

Mitzi Weiser

Verb suppletion by gender in languages of New Guinea



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ABSTRACT

Verb suppletion by gender is a typologically rare phenomenon in which phonologically unrelated verb stems are used in accordance with the gender of an argument. By now, only a handful of languages of New Guinea have been convincingly shown to exhibit this phenomenon, which accords with the typological prediction by Bybee (1985) that gender is the least likely category to trigger verb suppletion. This thesis provides a preliminary study of verb suppletion by gender, focusing on mapping out the basic features of the phenomenon and contrasting them to previous findings on verb suppletion. In addition, the different ways suppletion by gender is integrated into the systems of verb agreement are explored, and the possible explanations for how the phenomenon might have emerged are discussed. The thesis finds that despite its typological rarity, suppletion by gender usually affects around two verbs in a language, which is about equal to the number of verbs usually affected by the more common type of verb suppletion by tense and aspect. However, unlike tense and aspect suppletion, there are no clear semantic fields of verbs where suppletion by gender preferably occurs. Moreover, in most of the languages with verb suppletion by gender, there are two genders which are assigned to nouns according to sex for humans or animates, and according to highly opaque assignment rules for non-humans or inanimates. The thesis also finds that while there are different ways verb suppletion by gender can be integrated into the agreement system of a language, the selection of gender-suppletive stems is always conditioned by syntactic principles instead of lexical selection. Lastly, incursion, the standard explanation for verb suppletion, is hard to imagine as the cause for verb suppletion by gender, which highlights the typological rarity of the phenomenon.

CONTENTS

List of abbreviations	ii
1. Introduction	1
2. Preliminaries	3
2.1. Defining suppletion	3
2.1.1. Stem, affix, and phrase suppletion	5
2.1.2. Gradability of suppletion	6
2.2. Previous findings on verb suppletion	7
2.3. The issue of participant plurality	10
3. Overview of the data	13
4. Results	16
4.1. Numbers and meanings of gender-suppletive verbs	16
4.2. Gender systems of languages with gender suppletion	17
4.3. The agreement status of gender suppletion	20
4.3.1. Coastal Marind	21
4.3.2. Yelmek	23
4.3.3. Tayap	24
4.3.4. Orya	25
4.3.5. Skou	26
4.3.6. I'saka	27
5. Emergence of gender suppletion	28
6. Conclusions	30
Bibliography	32

LIST OF ABBREVIATIONS

1, 2, 3	1st, 2nd, 3rd person
I, II, III, IV	Genders I, II, III, IV
A	Actor
ABS	Absolutive
ACC	Accusative
BEN	Benefactive
DEIC	Deictic Reference
DIR	Directional Orientation
DIST	Distal (demonstrative)
DL	Dual
ERG	Ergative
F	Feminine
FOC	Focus
GIV	Given
LOC	Locative
M	Masculine
NF	Non-feminine
NM	Non-masculine
NOM	Nominative
NONSG	Non-singular
NTRL	Neutral Orientation
O, OBJ	Object
PL	Plural
PERF	Perfect
PROX	Proximal (demonstrative)
PRS	Present
PRSTV	Presentative
PRWD	Pro-word
PST	Past
R	Realis
RPST	Recent Past
S, SBJ	Subject
SG	Singular
U	Undergoer

1. INTRODUCTION

Verb suppletion by gender refers to a rare phenomenon in which phonologically unrelated verb stems are used in accordance with the grammatical gender of an argument. Consider the following example from Skou, a Papuan language from the Sko family spoken on the northern coast of New Guinea:

(1) Skou (Donohue 2004: 135, 130, emphasis added)

a. *ke=bà=ing a* *ke=pí=ra* *ke=ká.*
3SG.NF=person=the 3SG.NF=even=also 3SG.NF=**hit**
'That guy hit him too.'

b. *ke=Téme=ing a* *pe=ueme=ka=fue a* *ke=láng*
3SG.NF=Nafri=that 3SG.F=woman=FOC=that 3SG.NF=**hit.F**
'The Nafri guy hit that woman.'

Skou nouns are divided into two grammatical genders termed “feminine” and “non-feminine”. About 15% of Skou verbs undergo a regular alternation of the stem vowel to express agreement with the gender or number of a participant, often the object. In a general pattern, non-feminine objects are unmarked while feminine objects are marked by rounding and backing of the vowel in the verb stem (Donohue 2004: 222). However, for the verb *ká* ‘hit’, the case is different: While in (1a.), the unmarked stem form *ká* is used in agreement with the non-feminine object, in (1b.), the agreement with the feminine object is not expressed by rounding and backing of the vowel, but by the use of an entirely different stem *láng*.

Due to its rarity, verb suppletion by gender has been largely overlooked in the literature about both suppletion and grammatical gender. In her cross-linguistic study on suppletion in verb paradigms, Veselinova (2006) discusses the types, distribution and development of verb suppletion by tense, aspect, imperative and verbal number across a diverse sample of 193 languages, but does not mention suppletion by gender. The Surrey Suppletion Database (Brown, Chumakina, Corbett & Hippisley 2004) finds two verbs with suppletive stems according to gender from Yimas (Lower Sepik-Ramu) and Ket (Yeniseian) among 34 sample languages, but for both verbs, the stems have considerable phonological similarities such that their suppletive status can be called into question. In addition, typological studies on gender do not mention the phenomenon at all. In his discussion of gender systems of over 200 languages, Corbett (1991) considers the different expression types of gender agreement, but does not consider expressing gender by suppletive verb stems as a potentially even rarer type of gender agreement.

Henceforth, verb suppletion by gender is referred to as simply “gender suppletion” for the sake of brevity. This is not meant to imply that verbs are the only part of speech where suppletion by gender is possible, although examples of gender suppletion on parts of speech other than verbs are rare. For

instance, it has been argued that the Ancient Greek numeral ‘one’ had two suppletive forms *mía* ‘one (feminine)’ ~ *heís* ‘one (masculine)’ according to the gender of the enumerated item (e.g. Mel’čuk 2006: 451). More controversially, Mel’čuk (2006: 449) also argues that the German pronouns *er* ‘he’, *sie* ‘she’ and *es* ‘it’ are suppletive according to gender, since they are distinguished by the inflectional category of gender, but have only little phonological similarities. Other than that, Vafaeian (2013) finds no example of suppletion by gender in either nouns or adjectives in her study of nominal and adjectival suppletion across 63 languages. Since about half of Vafaeian’s sample languages are the languages of the Surrey Suppletion Database, there are no findings of gender suppletion in nouns or adjectives there either.

In addition to the limited sources, researching gender suppletion cross-linguistically is hampered by the difficulty of defining and identifying suppletion. Although suppletive relationships between words seem straightforward and intuitive to spot because of their obvious phonological irregularities, there are more things to consider when assessing the suppletive status of words. However, since there are different typological definitions to what makes a pair of phonologically unrelated words a suppletive pair, grammar authors often use different approaches to identifying instances of suppletion “in the wild”. To research gender suppletion cross-linguistically, it is therefore necessary to assess these instances under a consistent definition of suppletion.

Indeed, the rarity of gender suppletion and the fact that it has not yet come to the attention of many typologists seems less surprising considering the assumptions of Bybee (1985) about where suppletion is most likely to occur. In short, she predicts that suppletion in verb paradigms is most likely to express categories that most directly affect the basic meaning of the verb stem. According to Bybee, valence, voice, aspect and tense most directly affect stem meanings universally, while number agreement, person agreement, and at the very bottom of the hierarchy, gender agreement affect them the least (Bybee 1985: 24). Essentially, gender suppletion is the least likely type of verb suppletion among the types Bybee considers.

In contrast to this unlikelihood, gender suppletion has obvious similarities to a much more common phenomenon in which phonologically unrelated verb stems are used according to the plurality of one of the participants. Examples of this are found in languages across the world, such as Fasu (Kutubuan) *moto* ‘put down (one thing)’ ~ *tae* ‘put down (many things)’ (Loeweke & May 1980: 44) or Georgian (Kartvelian) *ǰd-* ‘(one) sits down’ ~ *sxd-* ‘(many) sit down’ (Corbett 2000: 254). Repeatedly, it has been argued that this type of plural marking does not constitute agreement (Durie 1986) or suppletion (Mithun 1988, Corbett 2000). This naturally raises the question whether gender-suppletive verb stem pairs like the above Skou *ká* ‘hit (non-feminine)’ ~ *láng* ‘hit (feminine)’ can be analyzed in the same way, and consequently, whether they can be justifiably called “suppletion” in the first place.

The aim of this thesis is to provide a preliminary typological study of the rather unusual and previously underresearched phenomenon of gender suppletion. Given the limited sources, the study is restricted to seven languages of New Guinea, the only languages shown to exhibit gender suppletion so far. To cover these issues, I first set the theoretical preliminaries needed to deal with the requirements and results of the study (§2). Next, I give an overview of the languages and compile the gender-suppletive verb stem pairs from their respective grammars (§3). Subsequently, I analyze these pairs according to their lexical characteristics, the gender systems they are embedded into, and their status in the agreement system (§4). Before the final conclusion is drawn, I speculate about the emergence of gender suppletion (§5). Given the very sparse basic data on gender suppletion, the findings of this thesis must be seen as preliminary.

2. PRELIMINARIES

2.1. Defining suppletion

Since there are different approaches to viewing suppletion as a concept, definitions of suppletion often vary in how the formal and semantic relationships between suppletive forms are characterized, and what types of linguistic items suppletion can affect. To serve this thesis in particular, a definition is needed that allows us to identify verb suppletion without the historical knowledge of a language. Since there are no extensive historical records of the languages of New Guinea, definitions based on diachronic characteristics of suppletion cannot be used. Mel'čuk (2006: 402) proposes a definition of suppletion well fit for this requirement:

“Suppletion is a relation between signs **X** and **Y** such that:

- the semantic difference ‘*d*’ between the signs **X** and **Y** is MAXIMALLY REGULAR in \mathcal{L} – that is, ‘*d*’ is grammatical in \mathcal{L} (‘grammatical’ = ‘inflectional or derivational’); [\mathcal{L} stands for any particular language, M.W.]
- the formal (i.e., phonological) difference *d* between them is MAXIMALLY IRREGULAR – that is, *d* cannot be described by an alternation of \mathcal{L} ; it is (close to being) unique in \mathcal{L} , since it obtains between the two given signs only and is not similar to any difference in any other pair of signs of \mathcal{L} ’

(Mel'čuk 2006: 406)

In Mel'čuk's view, suppletion describes a relation between two linguistic items in which a regular grammatical meaning is expressed by an irregular phonological change that is restricted to this relation only in the language. This is best illustrated by the well-known example of English *go* ~ *went*: The semantic relation between *go* and *went* is the expression of past tense, which is an inflectional category of English verbs. Thus, their semantic difference is grammatical and thereby maximally

regular in Mel'čuk's words. The phonological relation between *go* and *went* does not resemble any regular pattern that otherwise expresses past tense in English, such as the suffixation of *-ed*. In fact, this particular phonological alternation is unique in English and thereby maximally irregular.

On one hand, this definition contains two reliable criteria for identifying suppletion. First, the condition of grammaticality (that is, the idea that suppletive relationships encode grammatical meaning) ensures that not any semantic difference expressed by an irregular phonological change counts as suppletion. Consider the English verbs *eat* and *drink* (cf. Corbett 2000: 248): They share the same basic meaning 'ingest', but semantically differ in the consistency of what is ingested. Their phonological forms have no similarities and cannot be described by any regular alternation in English. If the condition of grammaticality did not apply, *eat* and *drink* would have to be considered a single lexeme with two suppletive word forms expressing something like 'consistency of the object'. In fact, suppletion would subsume any semantically related but phonologically unrelated words and take up almost all lexical relations. This would obviously blow suppletion out of proportion, since it is generally understood as a rather marginal phenomenon in the shadow of regular grammatical processes. Thus, restricting its scope to grammatical meaning seems reasonable. Second, the condition of uniqueness (that is, the idea that suppletive items formally differ in a way that is unique in the respective language) ensures the maximal formal irregularity of suppletive items. By Mel'čuk's (2006: 408) understanding of irregularity, this means that there are no rules, regardless of how restricted or unproductive, that can describe the formal relation of the items. This implies, for example, that some tense inflections of English verbs like *sing* ~ *sang* ~ *sung* and *swim* ~ *swam* ~ *swum* or *bite* ~ *bit* ~ *bitten* and *hide* ~ *hid* ~ *hidden* do not count as suppletive, because their changes of the stem vowel are not unique, but follow a restricted morphological pattern. More importantly however, the condition of uniqueness allows us to identify suppletion on synchronic terms as required above. This becomes clear in face of some scholars like Rudes (1980) who have proposed that the primary condition for suppletion is that the items in question stem from etymologically unrelated lexemes. This condition centers around an important diachronic characteristic of suppletion to be discussed later in §5, but it requires extensive diachronic knowledge, which is largely unavailable for many languages of New Guinea. Conveniently, however, the condition of uniqueness picks out largely the same linguistic items as suppletive as Rudes's condition of etymological unrelatedness, because etymologically unrelated lexemes usually have minimal phonological similarities.

On the other hand, some aspects of Mel'čuk's definition are left vague and must be specified. First, it purposefully leaves open which linguistic items the signs X and Y can be encoded as, so that word stems, affixes and even whole phrases can stand in suppletive relations. Second, the definition requires a maximally irregular phonological alternation between X and Y to be only "(close to [...]) unique", which raises the question how much phonological similarity between X and Y can be

allowed for their relation to still be considered unique, and thus suppletive. These two issues are individually discussed in the following chapters to restrict Mel'čuk's definition for the purpose of this thesis.

2.1.1. Stem, affix, and phrase suppletion

Traditionally, suppletion has concerned only the stems of words, like in the example *go ~ went* above. However, some linguists share the view that the term "suppletion" also applies to affixes, such that for example, the English plural suffix *-en* in *ox-en* is in a suppletive relationship with its more common allomorph *-s*. Mel'čuk (2006: 426) even goes as far as to include cases in which a whole phrase stands in a semantically regular derivational relationship with a phonologically unrelated word, such as Russian *molot' jazykom* 'talk nonsense' ~ *pustozvon* 'one who talks nonsense'. When understood this broadly, suppletion naturally encompasses a wide range of phenomena and takes up a considerable part of allomorphy. However, Mel'čuk (2006: 416) explains that this large scope must be accepted because there is no reason to restrict any theoretical concept to only one type of linguistic item. Rather, it seems more useful to first apply the concept in the broadest way possible and then distinguish different subtypes, in this case, stem, affix, and phrase suppletion.

By contrast, some authors have pointed out crucial differences between stem and affix suppletion, suggesting that they need to be analyzed separately. Payne (2006: 138) makes the basic distinction that stem suppletion is a lexical expression type where two phonologically unrelated forms express different conceptual categories, whereas affix suppletion involves two phonologically unrelated affixes expressing the same conceptual category for different subclasses of stems. Therefore, suppletive stems are not allomorphs of one another, but suppletive affixes are. Moreover, Corbett (2007: 15) directly criticizes Mel'čuk's view by claiming that stem suppletion typically affects only a small proportion of lexemes, while affix suppletion can range over all lexemes of a certain type. Consequently, if suppletion applies this broadly, then it is not a special phenomenon anymore and does not justify special treatment, let alone a special term.

Given the subject of this thesis, I choose to follow the latter position and restrict the definition of suppletion to stem suppletion only. That is because gender suppletion as described above naturally involves different gender categories expressed by phonologically unrelated forms, like Skou *ká* 'hit (non-feminine)' ~ *láng* 'hit (non-feminine)', so that following Payne (2006), only stem suppletion comes into question. Gender suppletion and unrelated verbal agreement affixes expressing the same gender category (for example, the two allomorphic non-masculine subject agreement prefixes *t-* and *w-* in I'saka; Donohue & San Roque 2004: 58) are entirely different phenomena and require different analytical approaches.

2.1.2. Gradability of suppletion

A persistent challenge for identifying suppletive items is their gradable character. While suppletive items with no shared phonological material like *go* ~ *went* can be easily identified, others can have phonological similarities that call their suppletive status into question. As an example, Mel'čuk (2006: 419) presents the French verb inflections *peux* /pø/ '(I) can' ~ *pouv(-ons)* /puv/ '(we) can'. Apart from the fact that there is some shared phonological material between the two stems, this specific formal pattern also appears in one other French verb *meus* /mø/ '(I) move' ~ *mouv(-ons)* /muv/ '(we) move' and is similar to other French verb inflections like *veux* /vø/ '(I) want' ~ *voul(-ons)* /vul/ '(we) want' and *vaux* /vo/ '(I) am worth' ~ *val(-ons)* /val/ '(we) are worth'. All these inflections could be considered suppletive with a broader understanding of suppletion (that is, a lower bar set for phonological irregularities to be considered suppletion), but Mel'čuk calls them not suppletive in a strict sense because of their apparent, albeit weak, formal similarities. Whether or not a researcher decides to classify a case like *peux* ~ *pouv-* as suppletion, it is obvious that it is in any case "less suppletive" than clearer examples such as *go* ~ *went*. In describing this gradability of suppletion, Dressler (1985: 98) makes the distinction between "weak" suppletion, where only single segments of a stem alternate in an irregular fashion, as in *child* ~ *childr-en*, and "strong" suppletion, where whole stems alternate, as in *be* ~ *am* ~ *are* ~ *is* ~ *was*. Despite this effort, Dressler must admit that there is no practicable way of grading, let alone quantifying the strength of suppletion any further. He can only point out that the relevant factors for a hypothetical gradation of suppletion would have to be the number of phonemes added, subtracted, or replaced, their phonetic similarity and their position within the stem (Dressler 1985: 102).

Thus, the questions posed for this thesis are whether or not to include both strong and weak suppletion, and if only strong suppletion is included, where to draw the line to distinguish it from weak suppletion. To answer the first question, I choose to restrict the scope of the thesis to strong suppletion only. On one hand, that is because instances of strong suppletion represent the more "genuine" or prototypical instances of suppletion, and correspond more to Mel'čuk's notion of maximal formal irregularity accordingly. On the other hand, although strong and weak suppletion appear synchronically as two manifestations of the same gradual phenomenon, they can be thought of as two very different phenomena diachronically. As Juge (2000: 184-186) summarizes, weak suppletion primarily develops through sound changes that affect single segments of an originally regular form, whereas strong suppletion mostly through arises through "incursion". This term describes a process in which the stem of a separate lexeme is reanalyzed as an inflection of another lexeme and becomes incorporated into its inflectional paradigm. This difference in development history brings a different relevance to strong suppletion and justifies restricting the focus on it. Especially considering strong gender suppletion, the questions of how and why this incorporation has taken place are highly

interesting and taken up again in §5. To answer the second question, the cases of suppletion from the grammars must be judged individually whether they are strong or weak, since as mentioned above, there is no systematic way of distinguishing the two. I try to follow Mel'čuk's principle of maximal formal irregularity and discuss the reasons for each exclusion of a potentially suppletive pair to provide for transparency.

In summary, the criteria for including a case of gender suppletion from the grammars into this survey are the following:

- The suppletion affects verb *stems*, not verb affixes. That is, participants from different gender categories trigger the use of a whole different verb stem.
- The semantic relation between the different verb stems is grammatical, more specifically, inflectional. That is, the language has a system of nominal gender that includes verbs as an agreement target. Apart from the suppletive stems, gender agreement of the verb is expressed by a regular morphological pattern.
- The formal relation between the different verb stems is strongly suppletive, more specifically, unique. That is, the stems have minimal phonological similarities and there are no other verb stems in the language with the same or a similar formal relation.

2.2. Previous findings on verb suppletion

To provide some background knowledge that allows us to evaluate how gender suppletion relates to other types of verb suppletion, I present some relevant previous findings on the topic. Seminal work on the occurrence of verb suppletion was done by Bybee (1985) who hypothesizes that the grammatical categories involved in verb suppletion follow the relevance hierarchy. According to her definition,

“[a] meaning element is *relevant* to another meaning element *if the semantic content of the first directly affects or modifies the semantic content of the second*. [...] So two semantic elements are highly relevant to one another if the result of their combination names something that has high cultural or cognitive salience.” (Bybee 1985: 13-14).

Bybee uses this concept to make a number of typological predictions. For example, relevant meanings are generally predicted to be expressed lexically or inflectionally, while irrelevant meanings are predicted to have syntactic expression across languages. She does not mean to imply that relevant meanings necessarily must have lexical or inflectional expression, but they may have. As an example, *walk* means ‘go on foot by taking steps’, and the additional meaning ‘through water’ is expressed in the separate lexeme *wade*. This meaning is expressed lexically because “whether one has one’s feet

on dry land or in water is quite relevant to the act of walking”. By contrast, ‘walk on a cloudy day’ is expected to be expressed syntactically across languages because the current weather is rather irrelevant to the act of walking (Bybee 1985: 13).

(2) Relevance hierarchy of verbal categories (Bybee 1985: 24)

valence > voice > aspect > tense > mood > number agr. > person agr. > gender agr.

Bybee’s concept of relevance also applies to verbal categories, which she arranges along a relevance hierarchy (see 2). Valence-changing categories like transitive, intransitive and causative, and voice categories like active, passive and reflexive are highly relevant to the basic meaning of a verb because they change the numbers and roles of participants and create entirely different situations. They are therefore most likely to be lexicalized in verb stem pairs like *lie – lay*, *go – send* or *give – receive* (Bybee 1985: 20-21). Aspect is also quite relevant to the basic meaning of a verb since it changes the internal temporal structure of an action, and many languages also have lexical expression of aspect or “aktionsart” accordingly, such as in pairs like *do – complete* or *know – realize*. Since aspect is the most relevant category that does not affect the arrangement of the participants of an action like valence or voice, Bybee describes it as “the category most directly and exclusively relevant to the verb” (Bybee 1985: 21). By contrast, tense only locates an action along a timeline and does not affect the basic meaning of the verb itself at all, which makes it less relevant and rather unexpected to be expressed lexically (Bybee 1985: 22). All other verbal categories are similarly unexpected to be expressed lexically, with the exception of number agreement which “can affect the situation profoundly” and is therefore sometimes found lexicalized in verb stems (Bybee 1985: 23). This is discussed more deeply in the following chapter of this thesis. Crucially, Bybee adds that the categories in the middle of the hierarchy will be the most likely to be inflectional categories of the verb. That is because on the lower end of the hierarchy, the categories become too irrelevant, and at the higher end, the categories make such large semantic changes that they are more likely to be expressed lexically (Bybee 1985: 23).

Coming back to suppletion, Bybee predicts that suppletion in verb paradigms is most likely to occur among the most relevant inflectional categories, that is, aspect and tense (Bybee 1985: 92). According to her, verb suppletion emerges when single inflectional forms become autonomous from the other forms of their verbal paradigm and enter a paradigmatic relation with the forms of another verb. To illustrate this, she speculates about the emergence of the suppletive relation between English *go* and *went*: The latter had been the past tense inflection of the separate verb *wend* ‘turn, wind’ until the 15th century. Gradually, *went* must have become autonomous from its present tense form, increased in frequency, come to express the more general meaning of *go* and thus become part of the inflectional paradigm of *go* (Bybee 1985: 91-92). In turn, Bybee suspects that the occurrence of suppletive forms

in verb paradigms is determined by two factors: semantic relatedness and frequency of usage. On one hand, since an irrelevant inflectional form that is semantically very similar to others in its paradigm is unlikely to become autonomous, she instead expects the most relevant inflectional categories that involve the greatest change in the basic meaning of the verb stem to be most likely to become autonomous (Bybee 1985: 92). On the other hand, based on the observation that verb suppletion in Indo-European languages always occurs among the most frequent verb stems of a language, Bybee predicts the same to hold generally. In her sample of 50 languages, she finds that the verbs meaning ‘be’, ‘go’ and ‘come’ were the most frequent to exhibit suppletive forms. In addition, Bybee posits that the extremely high frequency of a verb can override the factor of semantic relatedness, and thus lead to verb suppletion of less relevant categories in highly frequent verbs (Bybee 1985: 92).

Bybee’s predictions are largely confirmed by the results of Veselinova’s (2006) cross-linguistic study on suppletion in verb paradigms across 193 languages. First, Veselinova confirms that verb suppletion according to tense-aspect categories is the most widespread kind of verb suppletion cross-linguistically (Veselinova 2006: 63) and dedicates the majority of her study to it. Although aspect and tense are the most common verb categories to be expressed by suppletive forms, she finds that in a given language, there are usually only two to four verb stems with aspect suppletion (Veselinova 2006: 74), and only one or two verbs with tense suppletion (Veselinova 2006: 67). Second, she finds that of all verbs with suppletive forms according to aspect or tense, one quarter consists of the motion verbs ‘come’ and ‘go’, and another quarter of copula-like verbs such as ‘be’ and ‘exist’ (Veselinova 2006: 91). Beyond that, Veselinova argues that the preference for verb suppletion according to aspect and tense occurring in verbs meaning ‘come’, ‘go’, ‘be’ and ‘exist’ has mainly to do with grammaticalization. Specifically, she shows how tense suppletion in copula-like verbs can arise through several grammaticalization processes from different lexical sources with different temporal meanings (Veselinova 2006: 122-126). In addition, since both copula-like verbs and the most frequent motion verbs commonly become used in functionally different domains, that is, grammatical functions (Veselinova 2006: 134), they naturally develop a high level of autonomy that encourages suppletion as suggested by Bybee (1985).

Since gender agreement sits at the very bottom of Bybee’s relevance hierarchy, it has the least effect on the basic meaning of a verb stem, and is therefore the least likely candidate to host suppletive forms among the categories she considers. Because of this unlikelihood, I expect gender suppletion to be less pervasive, that is, to affect a smaller number of verb stems in a language than the more common tense-aspect suppletion usually does. Moreover, I expect gender suppletion to affect the same verb stems that usually exhibit suppletive forms, that is, the motion verbs ‘come’ and ‘go’ and copula-like verbs like ‘be’ and ‘exist’.

2.3. The issue of participant plurality

For a long time, linguists have been aware that many languages exhibit verbs with separate stems according to the plurality of one of its participants. Table 2.1 shows a few examples of this phenomenon. Participant plurality verb stems and gender suppletion are highly similar phenomena: In general, both number and gender are nominal categories that trigger verb agreement in many languages, and are also morphologically co-expressed in some languages. These commonalities between gender and number can also be seen in gender suppletion, since as we will see, languages with gender suppletion often also exhibit participant plurality stems, and sometimes employ the same stem to mark either plurality or a certain gender of a participant. Thus, to be able to evaluate whether these two phenomena can be analyzed in the same way, I give an overview of the controversial issue of participant plurality verb stems in this chapter.

Table 2.1: Examples of participant plurality verb stems

Language	Singular participant stem	Plural participant stem	Source
Haida (Isolate)	<i>tia</i> 'kill (one)'	<i>L!da</i> 'kill (many)'	Swanton 1911: 276
Koasati (Muskogean)	<i>á:tan</i> '(one) dwells'	<i>í:san</i> '(many) dwell'	Kimball 1985: 273
Barai (Trans-New Guinean)	<i>abe</i> 'take (one)'	<i>ke</i> 'take (many)'	Foley 1986: 129
Fasu (Kutubuan)	<i>moto</i> 'put down (one thing)'	<i>tae</i> 'put down (many things)'	Loeweke & May 1980: 44
Georgian (Kartvelian)	<i>ǰd-</i> '(one) sits down'	<i>sxd-</i> '(many) sit down'	Corbett 2000: 254

There have been different views on how participant plurality verb stems relate to number agreement, and whether they can justifiably be considered instances of suppletion. On one hand, Durie (1986) argues that this indexation of participant plurality is not a form of number agreement and presents several reasons for this claim. Most importantly, counter to what would be considered number agreement, the use of participant plurality verb stems is never triggered by surface syntactic roles, but semantic roles. This becomes clear in the Georgian example sentences of (3): In (3a-b.), the verbs agree with the syntactic S argument in person and number by a suffix, and the stem changes reflect the same number category as the suffix. However, noun phrases modified by numerals are formally

singular in Georgian, such that in (3c.), the verb suffix indexes the singular number of the syntactic S argument, while the stem change reflects the semantic number of S.

(3) Georgian (Durie 1986: 359, emphasis added)

- a. *ivane šemovid-a da daǰd-a*
 John enter-3SG and sit.SG-3SG
 ‘John entered and sat down.’
- b. *čemi mšobl-eb-i šemovid-nen da dasxd-nen*
 my parent-NONSG-NOM enter-3NONGS and sit.NONSG-3NONGS
 ‘My parents entered and sat down.’
- c. *čemi sami megobari šemovid-a da **dasxd-a***
 my three friend.SG enter-3SG and **sit.NONSG-3SG**
 ‘My three friends entered and sat down.’

Durie claims that the semantic role triggering participant plurality verb stems across languages is that of the most affected participant of the verb, that is, the S argument of intransitive verbs or the P argument of transitive verbs. The use of participant plurality verb stems thus always follows an absolutive pattern, regardless of whether the alignment type of the verb agreement in a language is also absolutive (Durie 1986: 357). Although Mithun (1988: 214) and Corbett (2000: 248) agree that participant plurality verb stems do not constitute agreement, they argue against Durie referring to this phenomenon as “number suppletion”, precisely because participant plurality stem pairs are related semantically, but not inflectionally. According to them, participant plurality verb stems are separate lexemes distinguished by the plurality of affected entities: “The implied plurality of effect is a feature of their basic meaning. Walking alone is classified lexically as a different activity from walking in a group; speaking is different from conversing; murdering an individual is different from massacring a village” (Mithun 1988: 214). Thus, they describe the choice of participant plurality verb stems as a question of lexical selection, not morphosyntactic agreement.

On the other hand, Veselinova (2006: 161) counters that this analysis is an unwarranted generalization of the phenomenon, and that there is variation in how participant plurality verb stems can be situated in the number agreement systems of languages. She presents counterexamples from four languages and argues that in these cases, the participant plurality stems are in fact part of the agreement system and constitute genuine suppletion. For instance, in Slavey (Athabaskan), participant plurality verb stems must agree in number with the agreement affixes for first and second person subjects (see 4), such that it is impossible to combine a non-singular agreement affix with a singular verb stem. Therefore, for first and second person subjects, the choice between singular or plural verb stem is conditioned by the same syntactic agreement as the number affixes.

- (4) Slavey (Veselinova 2006: 159)
- a. *ʔehts'e* *thí-ke*
 RECIPROCAL ASPECT/**1DL-sit.DL**
 'We two are facing each other.'
- b. *kó* *gá* *de-í-kw'i*
 fire near ASPECT-**1PL-sit.PL**
 'We (plural) sat near the fire.'

Among the languages analyzed in this thesis, some also exhibit genuine verb suppletion by participant number. For example, Olsson (2021: 248-250) lists 16 verbs from Coastal Marind (Anim) with suppletive forms according to the number of the absolutive participant and explicitly includes these into the agreement paradigms of the respective verbs. To illustrate how the use of number-suppletive forms is conditioned by agreement instead of semantic factors, consider (5):

- (5) Coastal Marind (Olsson 2021: 115)
- lahwalah-yahun* *ipe* *ti-ka-hat-ø-* *nayam*
 aeroplane(IV) DIST.IV GIV.IV-PRS.NTRL-PRSTV-3SG.A- **come.PL**
 'An aeroplane is coming there.' or 'Aeroplanes are coming there.'

If the choice between the singular verb stem *man* 'come.SG' and the plural verb stem *nayam* 'come.PL' was conditioned by semantic factors, then the subject of (5) could only be understood as plural. However, since agreement forms of gender IV are indifferent to number, including suppletive stems, the subject of the sentence can be interpreted as either singular or plural. The fact that the plural stem is used here is because of a pervasive syncretism in Coastal Marind between the agreement forms of gender IV and the plural of animates, which extends even to the use of suppletive stems (Bruno Olsson, p.c.). Therefore, *nayam* is not selected by semantic factors, but by the peculiarities of Coastal Marind syntactic agreement.

In conclusion, the phenomenon of participant plurality verb stems is not as homogenous as it has often been analyzed. In some languages, participant plurality stems appear to be separate lexemes that are purely semantically related and for which the case for suppletion is difficult to make. However, in other languages, participant plurality stems seem to be true suppletive forms of the same stem that are in fact paradigmatically related. Given this background knowledge, one can expect that there are also different ways gender-suppletive verb stems can be situated in the gender agreement systems of languages, similarly calling for different analyses as either lexical selection or suppletion. In any case, to find out which of these analyses can be applied to the stems, they are analyzed individually according to their status in the agreement system of their language in chapter §4.3.

3. OVERVIEW OF THE DATA

As mentioned in the introduction, the data on gender suppletion is very sparse, such that the languages examined in this thesis are the only languages that have been shown to contain gender suppletion so far. These languages are all mentioned in Gregor (forthcoming), plus one additional language with gender suppletion I identified myself, Tayap. They are listed in Table 3.1 together with their respective language family, number of speakers, ISO 639 code and relevant source. Figure 3.1 shows the geographical locations of the languages within New Guinea.

Table 3.1: Languages with gender suppletion

Language	Family	Number of speakers	ISO 639	Sources
Ama	Left May	~450	amm	Årsjö (1999)
Coastal Marind	Anim	~9,000	mrz	Olsson (2021)
I'saka	Sko	~1,000	ksi	Donohue & San Roque (2004)
Orya	Tor	~1,800	ury	Fields (2000), Foley (2018)
Skou	Sko	~700	skv	Donohue (2004)
Tayap	Isolate	~60	gpn	Kulick & Terrill (2019)
Yelmek	Yelmek-Maklew	~400	jel	Gregor (2020)

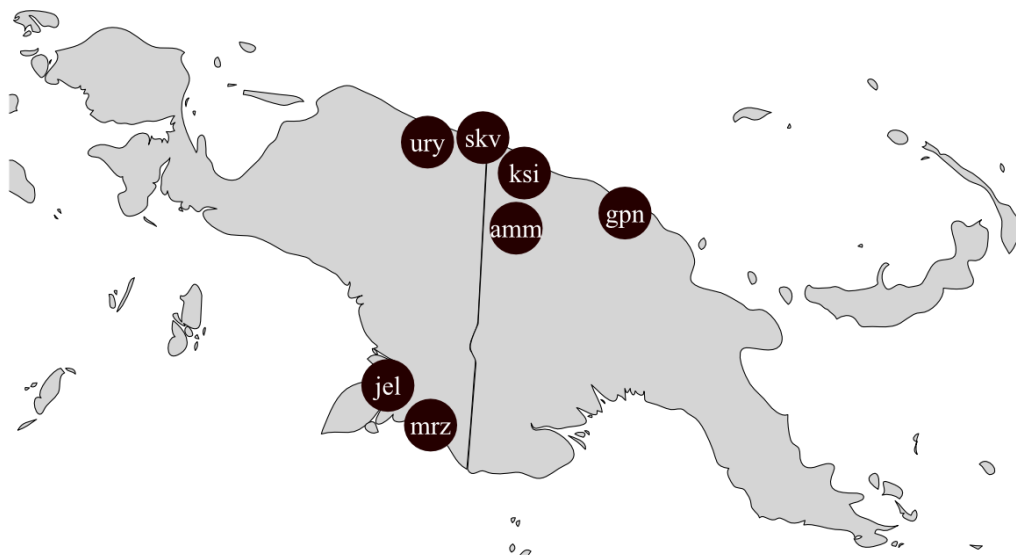


Figure 3.1: Geographical locations of the languages in New Guinea labeled with ISO codes

Table 3.2 shows all the verb stem pairs that appear to be strongly suppletive by gender in the grammars of the languages of Table 3.1. Indicated above the verb stems are the gender categories which the stems take suppletive forms by. Agreement affixes are put in parentheses.

Table 3.2: List of strongly gender-suppletive verb stems from the grammars

Language	Suppletive forms		Meaning
	III.U	IV.U	
Coastal Marind	<i>ahok</i>	~ <i>ihyohyab</i>	‘pull out’
	<i>ay</i>	~ <i>in</i>	‘become’
	<i>yet</i>	~ <i>nayat</i>	‘be moving, go’
	<i>yi</i>	~ <i>hi</i>	‘eat’
	<i>ihon</i>	~ <i>awan</i>	‘run away’
	<i>lu</i>	~ <i>hyamin</i>	‘call (name)’
	<i>man</i>	~ <i>nayam</i>	‘come’
	3SG.F.OBJ	3SG.M.OBJ	
Yelmek	<i>eme</i>	~ <i>oto</i>	‘cut’
	<i>emleŋe</i>	~ <i>oikio</i>	‘throw’
	<i>eŋaye</i>	~ <i>baiye</i>	‘see’
	<i>epŋe</i>	~ <i>pliaŋe</i>	‘hit’
	<i>odao</i>	~ <i>ipe</i>	‘bring/take’
	<i>ulo</i>	~ <i>ibo</i>	‘cook’
	F.U	M.U	
Orya	<i>gol</i>	~ <i>zer</i>	‘take’
	<i>gwi</i>	~ <i>ta</i>	‘kill’
	3SG.F.OBJ/SBJ	3SG.NF.OBJ/SBJ	
Skou	<i>láng</i>	~ <i>ká</i>	‘hit’
	<i>wé</i>	~ <i>ké</i>	‘get’
	3SG.NM.SBJ	3SG.M.SBJ	
I’saka	<i>(t-)i’</i>	~ <i>(k-)ele’</i>	‘go’
	3SG.F.SBJ	3SG.M.SBJ	
Tayap	<i>wu(-k)</i>	~ <i>ku(-t)</i>	‘be’

Table 3.3: Excluded verb stems from the grammars

Language	Suppletive forms		Meaning
	3SG.F.ABS	3SG.M.ABS	
Ama	<i>aloma(-so)</i>	~ <i>alomano</i>	‘take away’
	<i>mano(-so)</i>	~ <i>moi</i>	‘go’
	<i>ta(-so)</i>	~ <i>toi</i>	‘sleep’
	3SG.F.BEN	3SG.M.BEN	
	<i>ati(-so)</i>	~ <i>anoni</i>	‘give’
	3SG.F.SBJ	3SG.M.SBJ	
Tayap	<i>us(-ek)</i>	~ <i>kas(-et)</i>	‘come outside/down’
	<i>w(-ek)</i>	~ <i>mb(-et)</i>	‘go’
	<i>w(-ok)</i>	~ <i>mb(-ot)</i>	‘come’
	3SG.NM.SBJ	3SG.M.SBJ	
I’saka	<i>(w-)i</i>	~ <i>(k-)iy</i>	‘sleep’
	<i>(t-)u</i>	~ <i>(k-)au</i>	‘come’
	3SG.F.OBJ	3SG.M.OBJ	
Yelmek	<i>oyopo</i>	~ <i>ejepe</i>	‘catch/hold’
	<i>oyo</i>	~ <i>ewiye</i>	‘search’

Some of the verb stems mentioned in the grammars were found to not satisfy the criteria for suppletion given in §2.1.2. They are listed in Table 3.3. First, I exclude the I’saka stems pairs *(t-)u* ~ *(k-)au* ‘come’ and *(k-)iy* ~ *(w-)i* ‘sleep’ as well as the Ama stem pair *aloma(-so)* ~ *alomano* ‘take away’ because their formal differences are only slight. Likewise, I exclude the Yelmek stem pairs *oyo* ~ *ewiye* ‘search’ and *oyopo* ~ *ejepe* ‘catch/hold’. That is because a common way transitive verbs express the gender of the object in Yelmek is a type of stem alternation in which /o/ in the stem to indicate a feminine object alternates with /e/ to indicate a masculine object (Gregor 2020: 227-228). Considering this morphological pattern, the expected masculine object forms for *oyo* and *oyopo* would be **eye* and **eyepe*, which also differ only slightly from *ewiye* and *ejepe*. The same applies to the Tayap stem pair *us(-ek)* ~ *kas(-et)* ‘come outside/down’: In a restricted morphological pattern, /ka/ in some verb stems alternates with /o/ to index feminine and plural subjects (Kulick & Terrill 2019: 193). According to this pattern, the expected forms for ‘come outside/down’ would thus be **os(-ek)* ~ *kas(-et)*, which also differ only slightly from the actual forms. Second, the Ama stems *mano(-so)* ~ *moi* ‘go’ and *ta(-so)* ~ *toi* ‘sleep’ as well as the Tayap stems *w(-ok)* ~ *mb(-ot)* ‘come’ and *w(-ek)* ~ *mb(-et)* ‘go’ are excluded. Although they certainly have less formal similarities than the

other excluded stems, there is at least one other stem that undergoes a very similar formal change in the respective language, so their formal differences are not quite unique. Third, the Ama stem pair *ati(-so) ~ anoni* ‘give’ is excluded. That is because although Årsjö (1999: 29) lists this pair as suppletive in one section of her grammar, she analyzes the forms as *a-ti-so* and *a-noni* in another section, *a-* being a bound root meaning ‘give (non-plural patient)’ and *-noni* ‘2/3’ and *-ti* ‘3PL/F’ being suffixes that indicate the person and number/gender of the benefactee (Årsjö 1999: 61). It is unclear to me why she classifies *a-noni* and *a-ti-so* as independent suppletive stems in one section, and then shows how their formal alternation is attributed to a regular morphological pattern in another section.

On a sidenote, Fasu (Kutubuan) is also listed as exhibiting gender suppletion in Gregor (forthcoming). However, the Fasu verb stems in question *ka* ‘live (feminine)’ ~ *re* ‘live (masculine)’ are excluded simply because there is no mention of a nominal gender system in Fasu in Loeweke & May (1980). Therefore, the semantic difference between the two stems is not grammatical and contradicts the second condition of the definition set above.

4. RESULTS

4.1. Numbers and meanings of gender-suppletive verbs

In this chapter, I record how many gender-suppletive verbs the languages usually have and which meanings they usually express in comparison to the previous findings about aspect and tense suppletion by Veselinova (2006). The numbers of gender-suppletive verbs are listed in Table 4.1. In general, the majority of the languages has only one or two gender-suppletive verbs. Coastal Marind and Yelmek are outliers in this respect, with as much as 7 and 6 suppletive stems. The average number of gender-suppletive stems in the languages is 3.17, while the median number is 2.¹

Table 4.1: Comparison of the numbers of gender suppletive verbs

Language	Number of gender-suppletive verbs
Coastal Marind	7
Yelmek	6
Orya	2
Skou	2
I’saka	1
Tayap	1

¹ These results are based on the list of gender-suppletive verbs of Table 3.2 from which some verbs were excluded for not conforming to the narrow definition of suppletion of this thesis. With a broader definition, the numbers are of course expected to be higher.

These numbers suggest that on average, gender suppletion affects broadly the same number of verbs as tense and aspect suppletion. As stated above, Veselinova (2006: 67, 74) determined that in languages where it exists, tense suppletion usually involves only one or two stems, whereas aspect suppletion usually involves two to four. Thus, counter to the expectation that gender suppletion affects less verbs than tense and aspect suppletion because of its typological unlikelihood, the number of gender-suppletive verbs is comparable to that of tense- and aspect-suppletive verbs.

The meanings of the gender-suppletive verbs are listed in Table 4.2. In general, the meanings of verbs affected by gender suppletion are quite diverse and show no clear tendency towards a certain semantic field. Only the meanings ‘go’, ‘hit’ and ‘take’ appeared twice among the gender-suppletive verbs, while all other meanings came up only once.

Table 4.2: Comparison of the meanings of gender-suppletive verbs

Meanings	Absolute frequency
go, hit, take	2
be, become, call, come, cook, cut, eat, get, kill, pull out, run away, see, throw	1

Based on the limited data, these findings suggest that there is no clear preference for gender suppletion to affect the motion verbs ‘come’ and ‘go’ and copula-like verbs like ‘be’ and ‘exist’ like Bybee (1985) predicted and Veselinova (2006) confirmed for tense and aspect suppletion. However, as mentioned in §2.2, Bybee claims that verbs with other meanings also develop suppletion in case they are extremely frequent. Therefore, a corpus study focusing on the correlation between the token frequency of a verb and its tendency towards gender suppletion might reveal that gender-suppletive verbs are among the most frequent in their language.

4.2. Gender systems of languages with gender suppletion

In this chapter, I compare the gender systems of the six languages to further characterize gender suppletion. Two features of gender systems relevant to gender suppletion are the number of genders that verbs take suppletive forms for, and the semantic or formal features of nouns that trigger these forms. To compare the languages by these features, I employ three classificatory criteria conceived by Di Garbo (2014) and used by Svärd (2019) to classify the gender systems of New Guinea:

- Sex-based or non-sex-based gender system
- Number of genders

– Gender assignment

Some of these criteria require explanation. According to the first criterion, gender systems are classified as sex-based if the gender assignment is at least partly based on the biological sex of referents, which is mostly reflected by a distinction between a feminine and a masculine gender category. By contrast, non-sex-based gender systems are not based on biological sex, although all non-sex-based gender systems are claimed to be nevertheless based on animacy to some extent (Svärd 2019: 231). For the third criterion, Di Garbo (2014) classifies gender systems as either “semantic”, if nouns are assigned a gender solely according to their lexical meaning, or as “semantic and formal” if both the lexical meaning and the phonological form of a noun can determine its gender assignment. Among systems with semantic gender assignment, Svärd (2019: 240, 245) makes another distinction between “transparent” assignment, where the criteria for gender assignment are easily identifiable and consistent, and “opaque” assignment, where gender assignment criteria are unclear and loaded with exceptions. Thus, the third criterion classes gender systems as either “transparent semantic” or “semantic and opaque” or “semantic and formal”. Table 4.3 shows the values for all criteria in the six languages with gender suppletion.

Table 4.3: Comparison of the numbers of genders, sex-based or non-sex-based gender systems and gender assignment

Language	Number of genders	Sex-based or non-sex-based	Gender assignment
I’saka	2	sex-based	semantic + opaque?
Skou	2	sex-based	semantic + opaque
Tayap	2	sex-based	semantic + opaque
Yelmek	2	sex-based	semantic + opaque
Orya	3?	sex-based	semantic + opaque
Coastal Marind	4	sex-based	semantic + opaque?

Table 4.3 shows extensive similarities between the gender systems of the six languages. First, in all six languages, gender assignment is sex-based. This is reflected in a distinction between a masculine and a feminine gender category in Tayap, Yelmek and Orya. By contrast, Donohue & San Roque (2004) and Donohue (2004) apply different labels to this distinction in I’saka and Skou respectively. That is because in I’saka, the gender category including female referents is the unmarked gender, while in Skou, the gender including male referents is unmarked. Accordingly, I’saka nouns are distinguished between “non-masculine” and “masculine”, while Skou nouns are classed as “non-feminine” and “feminine”. By contrast, Olsson (2021) refrains from using the traditional terminology

for sex-based gender systems for Coastal Marind and distinguishes between gender I, II, III and IV instead. Second, in all six languages, nouns are assigned a gender by semantic factors only, and exhibit opaque gender assignment with many exceptions. However, the latter classification as “opaque” is problematic for the gender systems of both I’saka and Coastal Marind. In I’saka, male humans are naturally classed as masculine, while almost all other nouns denoting female humans, animals, plants, and inanimate referents are exclusively sorted into the non-masculine gender category. The only exceptions are some culturally significant animals like *a* ‘pig’ and natural powers like *tèing* ‘wind’, which are masculine (Donohue & San Roque 2004: 40, 111-112). It is unclear to me if a system with such restricted exceptions is still considered opaque by Svård’s (2019) understanding. Coastal Marind is another difficult case because on the first level, gender assignment is highly transparent. Nouns denoting humans are assigned either gender I or II based on their biological sex, all nouns denoting animals are grouped together with female humans in gender II, and nouns denoting inanimate objects are consistently assigned either gender III or IV. However, there are no reliable semantic criteria by which inanimate nouns are distributed among gender III and IV. Although there are some semantic fields of inanimate nouns whose members tend to be assigned either gender III or IV, there are still many exceptions. For example, mass nouns like *sa* ‘sand’ or *ahwa* ‘red clay’ tend to be assigned gender III, but *ndalom* ‘foam’ and *po* ‘white clay’ are gender IV nevertheless. Similarly, body decorations like *baway* ‘grass skirt’ or *himbu* ‘feathered headdress’ tend to be assigned gender IV, but *kalam* ‘necklace’ and *ud* ‘girl’s traditional headwear’ are gender III (Olsson 2021: 104-108). If opacity is restricted to only a subset of gender categories in an otherwise transparent system of assignment, it is again unclear to me whether this qualifies as opaque in line with Svård (2019).

The only notable differences between the six languages of Table 4.3 are found among the number of genders. While a majority of two thirds of the languages distinguish between only two genders, Orya and Coastal Marind have systems of three and four genders respectively. However, there two issues to clarify: First, Fields’s (2000: 20) analysis of three genders for Orya could be called into question. According to him, Orya nouns are classified as either masculine, feminine, or dual. However, outside of the section about gender, Fields treats the dual as a number category together with the singular and plural, and the agreement affixes of the dual number are identical to those of the supposed dual gender. Perhaps, the reason why Fields analyzes the dual as a separate gender category is because some Orya nouns are treated as grammatically dual although they are semantically singular. Nouns of the dual gender comprise things consisting of two parts, such as doors and glasses, but also things with an opening, like t-shirts and dresses, as well as some manufactured goods, like radios and motorcycles (Fields 2000: 20). Such nouns would be usually considered dualia tantum, that is, nouns with a fixed dual number value like the English pluralia tantum *scissors* or *pants*, instead of forming a separate

gender category. Unfortunately, Fields does not indicate how many Orya nouns belong to the dual gender. If the dual gender nouns amounted to a considerable share of nouns in Orya, there would be more support for Fields's analysis since pluralia tantum usually make up only a few instances in a language. However, without this information, it remains questionable whether Orya is better analyzed as having three or only two genders. Second, the number of genders does not necessarily match the number of gender-suppletive stems that verbs alternate between: Despite distinguishing four genders, there is a maximum of two suppletive stems in any verb paradigm. One exception of this is the Coastal Marind verb meaning 'eat' which alternates between three suppletive stems: *aheb* for singular animate undergoers, *yi* for undergoers of gender III and *hi* for undergoers of gender IV (Bruno Olsson, p.c.).

In conclusion, languages with gender suppletion have extensive commonalities in their gender systems: They mostly distinguish two genders at least partly based on sex and exhibit highly opaque semantic gender assignment. This is largely unsurprising because two genders and sex-based assignment are most common among the gender systems of New Guinea according to Foley (2000). However, the common feature of opaque gender assignment might be surprising because one might expect that irregular stem changes according to gender are at least triggered by nouns with regular gender assignment. Instead, gender-suppletive verb stems seem to mostly alternate by arbitrary non-transparent rules.

4.3. The agreement status of gender suppletion

As concluded in §2.3, I expect there to be variation in how the gender-suppletive verb stems are situated in the agreement systems of the six individual languages, similar to participant plurality verb stems. To cover this variation, the six languages are analyzed individually in the following subchapters according to their gender agreement system and which status the gender-suppletive verb stems have in it. Following the arguments of the discussion in §2.3, there are two main clues for the agreement status of the stems: First and most importantly, I determine whether the selection of the gender-suppletive stems in the languages is conditioned by the same principles as regular syntactic gender agreement or by some semantic principle. If the latter is the case, it should be possible to select stems whose indexed gender mismatches the gender of the syntactic argument and the gender indexed by the verb agreement to express a certain meaning, similar to the Georgian example for participant plurality in §2.3. Second, I determine whether the gender-suppletive verb stems are selected according to the gender of the absolutive participant, regardless of the alignment type of verb agreement.

4.3.1. Coastal Marind

In Coastal Marind, the choice between gender-suppletive stems seems to be conditioned by the gender of syntactic arguments rather than semantic selection. First, regular gender agreement of the verb in Coastal Marind is restricted to “undergoer” participants, that is, P arguments and patientive S arguments. Around half of Coastal Marind verbs regularly agree with undergoers in person, number, and/or gender by means of stem alternations, which can be further characterized as prefixing, suffixing, infixing or double-marking (Olsson 2021: 221). Moreover, which features of the undergoer are indexed by the stem alternations varies according to which types of referents the verbs allow as undergoers. Some verbs like *wihid* ‘become tired’ allow only animate referents as undergoers, in which case the alternation distinguishes between forms according to person and number of the undergoer (see Table 4.4). Other verbs like *awiy* ‘hurt’ only allow inanimate referents as undergoers, which are always 3rd person and can only belong to the genders III or IV. In that case, the alternation distinguishes only between gender III and IV of the undergoer (see Table 4.5). A third class of verbs allows both animate and inanimate referents as undergoers, in which case the alternation distinguishes between the person, number and 3rd person gender of the undergoer (see Table 4.6) (Olsson 2021: 228).

Table 4.4: Agreement paradigm of *wihid* ‘U become tired’

	SG	PL
1	<i>n-ihwid</i>	
2	<i>y-ihwid</i>	<i>ϕ-ihwid</i>
3	<i>w-ihid</i>	

Table 4.5: Agreement paradigm of *awiy* ‘U hurt’

	SG	PL
III	<i>awiy</i>	
IV	<i>awih</i>	

Table 4.6: Agreement paradigm of *hwagib* ‘put away U’

	SG	PL
1	<i>hwaga<n>ib</i>	
2	<i>hwaga<y>ib</i>	<i>hwaga<h>ib</i>
3	<i>hwag<ϕ>ib</i>	
III	<i>hwag<ϕ>ib</i>	
IV	<i>hwaga<h>ib</i>	

Crucially, as already mentioned in §2.3, there is a pervasive syncretism in Coastal Marind between the agreement forms of gender IV and the animate plural, which also extends to the use of suppletive stems (Olsson 2021: 115). This means that if a verb like *man* ‘come’ allows both animates and inanimates as undergoers and exhibits a number-suppletive stem, then this suppletive stem will also be used for gender IV undergoers (see Table 4.7). Since almost all of the seven gender-suppletive verbs in Coastal Marind allow both animates and inanimates as undergoers, almost all also exhibit number suppletion. Thus, gender suppletion and number suppletion seem to be manifestations of the same phenomenon in Coastal Marind. The only exception to this is *ahok* ‘pull out’, which allows only inanimate undergoers and therefore alternates only between gender III and IV (see Table 4.8). As shown in §2.3, the selection of number-suppletive stems in Coastal Marind is conditioned by syntactic agreement instead of lexical selection. Thus, since number and gender suppletion are the same phenomenon in Coastal Marind, the same applies for gender suppletion.

Table 4.7: Agreement paradigm of *man* ‘U come’ (Olsson 2021: 249)

	SG	PL
1		
2	<i>man</i>	<i>nayam</i>
3		
III		<i>man</i>
IV		<i>nayam</i>

Table 4.8: Agreement paradigm of *ahok* ‘pull out U’

	SG	PL
III		<i>ahok</i>
IV		<i>ihyohyab</i>

The alignment of gender-number suppletion in Coastal Marind follows an absolutive pattern, despite the otherwise semantic alignment pattern of regular gender agreement. Olsson (2021: 244) explicitly states that number suppletion follows an absolutive alignment pattern, and the same seems to be confirmed for the verbs with additional gender suppletion: Among the seven gender-suppletive Coastal Marind verbs, there are both transitive verbs alternating according to P arguments, such as *yi* ~ *hi* ‘eat’ and intransitive verbs alternating according to S arguments, both patientive such as *ay* ~ *in* ‘become’ and agentive such as *ihon* ~ *awan* ‘run away’. Thus, if gender suppletion in general was to follow the same alignment pattern as verb agreement, then it would not be expected to be triggered by agentive S arguments. Although the fact that gender suppletion and regular gender agreement are differently aligned in Coastal Marind would be an indication for lexical selection, we have seen that gender-number suppletion is in fact conditioned by the gender and number of syntactic arguments.

4.3.2. Yelmek

As in Coastal Marind, gender-suppletive stems in Yelmek seem to be selected according to principles of syntactic agreement rather than semantics. First, gender agreement in Yelmek is expressed by regular stem alternations according to the gender of the P argument on around 40% of verbs (Gregor 2020: 223). As an example, one of the regular stem alternation patterns according to the gender of P involves the alternation between /o/ in the stem to index feminine P arguments and /e/ to index masculine P arguments (Gregor 2020: 225, see 6). Gregor (2020: 228) lists the gender-suppletive stems as exceptions to the regular stem alternations according to the gender of the P argument, suggesting that gender suppletion is conditioned by the same principles as regular gender agreement.

(6) Yelmek (Gregor 2020: 223, emphasis added)

a. *p-oyopo-a*

RPST.SG.SBJ-**hold.F**.OBJ-RPST

‘He held her.’

b. *p-enepe-a*

RPST.SG.SBJ-**hold.M**.OBJ-RPST

‘He held him.’

The alignment of gender-suppletive stems in Yelmek cannot be ultimately assessed because verb alternations by gender have only been attested according to the P argument of transitive verbs yet, never S arguments of intransitive verbs. However, tentatively, this would constitute an accusative pattern, similar to most of Yelmek verb agreement. This is especially interesting considering that 12 verbs in Yelmek also exhibit separate stems according to participant plurality, which follow an absolutive pattern, the only exception to the otherwise exclusively accusative patterns of verb agreement (Gregor 2020: 232, see 7). In addition, there is no regular stem alternation for the plurality of a participant aside these separate stems, which hints at the possibility that gender and number suppletion in Yelmek constitute separate phenomena.

(7) Yelmek (Gregor 2020: 265, emphasis added)

a. *eu* *te-a* *ebi* *dam* *wak*

3SG.NOM **enter.SG.SBJ**-RPST house inside LOC

‘He entered the house.’

b. *em* *kalkio-a* *ebi* *dam* *wak*

3PL **enter.PL.SBJ**-RPST house inside LOC

‘They entered the house.’

4.3.3. Tayap

In Tayap, the single gender-suppletive verb *wu(-k) ~ ku(-t)* ‘be’ can in fact be selected such that the indexed gender mismatches the gender of the syntactic argument to express a certain meaning. In (8), the clearly male referent is marked with the feminine verb stem *wuk* because the feminine form conveys generality in Tayap. Thus, in the example, the speaker employs the feminine form to refer to an unspecific big man. While this might seem like evidence that the use of gender-suppletive stems is conditioned by lexical selection, it is rather a general feature of the Tayap gender agreement system and not restricted to *wu(-k) ~ ku(-t)* ‘be’: In Tayap, the gender agreement of a noun is not fixed, but can be overridden by discourse factors related to particularity, gender, and shape: Typically masculine referents can be marked with feminine gender agreement if they are unparticular, the sex of male and female referents can be specified by either masculine or feminine gender agreement, and in general, short, stocky and small referents tend to be marked with feminine gender agreement, while long, thin and large referents tend to be marked with masculine gender agreement (Kulick & Terrill 2019: 57-58). For example, pigs typically trigger feminine gender agreement, but can be specified to be male by masculine gender agreement (see 9).

(8) Tayap (Kulick & Terrill 2019: 60)

ani munje suman wuk?

who man big be.3SG.F.R

‘Which big man is here (i.e. still living)?’

(9) Tayap (Kulick & Terrill 2019: 58)

a. *ɲi=ɲi mbor po-ku-n*

3SG.M=ERG.M pig strike.R-3SG.F.R.O-SG|1PL.R.S

‘He speared a (female) pig.’

b. *ɲi=ɲi mbor po-ɲgi-n*

3SG.M=ERG.M pig strike.R-3SG.M.R.O-SG|1PL.R.S

‘He speared a (male) pig.’

This phenomenon in which a noun of one gender is marked as belonging to another gender for a certain effect is described as a type “recategorization” by Corbett & Fedden (2016: 526). They view recategorization as an uncanonical property of gender agreement systems because it violates the Canonical Gender Principle that every noun has exactly one gender value (Corbett & Fedden 2016: 527). Thus, it can be said that gender suppletion in Tayap is conditioned by the usual, albeit uncanonical, principles of gender agreement of Tayap instead of lexical selection.

The alignment of gender suppletion in Tayap is hardly possible to assess since there is only one gender-suppletive verb *wu(-k) ~ ku(-t)* ‘be’. However, *wu(-k) ~ ku(-t)* can be seen as a formally

irregular exception of an otherwise regular stem alternation pattern that follows accusative alignment. Largely, gender agreement with the S/A argument in Tayap is expressed by a set of suffixes, but for a few verbs, there are additional regular alternations of the verb stem. Specifically, for intransitive verbs of the conjugation class IIa and transitive verbs of conjugation class 3, an /a/ in the verb stem is changed to /o/ or /ŋgo/ for 3rd person feminine, 3rd person plural and dual subjects and to /ka/ for all others. The structure of the paradigm of ‘be’ has strong similarities to that of class IIa and class 3 verbs (see 10), suggesting that ‘be’ is part of a stem alternation pattern that follows accusative alignment, just like the rest of the Tayap verbal agreement system.

- (10) Comparison of stem alternations according to person, number and gender of the subject between *aku* ‘be’ and verbs of conjugation classes IIa and 3 (Kulick & Terrill 2019: 177-178, 193, 195, emphasis added)

	<i>aku</i> ‘be’ (unclassified)	<i>arki</i> ‘go down’ (Class IIa)	<i>a</i> ‘consume’ (Class 3)
1SG	<i>ku-</i>	<i>kar-</i>	<i>ka-</i>
2SG	<i>ku-</i>	<i>kar-</i>	<i>ka-</i>
3SG.F	<i>wu-</i>	<i>or-</i>	<i>o-</i>
3SG.M	<i>ku-</i>	<i>kar-</i>	<i>ka-</i>
1PL	<i>ku-</i>	<i>kar-</i>	<i>ka-</i>
2PL	<i>ku-</i>	<i>kar-</i>	<i>ka-</i>
3PL	<i>ŋg-</i>	<i>ŋgor-</i>	<i>o-</i>
DL	<i>wu-</i>	<i>or-</i>	<i>o-</i>

4.3.4. Orya

First, it seems that gender-suppletive stems in Orya are selected according to the same principles as gender agreement. In fact, a large part of gender agreement is expressed by suppletion in Orya, since many common verbs exhibit a complex system of suppletion according to the gender and number of the subject or object according to Foley (2018: 476). Only in very rare cases, it is possible to mark a noun of one gender with the gender-suppletive stem of the other gender to express a certain meaning. For example, in (11), the object *te-ala* ‘money (lit. tree leaves)’ is marked by the feminine verb stem to express a small amount of money, and by the masculine verb stem for a big amount of money. However, Phil Fields (p.c.) states that he does not know of any other object other than *te-ala* ‘money’ for which both gender-suppletive stems of *gol* ~ *zer* ‘take’ can be used, and that choosing gender-suppletive stems according to semantics is rather an inconsistency and certainly not possible for all suppletive verbs.

(11) Orya (Phil Fields, p.c.)

a. *te-ala-sa* *gol-k-a*
tree-leaves-ACC **A.SG.take.U.F-PST-A.M**
'He took a small amount of money.'

b. *te-ala-sa* *zer-k-a*
tree-leaves-ACC **A.SG.take.U.M-PST-A.M**
'He took a big amount of money.'

The relation between the alignment of gender-suppletive stems and regular gender agreement in Orya is especially interesting because it is exactly the gender-suppletive stems *gol ~ zer* 'take' and *gul ~ ta* 'kill' that have become grammaticalized as auxiliaries to express the inflection by gender and number for many transitive verbs (Foley 2018: 477). This means that for those many verbs, the alignment of gender-suppletive stems actually determines the alignment of gender agreement in general, which is an absolutive pattern (Foley 2018: 476).

4.3.5. Skou

For Skou, one can assume that as in Tayap, the selection of gender-suppletive stems is conditioned by the same, albeit unusual, principles as regular gender agreement. First, as mentioned in the introduction, around 15% of Skou verbs regularly agree with the number or gender of a participant by alternations of the stem vowel. Generally, non-feminine participants remain unmarked, feminine participants are marked by rounding and backing of the vowel in the verb stem, and plural participants are conversely marked by fronting and unrounding of the vowel (Donohue 2004: 222-223, see 12).

(12) Skou (Donohue 2004: 222)

a. *ke* *naké* *boeboe* *ke=lá=ing* *ke=lúe*
3SG.NF dog bark 3SG.NF=bark=DEIC 3SG.NF=**hear**
'He heard the dog barking.'

b. *pe* *naké* *boeboe* *ke=lá=ing* *pe=r-ú*
3SG.F dog bark 3SG.NF=bark=DEIC 3SG.f=3SG.F=**hear.F**
'She heard the dog barking.'

c. *te* *naké* *boeboe* *ke=lá=ing* *te=r-í*
3PL dog bark 3SG.NF=bark=DEIC 3PL=3PL=**hear.PL**
'They heard the dog barking.'

Although in (12), the alternation of the verb stem vowel marks the gender or number of the A argument, this is not necessarily so. The gender and number of either the A or the P argument can be marked by the alternation, a decision for which the person, number, gender and animacy features of

both A and P as well as the lexical meaning of the verb are weighed against each other. For example, if either A or P possesses a marked feature (that is, “feminine” or “plural”) and the other argument does not, then alternating verbs tend to agree with the argument with said marked feature, as Donohue (2004: 225) illustrates with the verb *fue* ‘see’. However, if both A and P possess a marked feature, alternating verbs tend to follow a principle of “object saliency” and tend to mark the feature of P (Donohue 2004: 227). Accordingly, in a clause with a plural A argument and a feminine P argument, the alternation of the verb stem will index the “feminine” feature of P (see 13).

(13) Skou (Donohue 2004: 225)

- | | |
|-----------------------|-------------------------|
| a. <i>te pe te=fu</i> | b. * <i>te pe te=fe</i> |
| 3PL 3SG.F 3PL=see.F | 3PL 3SG.F 3PL=see.PL |
| ‘They saw her.’ | ‘They saw her.’ |

Crucially, Donohue (2004: 232) states that although the morphological realization of gender agreement in the suppletive verb *ká ~ láng* ‘hit’ is quite different to that of a regularly alternating verbs like *fue* ‘see’, the decision process between the different features is “(approximately) constant”. Thus, it can be suspected that the choice of the two gender-suppletive verbs is again conditioned by the same principles as regular gender agreement.

While the alignment system of gender agreement in Skou, and by extension, gender suppletion, cannot be described in traditional terms, Skou verbs otherwise follow accusative alignment (Donohue 2004: 110-111).

4.3.6. I’saka

Due to the limited data on I’saka, there is no evidence whether the single gender-suppletive stem (*(k-)ele’ ~ (t-)i’* ‘go’ is selected according to semantic or syntactic principles, and since it is intransitive, one can only guess which alignment type gender suppletion follows. However, there are some indications: In any case, regular gender agreement in I’saka is expressed by prefixes agreeing with the S/A argument in person, number and gender, thereby following an accusative pattern (Donohue & San Roque 2004: 58). Interestingly, all the verb forms that Donohue & San Roque (2004) refer to as suppletive according to gender, including the ones excluded for this thesis (see Table 3.3), appear in the 3rd person singular non-masculine gender and are phonologically relatively similar to and shorter than the forms for the masculine gender. As mentioned in §4.2, all nouns that do not denote male humans in I’saka are non-masculine, with only a few exceptions. Thus, one could suspect that the 3rd person singular non-masculine form of verbs is generally very frequent in I’saka discourse, and that it therefore became phonologically shortened for very frequent verbs like ‘go’, ‘come’ and

‘sleep’. If this is likely, then gender suppletion would appear in the same contexts as regular gender agreement, and therefore also follow an accusative pattern. However, a corpus-based study of I’saka is needed to confirm whether the 3rd person singular non-masculine forms of ‘go’, ‘come’ and ‘sleep’ are in fact the most frequent verb forms.

In conclusion, as suspected in §2.3, gender-suppletive verbs can have many different statuses in the agreement system. As we have seen, gender suppletion is very often accompanied by number suppletion in a language, mostly as a part of the same larger phenomenon, like in Coastal Marind, Skou, Tayap and Orya, or as a possibly independent phenomenon as in Yelmek. Moreover, among the six languages, no language was found where the choice of separate stems according to gender is conditioned by semantic principles while regular gender agreement is conditioned by syntactic factors, as it has repeatedly been argued for participant plurality. Thus, it is safe to say that the investigated phenomenon does constitute suppletion, and not separate lexemes. Not least, we have seen that gender suppletion sometimes follows the same alignment type as regular gender agreement, as in Yelmek, Orya, Skou and Tayap, while it sometimes does not, as in Coastal Marind. However, this does not necessarily mean that gender-suppletive stems are not part of the agreement system or are selected by semantic principles.

5. EMERGENCE OF GENDER SUPPLETION

In this chapter, I speculate about possible scenarios how gender suppletion might have emerged in the languages investigated in this thesis. This is a worthwhile consideration because knowing what must happen in a language for gender suppletion to arise might give clues to why the phenomenon is so rare cross-linguistically. In general, the instances of gender suppletion seem to have different origins. First, some can surely be attributed to sound changes. Although I aimed to exclude suppletion caused by sound changes to focus on strong suppletion, the gender-suppletive stems in Tayap and I’saka as well as the Skou stems *ké* ~ *wé* ‘get’ have phonological similarities that make it seem likely that their suppletive relation has developed through sound changes. This is unsurprising given that in most of the languages, regular gender agreement is expressed by alternations of the verb stem, which can plausibly be turned into a suppletive stem alternation by sound changes.

Second, the gender-suppletive verbs in Coastal Marind can be traced back to the number-suppletive stems which came to be also used in agreement with nouns of gender IV when they became a separate gender class. Olsson (2019: 217) proposes that in pre-Proto-Anim, most nouns of gender IV started out as a class of pluralia tantum marked with plural agreement, which then gained new non-pluralia tantum members through some unknown process, thereby forming a new semantically heterogeneous gender class. Thus, to a large part, the emergence of gender suppletion in Coastal Marind can be

explained by a class of pluralia tantum that took with them their number-suppletive verb stems to also become gender-suppletive verb stems in their rise to a separate gender class. Still, the question remains how the number-suppletive verb stems arose in Coastal Marind in the first place, but it is possible to imagine them as a product of incursion discussed in the following paragraph.

Third, for the remaining gender-suppletive stems, incursion presents itself as a possible explanation. As briefly mentioned in §2.1.2, incursion occurs when an originally independent verb lexeme becomes reanalyzed as an inflectional form of another semantically related verb lexeme and takes its place in the inflectional paradigm. Juge (2000: 186) explains that incursion sometimes follows a functional motivation to fill gaps of defective paradigms, but can also affect previously complete paradigms. To illustrate the former case, Deshpande (1992) shows that for some verbs with suppletive forms according to aspect in Sanskrit, suppletion arose because of mismatches between the lexical meanings of verb stems and certain aspect categories. For example, the Sanskrit verb *dhāv* ‘run’ constituted an inherently imperfect, non-resultative action and was therefore unsuited for perfect contexts, whereas the semantically similar verb *ṣṛ* ‘run to, seek refuge in’ was resultative, thereby compatible with the perfect inflection. Eventually, the originally independent verb *ṣṛ* became reanalyzed as the perfect inflection of *dhāv* to fill its missing form in the paradigm (Deshpande 1992: 43-44). Thus, it seems that whether incursion affects defective or complete paradigms, it involves a verb which due to its basic meaning becomes strongly associated with an inflection of a semantically similar verb and becomes part of its paradigm, either filling in a missing form or replacing an existing form. This scenario is somewhat hard to imagine as the cause for the gender-suppletive forms. That is because incursion would require an independent verb to carry a certain lexical meaning that is strongly associated with an inflectional gender category, to then be integrated into the paradigm of a similar verb that is somehow less compatible with the category. In accordance with Bybee’s relevance hierarchy, verbs with lexicalized gendered meanings seem unlikely, because the gender of who or what performs or undergoes an action seems too irrelevant to constitute a separate action, and therefore justify a separate lexeme. However, inherently gendered verbs are not unthinkable. On one hand, it is possible to imagine actions for which the distinction by gender is of high cultural significance to be expressed by different verb lexemes. For example, in Coastal Marind, marrying is expressed by the verb *ambid* from the woman’s perspective, and *kisa* from the man’s perspective (see 14). Note that *ambid* also means ‘sit’ and *kisa* also means ‘grab’.

(14) Coastal Marind (Olsson 2015, Olsson 2021: 490)

- a. *e=k-a-* *ni-n* *nok* *e=ka-no-* ***ambid***
PROX=DIR-3.SG.A 1.U-become 1 PROX=DIR-1.A **sit**
‘I (F) was born over there, and I married here.’

- b. *Henki oso m-a- kisa agu, Apliw uhe*
 H. start OBJ-3SG.A **grab.3SG.U** PRWD.II A. PROX.II
 ‘Henki (M) had just married what’s-her-name, Apliw.’

However, none of the gender-suppletive verb stems from Table 3.2 denote actions of such obvious cultural significance, and after all, grammatical gender is not limited to distinguishing women and men. On the other hand, more clues for the existence of inherently gendered verbs might be provided by the principle of gender assignment based on size and shape, which according to Foley (2000) is commonly found in New Guinea. As mentioned in §4.2.3, this assignment principle is still active in Tayap, where nouns can be marked by feminine gender agreement if they are small, short and stocky, and by masculine gender agreement if they are large, long and thin. In Orya and Yelmek, there are only remnants of the principle left (Fields 2000: 20, Gregor 2020: 123). This is highly speculative, but for some verbs with such as Yelmek *emleje ~ oikio* ‘throw’, it is possible to imagine that throwing a large, long (presumably heavy) object might have been expressed by a different verb lexeme than throwing a small, stocky (presumably light) object, similar to English *hurl* and *toss*. However, this is neither a satisfactory explanation for gender suppletion, since the size and shape-based assignment principle is not present in Coastal Marind, I’saka or Skou, and some verbs like Yelmek *epnje ~ pliane* ‘see’ are very unlikely to originate from two separate lexemes according to the size and shape of the object.

In conclusion, it seems that gender suppletion can emerge through several different possible processes. However, incursion as the standard explanation of strong suppletion is not as easy to justify because it requires verbs with inherently gendered meanings which are rare to find. This might explain the typological unlikelihood of gender suppletion and confirm Bybee’s (1985) presumption about the irrelevance of gender for the basic meaning of verbs.

6. CONCLUSIONS

The preliminary results of this thesis give some first insights into the phenomenon of verb suppletion by gender. First, gender suppletion is far less common than aspect and tense suppletion, as it has been identified in only a handful of languages by now, yet in the languages that have it, gender suppletion has shown to usually affect around the same number of verbs as tense and aspect suppletion. In contrast to tense and aspect suppletion which is predominantly found in motion verbs and copula-like verbs, no delimitable semantic field of verbs could be found to preferably host suppletion by gender. However, given that this result is based on the data of only six languages, a more extensive cross-linguistic study on gender suppletion is needed to find out which kinds of verbs it usually affects. In addition, as mentioned in §4.1, a corpus-based study in the languages might also reveal that which

verbs are affected by gender suppletion is rather not conditioned by certain meanings of verbs, but the discourse frequency of verbs.

Second, with sex-based systems of mostly two genders, the gender systems of languages with gender suppletion are overwhelmingly similar to those of New Guinea in general, but surprise with their high opacity of gender assignment rules. Future research could focus on how these common features might have encouraged or even preconditioned the emergence of gender suppletion.

Third, gender suppletion was shown to have various different statuses within the agreement systems of languages, but always be conditioned by syntactic agreement rather than lexical selection. If more languages with different verb stems according to the gender of participants are found, it will be interesting to see whether these concur with the findings or whether some employ lexical selection. In addition, gender suppletion was found to often cooccur with number suppletion, sometimes also sharing the same suppletive stem with number suppletion, suggesting that the two are part of the same larger phenomenon. Future research on gender suppletion might determine whether this is an inherent feature of gender suppletion, then more accurately termed “gender-number suppletion”, or just two similar phenomena that tend to merge into one another.

Fourth, the emergence of gender suppletion was found to have several possible parallel explanations, from sound changes over syncretism to incursion. Although the process of incursion provides a useful explanation of how verb suppletion can develop, it requires that the verbal category to be expressed by suppletion is priorly lexicalized in the “intruding” verb stem, which is highly unusual for a category like gender. While this might explain the rarity of gender suppletion, it is hard to imagine how it could have emerged at all, considering that only few of the gender-suppletive verbs denote actions for which a gender distinction would seem significant. In addition, the high opacity of the gender systems leaves little traces of what might have motivated such a distinction. Perhaps deep comparative examinations of vocabulary might reveal what the suppletive forms originally meant and thereby hint at what could have motivated their incursion.

Thus, first and foremost, future research on gender suppletion should be dedicated to finding more languages with gender-suppletive verbs across the world, to accumulate more data to confirm the results of this preliminary study, but also to see how gender suppletion is distributed across the world and how rare it actually is.

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