within inanimate nouns that can help predicting where the cut-off point between animate and inanimate is most likely to occur are not available. Intuitively, mass nouns are less individuated than count nouns: thus, if the cut-off point between what is treated as animate and what is not is close to the end of the hierarchy, it ends up singling out only mass nouns, as in the alleged reconstruction of the PIE gender system (section 3.1).

The position of abstract nouns in this respect has never been exhaustively investigated. Again based on intuition, abstract nouns seem to be less individuated than concrete ones (obviously abstract concepts are not concrete); however, such an assumption fails to consider the existence of different types of abstract nouns. Often, abstract nouns can be conceptualized as capable of acting, because they indicate entities which cannot be controlled by human beings, such as emotions (see Luraghi 2006, 2009a, b).

Abstract nouns can also be different based on degrees of abstraction. This issue is discussed e.g. in Vogel (2000) in connection with gender and individuation in German. Vogel argues that in German deverbal action nouns are assigned different genders based on different degrees of individuation: neuter nouns indicate generic reference to a certain action (*das Sitzen* 'the act of sitting'), feminine indicate specific instances of it (*die Sitzung* 'the session'), while masculine most often tend to develop concrete meanings (*der Sitz* 'the seat'). A similar situation occurs in other Indo-European languages, in which neuter gender is consistently assigned to verbal infinitives, when they are used as action nouns (Luraghi 2009b).

Regarding gender assignment to concrete entities in German, Zubin and Köpke (1986) observed that neuter gender is systematically assigned at the superordinate level of categorization, while masculine and feminine are assigned at the basic level and below. Thus, at the highest level of genericity,

[6] Dahl (2000: 100) defines the animacy hierarchy as follows: "the distinction between persons, i.e. essentially human beings perceived as agents, and the rest of the universe".

the word for 'animal', *Tier*, is neuter. At the next level, we find the words for 'mammal', 'reptile', and 'insect', also neuter (*Saugtier*, *Reptil*, *Insekt*), while at the basic level of representation we find masculine or feminine, e.g. *der Hund* 'dog(masc)' or *die Katze* 'cat(fem)'. Assignment of an entity to a certain level may depend on different taxonomies, including perceptual and functional. Thus, nouns that indicate animals at the superordinate level are all neuter in spite of referential animacy, and many inanimate nouns are either masculine or feminine because they belong to a level with a higher degree of specificity. In other words, animacy seems to have little to do with referential properties, and to be rather connected with human perception and beliefs, including possible practical aims, concerning a certain entity.

3.3. Sex, animacy and gender

Apart from cases of morphological motivation (such as diminutive assigning neuter gender to all nouns in German and other languages) and some other restricted cases of gender conflict, in many gender systems nouns with human referents are assigned gender based on referential sex. Even the well known fact that nouns denoting small children or young animals are often neuter in the Indo-European languages is a reflex of the importance of referential sex for gender assignment: sex is irrelevant for humans and animals before the age of procreation. Remarkably, sex is an important feature for gender systems, but it has no influence on the animacy hierarchy: languages do not display different degrees of animacy in connection with sex of human referents, even though it is true that in sex-based gender systems masculine and feminine may be associated with different degrees of individuation in connection with inanimate or even animate referents (as in the case of German described in section 3.2).[7]

Thus, in the familiar three-gender system of the Indo-European languages, as well as in other similar gender systems, the available distinctions seem to be of a different nature: on the one hand, the distinction between animate and inanimate may be connected with the animacy scale, and it often reflects degrees of individuation; on the other hand, the distinction

[7] Siemund (2008) shows that inanimates are often assigned pronominal gender in English as a reflex of a scale of individuation based on similar criteria to those relevant for gender assignment in German.

between referentially masculine and feminine human beings has nothing to do with the animacy scale. This difference can be summarized as follows:

(2) *Classifying function of gender*
All entitites: animacy, corresponding to varying degrees of individuation
HIGHEST PART OF THE SCALE: sex, same degree of individuation.

Thus, individual human beings rank the highest on the animacy hierarchy (especially when they are speech act participants) irrespective of their sex. The sex distinction may be introduced, and often is, in gender systems, to distinguish between referents at the same level of animacy and individuation.

Apparently, in some sex-based gender systems, masculine and feminine are virtually always motivated by the sex of the referent: according to Corbett (1991: 8–9) this is the case in Tamil. However, things are different in the Indo-European languages, and not only there: other familiar sex-based gender systems, such as the two-gender system typical of the Afro-Asiatic languages, display the same interplay between the masculine–feminine distinction, which refers to sex in the case of human nouns, and various other features connected with individuation in the case of inanimates (mass–count, concrete–abstract) or collectives (see Hämeen-Anttila 2000).

In sum, in the IE and some other sex-based gender systems, two criteria for classification cross-cut each other, one of which, i.e. animacy, has to do with the animacy scale and degrees of individuation, while the other – sex – has no place in this scale.

3.4. Possible semantic motivation for nominal classification: gender vs. classifier systems

Aikhenvald (2006) provides a survey of possible semantic motivation for various devices of nominal classification, including genders (or noun classes)[8] and different types of classifiers. While a number of parameters, such as animacy and humanness, are common to genders and classifiers, classifiers tend to have a wider number of parameters, often connected with the nature, function or shape of referents. In particular, focusing on

[8] It is worth stressing that the terms 'gender' and 'noun class' must be understood as referring to classification systems which trigger agreement, as opposed to various types of classifiers, which do not.

noun classifiers and numeral classifiers, which are the ones more likely to develop into gender markers through grammaticalization (section 5.1), one can remark the following:

a. animacy/humanness appears to be always a relevant parameter; in systems of nominal classifiers, status can be a parameter rather than simply animacy, but it refers to human beings (so it implies animacy);
b. sex is a frequent parameter for gender systems; it may also be found in classifier systems, but less frequently.

If one takes a closer looks at the distribution of parameters in gender systems, a correlation emerges between the number of genders and possible gender distinctions, and between the origin of gender markers and possible semantic parameters, as I show in the next sections.

Another remarkable difference between classifiers and genders is the much more arbitrary character of the latter. As Corbett (1991) points out, in virtually all gender systems there is a 'semantic residue', distributed among genders in an arbitrary way. Such residue, which, as noted by Dahl (2000), only concerns inanimates, does not normally exist in classifier systems: hence, the classifying function of classifiers is much more straightforward.[9]

4. Setting the PIE gender system in a typological perspective

Matasović (2004: 178) points out that his reconstruction of the PIE gender system raises typological problems; he writes: "Gender systems based on the opposition between countable and mass nouns . . . are unattested in other language families." He further indicates a possible typological parallel constituted by Ket, a Yeniseian language, which is unlikely to be areally related with PIE.

The typologically problematic aspect of the reconstruction suggested by Matasović is not the possibility that a specific gender is assigned to mass nouns or uncountable: such a system is attested in some Romance varieties, in which a new neuter has developed, constituted by a "semantically based class of nouns (uncountables)" (Haase 2000: 234). What is

[9] Dahl (2000: 113) remarks that in classifier systems "[t]here is often a general classifier for animates, but it seems that it is usually not extended to inanimates." This is a consequence of the lower degree of arbitrariness of classifiers systems, noted above.

unattested across languages is the intermediate stage of the PIE gender system, created by reanalysis of the suffix of abstract nouns (or collectives, this does not make a difference here) as a gender marker, which contained two inanimate genders and was not sex-based. In other words, the only possible motivation for a new gender which expands on an animacy-based three-gender system is sex, and only when the third gender was motivated by this feature did a new agreement class possibly arise.

In what follows I substantiate my claim with cross-linguistic data and provide a possible scenario for the rise of agreement.

4.1. Gender systems across languages

This section is based on Corbett (2011a, b), crossing data from features 30 'Number of genders' (2011a) and 31 'Sex-based and non-sex-based gender systems' (2011b). Regarding non-sex-based gender systems, it is noted: "The main non-sex-based area is covered by the extensive Niger-Congo family in western, central and southern Africa . . . The other substantial non-sex-based area is that of the Algonquian family of North America, reflected in our sample by Plains Cree, Ojibwa and Passamaquoddy-Maliseet. Elsewhere there is Ju|'hoan, representing Khoisan languages from southern Africa. In Austro-Asiatic, the languages in our sample are Mundari and Nicobarese. In Australia there is Wardaman. Two Carib languages (Hixkaryana and Macushi) are both of this type, as is Lealao Chinantec (Oto-Manguean; Mexico). The wide scatter of these languages shows that animacy is a viable basis for gender systems".

Indeed, if we consider the number of genders in languages with animacy-based systems, two groups emerge, i.e. languages which have an animacy-based two-gender system, similar to the system of early PIE, and languages that have only one gender for animates and more than one for inanimates. Languages in the first group, which is indeed geographically scattered, are the following:[10] Chinantec (Lealao), (Mexico); Plains Cree, Eastern Ojibwa, and Passamaquoddy-Maliseet, Algonquian (Canada); Hixkaryana and Macushi, Carib (Brazil); Mundari, Austro-Asiatic (India). From the point of view of typological adequacy of the reconstructed sys-

[10] Clearly, data from the WALS must be taken as a generalization: among other things, data are taken from a partial collection of the world languages (even though it must be said that data regarding classification systems are pretty extended), and features are not nuanced.

tem of PIE, languages in this group do not raise problems. The second group of languages deserves closer examination.

Languages with more than two genders and no sex distinction are, as noted in the WALS, mostly genetically related. They are four Niger-Congo languages: Babungo Chichewa, Godié, Grebo, and Koromfe; Ju|'hoan, a Khoisan language; Nicobarese (Car), a Mon-Khmer language; and Wardaman, a non-Pama-Nyugan Australian language of Northern Australia.

Regarding Ju|'hoan, it can be remarked that other Khoisan languages have sex-based gender systems (Güldemann & Vossen 2000: 111–112), and the system of Ju|'hoan may well be borrowed from the neighboring Bantu languages, considering that evidence for diffusion of noun class system is quite extensive (Aikhenvald 2000: 386–388): thus, this language is at least areally related to the other African languages with non-sex-based complex gender systems.

Let us now turn to the other two languages. Wardaman has three genders: animate *yi-*, vegetable *ma-*, man-made and natural objects *wu-* (Merlan 1994: 61–63). Areally related Maung, of the Yiwaidjan group, has a five-gender system, including: masculine *yi-*, feminine *iŋ-*, vegetable *ma-*, neuter *aŋ-*, miscellaneous *aK-* (Evans 2000). This system is also reconstructed for Proto-Yiwaidjan; it is only preserved in Maung, while other related languages have either reduced it to a two-gender system, or lost it. As for the origin of gender markers, Dixon (1980: 273) writes: "There is evidence that the noun class prefixes developed out of generic nouns."

The Nicobarese gender system includes two classes, common and proper, each with sub-classes, animate and inanimate: thus it can be described as an animacy-based two-gender system with sub-genders. In this language, gender co-occurs with classifiers, and is marked on third person pronouns, demonstratives, and numeral classifiers (Braine 1970: 103–108).

Thus, the existence of non-sex based gender-systems with more than one gender for inanimate is virtually limited to Niger-Congo and other areally related language(s); the other instances are in languages in which a complex classification system is being reduced (Wardaman) or are better regarded as an overlap of gender and classifiers (Nicobarese). The Niger-Congo system is likely to have developed out of the grammaticalization of an older system of classifiers, as I argue in the next section. As remarked in section 3.4, classifiers systems in which gender does not feature as a parameter are not infrequent in other areas of the world (an example is consti-

tuted by the Mon-Khmer languages, genetically related with Nicobarese, in which classifiers originated from generic nouns, see DeLancey 1986; Aikhenvald 2000: 443 on Nicobarese).

5. The rise of gender systems

5.1. Some current views

Corbett (1991) indicates demonstratives as the origin of gender agreement (1991: 310–311), not only in pronominal usage, but even more when used inside NPs, as attributes: as such, they may undergo grammaticalization and become articles; a further step in increasing grammaticalization may lead them to become affixes. Now, if a language originally had more than one demonstrative, e.g. one for animate and one for inanimate, when demonstratives turn into affixes they also turn into gender markers on NPs. Agreement follows naturally, because NPs marked by either former demonstrative are referred to anaphorically by the corresponding free demonstrative.

This account of the rise of agreement (and thus of gender) is based on Greenberg (1978), who discusses evidence mostly taken from African languages. When turning to the question of how classifying demonstratives arise, Greenberg's answer is that their source is constituted by classifiers (1978: 78).[11] In Greenberg's view, classifier systems may spread beyond nouns, starting with demonstratives: hence, classifiers undergo grammaticalization, in that the spread from nouns to demonstrative is a first step in the building of agreement, which is obligatory. Corbett further investigates the possible origin of classifiers/demonstratives (the possible source of gender markers), and, drawing on evidence from Jacaltec (Craig 1986) and Zande (Claudi 1985), finds that in these and in various Australian languages (Dixon 1982: 171; Aikhenvald 2000: 372–372), such demonstratives go back to generic nouns. He then concludes that "the ultimate source of gender systems is nouns, more specifically nouns with classificatory possibilities such as 'woman', 'man', animal'" (1991: 312).

[11] Greenberg only indicates numeral classifiers as a possible source for gender markers; evidence from the Australian languages suggests that nominal classifiers can equally well serve the same purpose, see Aikhenvald (2000: 376).

Hence the rise of gender systems is a grammaticalization process which can be represented as follows:[12]

(3) *Stages in the rise of gender markers*
Generic nouns → classifiers → pronominal demonstratives → attributive demonstratives → determiners → agreement markers

Apparently, Corbett views this type of process as the only possible source for the rise of gender in a language which formerly had no patterns of gender agreement.

Greenberg (1978: 79) makes a distinction between the rise of gender systems and their extension: "[t]he way in which gender arises need not be the same as that by which the system can expand by the development of new genders". He also considers the possibility that exponents of other grammatical categories become gender markers limited to the creation of new genders: "[g]ender systems may expand by adding new genders; this is generally done using existing morphological material." (1991: 313). An example of such development is the rise of animacy based sub-genders for masculine nouns in the Slavonic languages.

In her account of possible sources for noun class systems, Aikhenvald (2000: 377) holds similar views; in Aikhenvald (2004), she indicates the Kiowa-Tanoan languages of North America, in which "number . . . conditions the assignment of noun classes", as an example for the rise of a gender system out of another grammatical category. Apparently, Aikhenvald considers the possible role of derivational affixes limited to the creation of new genders within existing gender systems (2004: 1042; the only piece of evidence adduced is PIE). To sum up, one must separate two different phenomena: (a) the rise of a gender system in languages without gender; and (b) the extension of already existing gender systems.

As we have seen above, genders may arise in a variety of ways, but current views tend to identify only (3) (grammaticalization of classifiers) as a source for (a), while (b) may have different causes. A more elaborated view can be found in Fodor (1959: 213), in which a difference is made between systems of 'lexico-semantic' origin (such as those that arise through the grammaticalization process sketched in (3)), and gender systems which

[12] Claudi (1997) offers a more complex scenario, in which the grammaticalization path which leads from generic noun to gender marker can follow three sub-paths, i.e. generic nouns may go through a classifiers stage, a demonstrative stage, or a derivational stage.

arise for morphological or syntactic reasons. Since evidence for this distinction is provided by the PIE gender system, I return to this issue after discussing the Indo-European data.

5.2. The rise of the PIE two-gender system

The scenario sketched in (3) cannot account for the rise of the PIE animacy-based two-gender system, in which no grammaticalization of generic nouns or demonstratives, and indeed no specific gender markers are involved. As well known, the difference between the two earliest genders of PIE, animate and inanimate, was indicated by absence of endings for nominative and accusative in the inanimate gender (Meillet 1921).

At this stage, the agreement pattern only concerned the nominative and the accusative, and was the same attested in the Anatolian languages, represented in Figure 1.

At this stage gender was not indicated by specific gender markers, being rather a matter of inflectional patterns; gender was not even indicated by distinct case endings, but by the absence of endings for some cases in the inanimate gender. How did agreement come about? Very simply, because demonstratives followed the same pattern of case marking when referring to animate or inanimate, i.e. they either displayed endings for the nominative and the accusative or did not. Indeed, in early PIE one cannot even speak of agreement for demonstratives, since two different demonstratives were used for animate (**so*) and inanimate (**to*), and patterned accordingly.[13] Thus, this first stage conforms to Corbett's hypothesis that a gender system may have as its starting point the existence of two different demonstratives, but the development in PIE shows that subsequent grammaticalization of demonstratives is not a necessary step for the distinction of genders.

In the case of adjectives, agreement in case and number preceded gender agreement. Pervasiveness of agreement can be explained following a well-established reconstruction going back to Brugmann (1888), which conceived of adjectives as nouns which indicated qualities in PIE; they accompanied other nouns as appositions, and only later, out of frequent

[13] Reflexes of these demonstratives are attested in several Indo-European languages, see e.g. Sanskrit *sa* (masculine), *sā* (feminine) vs. *tad* (neuter), or Ancient Greek *ho* (masculine <**so*), *hē* (feminine < *sā*) vs. *to* (neuter). Thus, comparative evidence allows us to reconstruct **s-* (animate, i.e. masculine+feminine) vs. **t-* (inanimate) for PIE.

Two genders: animate and inanimate (Anatolian)

	Singular			Plural	
	Animate	Inanimate		Animate	Inanimate
Nom.	*-(o)s*	*∅/-om*	Count		Stage (a_i) = Pre-PIE no plural Stage (a_{ii}) = PIE collective (< abstract)
Acc.	*-(o)m*	*∅/-om*			
All other cases	Same endings		Nom.	*-es*	*-h_2 > -a*
			Acc.	*-(o)ns*	*-h_2 > -a*
			All other cases	Same form	

Figure 1. The Indo-European two-gender system and agreement

occurrence with other nouns, turned into a specific category (Meillet & Vendryes 1924; see Luraghi 2010 for further references). Thus, agreement arose as a consequence of the creation of a class of adjectives, and of increasing constituency (see further Fodor 1959).

5.3. Agreement in the PIE three-gender system

A fully fledged system of gender agreement, involving whole paradigms, arose only later in PIE, when the feminine was created, and most likely contributed to the creation of a separate class of adjectives. There is indeed evidence, especially from Greek, that feminine nouns originally took masculine forms of the adjectives. Hence the following stages in the creation of feminine agreement can be set up:

a. the animate demonstrative **so* developed feminine forms through addition of the suffix **-h_2*; masculine and feminine followed the same agreement pattern with adjectives;
b. feminine forms of adjectives were created on the analogy of demonstratives, starting with (and in some languages limited to) first class adjectives.[14]

The resulting agreement pattern is summarized in Figure 2. Following this reconstruction, a distinction between animate (highly individuated)

[14] First class adjectives pattern with the *-o-* declension for masculine and neuter and with the *-ā-* declension for feminines. Thus, the *-ā-* theme vowel functions as the marker of the feminine gender with these adjectives.

Three genders: PIE after Anatolian split

	Gender I (<animate)	Gender II (<inanimate)	Gender III
Nom.	-(*o*)*s*	∅/-*om*	-h_2
Acc.	-(*o*)*m*	∅/-*om*	-h_2m
All other cases	Same endings		-h_2+endings of athem. infl.

Figure 2. The Indo-European three-gender system and agreement

nouns and inanimate (poorly individuated) ones arose in PIE following a case marking pattern by which inanimate nouns did not take specific case endings, one of which is the ending of the nominative case, i.e. the case which commonly encodes agent. This fact has been taken as evidence for reconstructing different types of alignment for PIE, an issue that I cannot pursue here: what is relevant for the rise of the two-gender system is that nouns in the inanimate gender, which could not function as agent, clearly also referred to entities which were poor discourse topics. In other words, the animacy hierarchy in this case reflects different degrees of discourse prominence.

When the third gender arose, it represented a split within the class of topic-worthy nouns, and provided a means for referent tracking in discourse, which kept distinct equally discourse-relevant entities, such as male and female humans (section 6.1).

6. Gender from above and gender from below

In the preceding sections I argued that gender systems can arise in at least two completely different ways. In the first place, they may arise from earlier systems of nominal classification, which become increasingly obligatory, and start triggering agreement, most likely starting with demonstratives or other pronouns. I call this type of process 'gender from above'; it is described in (3), and called 'lexico-semantic' by Fodor (1959). In the second place, genders can arise from special patterns of case marking, following a development which I call 'gender from below'. Such a process does not in principle imply the creation of gender markers, as it did not in the PIE two-gender system; it corresponds to the morphologically or syntactically motivated gender systems of Fodor (1959).

6.1. The function of gender

The two different geneses of gender systems are further connected with different (primary) functions. The basic function of classifiers is obviously classification: classifiers may acquire different functions, including discourse relevant ones as described in Hopper (1986); in fact, anaphoric usage of classifiers may well be the source for determiners as described in Greenberg (1978) and Corbett (1991), and thus become agreement markers. In a gender system which arises in such a way, agreement is a new function of grammaticalized classifiers; gender markers inherit the classificatory function typical of classifiers, from which they developed.

However, gender is more than a classification device: following the definition in Hockett (1958: 231): "[g]enders are classes of nouns reflected in the behavior of associated words". Thus, the defining feature of gender is agreement, but classification is certainly not the function of agreement. Rather, gender agreement within the NP provides information as to which items belong together, while gender agreement with pronouns clarifies reference to NPs in discourse. As Dahl (2000: 113) puts it, "it is a mistake to think of gender systems as systems for classifying things: to the extent that they do so it is secondary to their function to make it easier to keep track of links between constituents." Hence gender may be viewed as a possible device for creating cohesion within NPs and make them possible discourse topics. In particular, gender distinctions in pronouns at the top of the individuation hierarchy, i.e. between male and female humans, provide a possible means for finer referent tracking in discourse. This second aspect of agreement, i.e. agreement with pronouns, is most relevant for the rise of the PIE feminine gender.

Figures 1 and 2 show that agreement is pervasive in Indo-European, as it does not only involve gender, but also number and case. As number and case agreement existed before gender agreement, agreement is not a result of the creation of gender. In the case of pronouns, as I have recalled above, animate and inanimate were referred to by two different demonstratives. As argued by Meillet (1931: 17–20), the creation of a sex-based distinction between masculine and feminine demonstratives followed from the extension of the suffix *-$*h_2$* to the stem of the animate demonstrative: in other words, it issued from a split within the animate gender. Indeed, the feminine patterns with the masculine in case marking, as it has a specific ending for the accusative which keeps it distinct from the nominative (Meillet

1931: 19). Thus, the demonstrative was not created in order to refer to items in a new gender of inanimate nouns, but to refer to female humans: agreement introduced the sex-based distinction.

The new gender may have contained a majority of inanimate nouns (often abstract), but it became a gender only when it was motivated by sex. As we have seen above, the sex parameter is different from the animacy parameter, as it reflects referential sex, while the animacy parameter reflects a variety of other grammatical features, such as individuation. It is pointless to look for a semantic motivation which may have caused the suffix *-*h_2* to be reinterpreted as feminine: as argued in Luraghi (2009b), the morphologically motivated class of suffixed nouns was motivated semantically as feminine gender just because the sex parameter offered the only possible motivation for a third gender within a gender system such as that of early PIE.

Once the feminine gender is introduced in an animacy-based gender system, it may also take part in the individuation scale, as it does in the Indo-European languages: thus in German there is a scale of individuation which involves abstract nouns and in which the feminine has a position between the masculine and the neuter (section 3.2). However, when referring to human beings, masculine and feminine do not reflect degrees of individuation. The differentiation between a masculine and a feminine form of demonstratives rather provides a means for reference to male and female humans in discourse. The fact that the feminine demonstrative is built on the same stem as the masculine, while the neuter demonstrative is based on a different stem, also reflects the equal degree of discourse prominence of the referents.

Thus, different origins of gender systems put an emphasis on either function: gender deriving from classifiers has classification as its primary function, while gender arising from differential case marking, as in PIE, is primarily motivated by discourse, and exploited for classification as its secondary function. The features of the two types of issuing gender system can be summarized as in Table 2.

Table 2. Gender systems and their origin

	Gender from above	**Gender from below**
Number of genders	Relatively high	Minimal (two)
Overt gender markers	Always	May be absent
Primary function	Classification	Referent tracking

6.2. Gender and derivation

The rise of the feminine gender in PIE is strictly connected with derivational morphology: as we have seen, the suffix *-h_2 was in origin a derivational suffix which served the function of building abstract nouns (mostly deverbal action nouns). The suffix later became a theme vowel associated with the feminine gender. At this stage, change of inflectional class (e.g. from *-o-* to *-ā-* stems, as in Lat. *amicus* → *amica*) retained a derivational function, known as gender 'motion'. In some modern Indo-European languages, gender may still in part be regarded as a derivational category. For example, in Italian and other Romance languages, one finds regular patterns, such as *ragazzo* 'boy' vs. *ragazza* 'girl', *maestro* 'teacher(masc)' vs. *maestra* 'teacher(fem)', *gatto* 'he-cat' vs. *gatta* 'she-cat', and so on (Luraghi & Olita 2006: 16–17). In such cases, gender fulfils the function typical of derivation, i.e. to enrich the lexicon. However, the derivational function of gender is limited; most often, gender may change between a nominal base and a derivative, but this depends on the gender-assigning function of some specific suffixes (see Luraghi forthcoming for a thourough discussion of the issue).

In the early PIE two-gender system, gender did not, in all likelihood, function as a derivational device. As remarked above, gender was in a way an epiphenomenon of case marking patterns, and it arose as a consequence of inanimate nouns not having endings for the nominative and the accusative case. In addition, they were referred to by a special demonstrative which followed their inflection, and adjectives originated as juxtaposed nouns, which referred to qualities typically predicated of specific entities, hence they also shared the same inflection as nouns that denoted those entities. When the feminine gender was created by the addition of an overt gender marker, gender also acquired the function of creating new words. Thus, this function was secondarily acquired by the PIE gender system.

The function of gender as a device for enriching the lexicon is much more prominent in the Bantu languages, as pointed out by several authors. Mufwene (1980) views lexical derivation as the primary function of Bantu genders, following a tradition which reaches back to early research in African linguistics (see further Katamba 2003: 106). Far from being a feature typical of the Niger-Congo languages, the relevance of noun classes as a derivational device has been pointed out relative to other languages as well. Seifart (2009) discusses nominal classification in Miraña. Miraña class

markers are a sort of hybrid category, being similar to classifiers in various respects (e.g. they are an open class), but crucially similar to gender markers in triggering agreement on various targets, including demonstratives. According to Seifart "[a] major function of Miraña class markers is to form new noun stems from bare noun roots or derived noun stems. These uses account for the majority of occurrences of class marker tokens in texts." (2009: 344).[15]

6.3. Genders, classifiers and hybrid categories

The Miraña classification system seems to stand between classifiers and genders. Seifart (2009) notes that "a more promising approach is to shift the focus away from the broad types defined by relatively few characteristics towards a larger number of more detailed characteristics, each corresponding to one parameter in a multidimensional typology". Indeed, genders, as opposed to classifiers, are defined as such essentially on the basis of only one parameter, i.e. agreement. In other words, current research on gender systems, at least from Corbett (1991) onward, assumes Hockett's definition quoted above, section 6.1, as referring to the necessary and sufficient feature of all gender systems.

However, there seem to exist a number of relevant differences between the noun class system of the Niger-Congo languages and simpler gender systems, like the three- and especially the two-gender system of PIE, in spite of the fact that agreement functions similarly. Such differences correlate with different origins of the two systems, which arose in two completely different ways, originally serving different functions, and only partly overlapping as systems of classification.

I suggest that the continuum represented in Figure 3 can be set up, which accommodates different types of noun classification device accord-

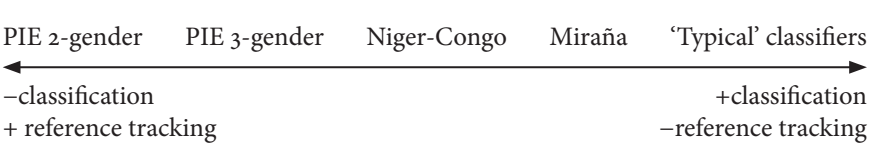

Figure 3. Functions of noun classification devices

[15] Note however that classifiers on their way to becoming gender markers do not necessarily develop into derivational markers (see Aikhenvald 2000: 373); see Grinevald & Seifart (2004) for a comparison of the Niger-Congo system with Miraña.

ing to the extent to which they fulfill primarily a classificatory function, or the function of reference tracking.

7. Summary

In this article I set the development of the PIE gender system and its reconstruction in a typological framework. I argued that the often-noted correlation between gender and degrees of individuation may involve all three genders in the Indo-European languages; on an individuation scale, similar entities may be classified differently, based on how they are conceptualized. Distinctions in degrees of individuation coexist with another, non-scalar distinction, namely the distinction based on the sex parameter, which reflects a referential property (sex) of human beings. Reviewing gender systems and other devices of nominal classification across languages, I showed that gender systems tend to have more than one gender for inanimates only in the case they are sex-based, with the notable exception of the Niger-Congo languages. On the other hand, classifier systems which do not distinguish between male and female humans are more frequent.

I examined the possible origin of gender systems, and argued that gender systems can arise in two quite different ways, either from the grammaticalization of classifiers (gender from above), or from the establishment of agreement following different morpho(syntactic) behavior of groups of nouns (gender from below). Crucially, non-sex based gender systems with more than two genders seem to possibly arise only from former systems of classifiers. I argued that gender systems also have different primary functions depending on their origin: while genders 'from above' serve a classificatory function in the first place, genders 'from below' primarily fulfill the function of providing a means for referent tracking. For this reason, they tend to be sex-based, since male and female humans are equally discourse-prominent and topic-worthy entities.

In the last section, I compared the possible derivational function of various devices of noun classification, and showed that in this respect the Niger-Congo noun class system tends to pattern with other systems, such as that of Miraña, which are closer to classifiers than to genders. In order to sum up my findings, I proposed a scale of noun classification devices, on which gender systems 'from below' and 'from above' rank differently, depending on primary relevance of their function (referent tracking vs. classification).

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Author's address
Università di Pavia
Dipartimento di Linguistica Teorica e Applicata
Strada Nuova 65
I-27100 Pavia, Italy
E-mail: silvia.luraghi@unipv.it

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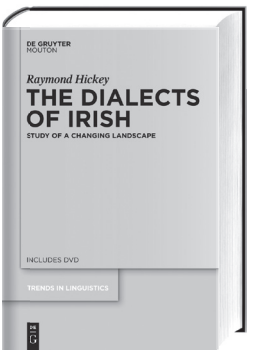

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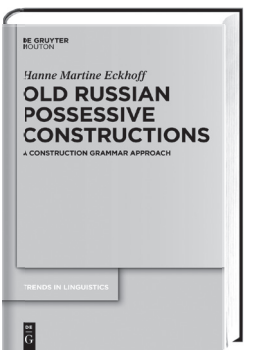

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