Typology and Analysis of Change in Person Marking Reference

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Abstract

The two-fold goal of this dissertation is to conduct a thorough survey of diachronic changes to person marking reference within paradigms (here called Person Marking Referent Shifts or PMRS) across a wide set of languages and then to analyze patterns in the trajectory of those shifts through a formal separation between the syntactic and semantic representation of the ϕ-features underlying pronominal exponence and the actual contexts of use that are available to those forms. As such the body of this disseration is divided into four parts. The opening section introduces the scope and bounds of the project and reviews the literature on person marking and PMRS that led to the current project. It addresses the range of discovered PMRS types and claims of directionality found in Heine & Song (2011), Song & Heine (2016), and Helmbrecht (2015), specifically that person (3 > 2 > 1) and number (PL > SG) hierarchies may both trigger and constrain these shifts. In order to investigate those claims more comprehensively, Chapter 2 broadens the surveys of PMRS seen in those works to a much larger variety of languages from genetically and geographically language families, exposing a number of novel findings. First, it is demonstrated that PMRS is relatively common in the sample compared to estimates based only on more commonly studies families. Further, the survey greatly expands on the types of PMRS as defined by the difference between source and goal referent sets. Finally, the results are found to be inconsistent with previous proposals of strong influences towards uni-directionality in these shifts based on referent accessibility since the data include widespread bidirectionality not present in previous surveys.

However, the case is made that not all shifts represent the same phenomenon. They can in fact be divided into two groups: Independent Shifts and Dependent Shifts. While Dependent Shifts appear to involve restriction of a markers reference to a subset of its original contexts due to the introduction of a competing marker, Independent Shifts involve an extension of the marker to new

contexts of use without the concomitant addition of any competing markers to the person marking paradigm. Based on historically recorded trajectories for some shifts and synchronic facts about the person markers' distribution in others, many of the shifts in the survey are able to be immediately sorted into one of these two categories. The next chapter goes into depth on the semantic and syntactic structure of the phi-features underlying reference to PERSON, NUMBER, and GENDER. Appealing to the usage of person markers, I bolster the claim made in other works that these features often utilize privative, rather than polar, divisions. In these cases, one member of the contrasting dichotomy has a semantically contentful feature defining its contexts of use, while the other (bare) member is confined from use in some of the contexts with which it is semantically compatible due to pragmatic pressure from the existence in the paradigm of the other more semantically specific marker that it competes with. This is expanded on for features such as NUMBER (contentful PL vs. bare SG) and clusivity, which often involves a contrast between one contentful clusive marker, either exclusive or inclusive, and a more general marker.

Privative contrasts capture the details of the Independent/Dependent contrast seen in PMRS very well. That is, Dependent Shifts are ones in which a more feature-rich marker is innovated and enters a paradigm, pragmatically forcing a feature-poor more-general, with which it competes for the same contexts, into a subset of the contexts that are semantically available to it. On the other hand, Independent Shifts involve actual change, or reanalysis, of the featural content of a pronoun. Due to a majority of these cases following a pathway from more to less features (extending their range of compatible contexts of use), a proposal for directionality in Independent Shifts is entertained positing that the shifts always involve a loss of featural content similar to bleaching. Independent Shifts appear to be triggered by the socio-linguistically strategic use of the 'strong' feature-rich pronoun in contexts where the hearer is socially expected to take their word for its

acceptability. As seen in other cases of reanalysis (see Eckardt 2012 and Deo 2015), some hearers question this accomodation and posit instead that the speaker is using the form to mean something more immediately accessible to both speech act participants in the context. The directionality of these shifts falls out from the assymetric entailment relationship between the feature-rich 'strong' form and the feature-poor 'weak' forms. The pair form a Hornian <Strong,Weak> dyad, in which S → W but W does not entail S and the use of W implicates that S could not have been used in that context. For example, in NUMBER, the 1PL entails 1SG but not vice versa and the use of the 1SG marker has an implication that the 1PL could not have been used in that context. Thus if a speaker uses S in a context the hearer associates with the weak meaning, there is impetus to reanalyze but if one uses a W form in a context associated with the strong meaning, the utterance is still technically true and would not produce the triggers necessary for reanalysis. This proposal would simplistically separate true reanalysis involving actual feature loss that lead to context extension from cases of pragmatic restriction that lead to context reduction.

However, counterexamples in the data suggest that this proposal is incomplete. To investigate this more fully, the final chapter of the dissertation looks at some of the more peripheral examples of PMRS both within the survey sample and outside of those language families. Specifically, the paper looks into shifts in GENDER, shifts from 3rd person to SAP markers, and those involving feature 'hardening' of clusive contrasts and some number contrasts, which show feature 'gain' instead of loss. Together these make a strong case that reanalysis directionality in PMRS should not be defined in terms of what is *likely*, but rather what directions are *unlikely* to occur given the triggers that are necessary. In other words instead of favoring S > W directionality, the processes involved simply do not favor W > S. When no such <S,W> relationship is present between a potential shift's source and goal feature sets, directionality does not appear.

To Morgan

whatever comes

wherever I go

I want you there

with me

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Throughout the process of dissertation writing, one sentiment, shared with me many times by many people, has given me a ray of hope: “Besides your committee, almost no one will read your dissertation.” However, as my committee can attest, I just couldn’t be sure. And just in case some intrepid soul should come along later and try to digest what I have attempted to lay out, I tried my hardest to make it perfect anyway. Of course, I failed. But that didn’t stop me from asking for more deadline extensions so I could tweak what I had written just a *little* bit more. All joking aside though, my first thanks go out to my chair Andrew McKenzie and my good friend and committee member Phil Duncan for teaching me the worth of a *terrible*, but nevertheless *written*, first draft. If there is nothing written down, there is nothing to work with. If I don’t publish and present my ideas, they can never be challenged and refined. I can’t count how many times I heard, “Just write something, anything, down.” And now, at the end, I am thankful for every time.

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1	1st person
2	2nd person
3	3rd person
A	Arawakan (Language Family)
ADDR	Addressee
B	Bantu (Language Family)
D	Dravidian (Language Family)
DEF	Definite Article
DIV	Dividing Plural
DU	Dual NUMBER
EXCL	Exclusive (1+3)
FEM	Feminine GENDER
FUT	Future Tense
GEN	General (unspecified) NUMBER
HON	Honorific
INCL	Inclusive (1+2)
INDEP	Independent Pronoun
IRR	Irrealis Mood
LF	Logic Form: semantic interface
Ma	Mayan (Language Family)
MASC	Masculine GENDER
Mo	Mongolic (Language Family)
NOM	Nominative CASE
NP	Noun Phrase
OBL	Oblique CASE
PAUC	Paucal NUMBER
PF	Phonological Form: motor interface
PL	Plural NUMBER
Pm	Paman (Language Family)

PMR	Person Marking Reference
PMRS	Person Marking Reference Shift
Pn	Panoan (Language Family)
PRES	Present Tense
PST	Past Tense
S	Strong Form (Horn Pair)
S	Semitic (Language Family)
SAP	Speech Act Participant
SG	Singular NUMBER
SGLTV	Singulative NUMBER marker
SP	Southern Pama-Nyungan (Language Family)
SPKR	Speaker
TP	Tense Phrase
TRL	Trial NUMBER
UA	Uto-Aztecan
VP	Verb Phrase
W	Weak Form (Horn Pair)
X +> Y	Y is an Implicature of X
X → Y	Y is an Entailment of X
X > Y	X diachronically changes to Y

Chapter 1: Introduction to PMRS

1.1 Introduction

Personal pronouns have long been thought to be some of the most conservative parts of grammar, changing slowly, if at all over the course of millenia (Heine & Song 2011:587). However, as this dissertation shows, some kinds of change to pronouns, and person markers more generally, are quite robustly attested in a variety of language families. These are called person marking reference shifts or PMRS. Not only are they found across the globe but they impact the very heart of person marking since they are changes to the people, roles, and group sizes that a given person marker may refer. The goal of this dissertation is to answer some of the fundamental questions surrounding these types of change. How many types of PMRS are there? Are they all the same phenomenon? Formally speaking, what is actually shifting during PMRS? How do the trajectories of these shifts fit into wider models of language change and what can they tell us about other kinds of change?

This chapter is dedicated to providing an overview of PMRS and an introduction to the main themes of the dissertation. First, shifts in person marking reference are identified and naively defined, delimiting the bounds of what will be studied in the body of this text. The definition of these shifts presupposes the nature of person marking and reference, so this chapter will discuss the features that will be used and tracked in the later PMRS survey, and some that will not, as well as how different models, including Generative ones, approach 'reference' and how that impacts the variety of forms that are focused on for this dissertation. A section is devoted to frameworks of diachronic change, particularly showing the opposition between models of discrete reanalysis and those positing continuous clines. Finally, previous literature that investigated PMRS is summarized and discussed.

1.2 Person Marking and PMRS

Person Marking Referent Shifts are diachronic changes that impact the value of the person marking features that a given person marker refers to in context. Take a person marker with phonological form *f*, which at some past time (T_{past}) was mapped to a set of features [α]; such as '1st person' or 'plural'. Time passes ($T_{past} > T_{present}$) and *f* now corresponds to a different set of features [β].

Figure 1. PMRS Schema

$$\frac{T_{past}}{f\,[\alpha]} \longrightarrow \frac{T_{present}}{f\,[\beta]}$$

This sort of change is exemplified in the shift of Arabic *ni-* from '1PL' in the Classical prefix conjugation to '1SG' in modern Tunisian imperfective in (1).

(1) TUNISIAN ARABIC (SEMITIC) Isaksson (1998)
Old Pattern: **ʔa–* [1SG] **ni–* [1PL]
New Pattern: *ni–* [1SG] *ni–. . . –u* [1PL]

Crucially the phonological form *ni-* has not changed, so that $f(T_{past}) = f(T_{present})$, or in other words, the form in the past has not had any morphologically salient pieces added or taken away during the course of the change. Since I am interested in the morphological purity of the marker, I define equivalence of the phonological form over time not as a strict phonemic match, but allowing for predictable sound change, including changes in boundness, since these have not been found to predictably correlate with changes in meaning or reference. Also, for the duration of the shift, the marker was always a part of the person marking system. I only track changes a person marking morpheme undergoes after it is part of the paradigm. PMRS then is defined to exclude changes from sources outside the marking paradigm such as the common demonstrative-to-pronoun pathway (Van Gelderen 2011) or Thai personal pronouns from nominal sources like *servant* or *slave*. This section will discuss person marking features and notions of boundness in person marking impacting the definition of PMRS above.

1.2.1 Person Marking: Features

Since PMRS are diachronic shifts in the reference of person markers, it is necessary to first define person marking. Person markers are linguistic elements, the primary purpose of which is to act indexically to direct towards and reference speech act participants (Cysouw 2003:5). This idea of indexicality can be traced to Jespersen's (1965) use of 'shifters' where the shifting quality refers to the deictic property of the person markers that locates the identity of the discourse participants. At least 1st and 2nd person markers are taken to be true indexical expressions (Fillmore 1971). They are indexical in the sense that their felicitous use hinges on both the identity of the person using them and the utterance-specific discourse roles of the entities being referred to. The referent in a given context depends on speaker-centered deixis without regard to the actual context-independent identity of the referenced person. In other words, it does not matter if it is Bill, Jane or John speaking; they may all use the pronoun 'I' when refering to themself and 'you' to refer to the person they are addressing. Defined as a grammatical category then, person markers are those elements dedicated to encoding features that (at least) express the discourse roles of speaker, addressee and non-participant, constituting a closed contrastive paradigm[1].

The features setting one person marker apart from another are defined by their contrasts with each other within that closed paradigm. Gathering at least a working list of the possible set of features is essential to defining when PMRS takes place. Although formalization or naming conventions for the instantiations of these features may differ (even considerably) across sub-disciplines and authors, there is general agreement about classificatory terms such as PERSON, NUMBER, and GENDER (Harley & Ritter 2002:483). PERSON refers to features related to the

[1] Of course this may be complicated by further indexicality, such as the context dependent choice of possible first and second person forms in Japanese depending on the relative social standing between the speaker and hearer. These complications notwithstanding, the use of discourse role indexicality is still a basic part of the speaker choice.

discourse roles mentioned above and is the fundamental, and apparently universal, feature set defining person marking. NUMBER is self-explanatory and refers to the size of the group referenced, including distinction like atomic, sum, group, associative, and other more specific number designations like dual, trial, paucal, etc. GENDER is a more complex notion since it is commonly defined to include not only languages that express sex-based distinctions in pronouns but all other nominal classificatory schemes including both semantic and 'formal' systems (see Corbett 1991).

Beginning with PERSON, there appears to be a universal distinction made between speech-act participants (SAP), including the speaker and addressee, and those external to that group or non-SAP (Lyons 1977:638). Furthermore, in some languages, morphology instead distinguishes the speaker from the others with homophony between the markers for addressee and non-SAP. Compare the 1/2 homophony in Waskia in (2) to the 2/3 homophony seen in Balanta in (3).

(2) SAP VS. NON-SAP in WASKIA Ross & Paol (1978)

[1PST	2PST]	3PST
-em	*-em*	*-am*

(3) SPEAKER VS. ADDRESSEE/NON-SAP in BALANTA Fudeman (1999:56)

1IRR	[2IRR	3IRR]
í-	*ú-*	*ú-*

On the upper limit, the largest surveys of person marking available find no evidence for more distinctions in discourse roles than between speaker (+/- associates/group), addressee (+/- associates/group), and non-SAP (+/- associates/group) (Siewierska 2004:75). These roles are commonly referred to as first (1), second (2), and third (3) person respectively. The data provide a narrow range of possible PERSON features used in known natural languages, that is: a lower limit of 2 (SAP vs. non-SAP or 1 vs. 2/3) and a higher limit of 3 (speaker, addressee, and non-SAP).

Combinations of these features can produce an emergent featural phenomenon called *clusivity*. For example, a number of languages make a distinction between 1+3, called exclusive

since it excludes the addressee, and 1+2, called inclusive since it includes the addressee with the speaker. Addressee-focused clusivity, which would contrast 2+2 and 2+3, is controversial and the small amount of supposed attestations are argued to be mis-designations (Simon 2005).

(4) CLUSIVITY in ANGUTHIMRI NOMINATIVE PRONOUNS Crowley (1981:170)

	SG	DU	PL	
1EXCL	aŋu	nini	ɲaŋa	[SPEAKER (+ non-SAP)]
1INCL		lægi	bwi	[SPEAKER + ADDRESSEE]
2	dʳu	pi	ɽeːɣe	
3	lu	lwepi	amɽa	

NUMBER has more diversity but does not appear to be completely unbounded. Although often taken to be a universal feature of person marking (Greenberg 1963:96, Ingram 1978:327), there is some evidence that NUMBER distinctions may not be utilized at all in the pronominal systems of some languages (e.g. Pirahã: Everett (1986); Golin: Foley (2018)). The most common distinction for this feature is a two-way singular/plural dichotomy. Some further expansions of the system include dual, trial, quadral, and paucal. In some cases involving clusivity, the system may be better described as minimal versus augmented. Some have argued that pronominal number is different than nominal number, involving a "plurality of types" rather than of entities (Cysouw 2003, Helmbrecht 2015:177). This problem will be taken up in more detail in Chapter 3.

(5) "MAXIMAL" NUMBER SYSTEM in SURSURUNGA Hutchisson (1986:5)[2]

	SG	DU	TRL	Quadral	PL
1EXCL	iau	giur	gimtul	gimhat	gim
1INCL		gitar	gittul	githat	git
2	iáu	gaur	gamtul	gamhat	gam
3	-i/on/ái	diar	ditul	dihat	di'wuna

Given that GENDER features are used for contrast, the lower limit, if the language utilizes this at all, is logically 2. However, an upper limit has not been found and languages expressing GENDER show considerable diversity (Siewierska 2004:103). This includes class distinctions based

[2] Reproduced from Siewierska (2004:91).

on animacy, size, shape, etc. It is important to note that these larger classification systems apply primarily to non-persons. When gender does apply to personal pronouns, it is usually 'natural' or sex-based gender divided into 'masculine', 'feminine', and at times a third category (Corbett 1991:241-248). Even sex-based gender primarily applies to third person (Siewierska 2013). When it does distinguish forms in 1st and 2nd person, with vanishingly few exceptions, these systems follow Greenberg's 44th Universal: "If a language has gender distinctions in the first person, it always has gender distinctions in the second or third person or in both" (1963: 96).

(6) GENDERED PERSONAL PRONOUNS IN NGALA Laycock (1965:133)[3]

	SG	DU	PL
1.MASC	wn	ʌyn	nan
1.FEM	ñən		
2.MASC	mən	ən	gwn
2.FEM	yn		
3.MASC	kər	kəbər	rʌr
3.FEM	yn		

Beyond the uses mentioned above, there are some confounding uses of pronominal features that if taken as equal to them would call into question whether the distinctions made above are fundamental. These include for example 'generic you', where an ostensibly 2nd person marker is used for impersonal reference, 'pluralis majestis', in which a singular entity uses a plural pronoun, along with many other 'non-literal' or 'non-stereotypical' uses (Helmbrecht 2015). 'Non-literal' use of person markers is common in natural language (Filimonova 2005:x). However, these uses are not random and, crucially, rely on the literal sense of the marker, defined by the set of features I have outlined above, therefore I will not track these uses as fundamental parts of the person marker themselves.

[3] Reproduced from Siewierska (2013).

As a final note on person marking terminology, for this dissertation, I have chosen, following Siewierska (2004:2), to use the term person marker or person form as an encompassing category instead of pronoun. This preference should not be taken as a theoretical claim but a convenient side-stepping of the difficulties associated with the more theoretically-charged term 'pronoun' (see discussion in Heine & Song 2010:118).

1.2.2 Person Marking: Boundness

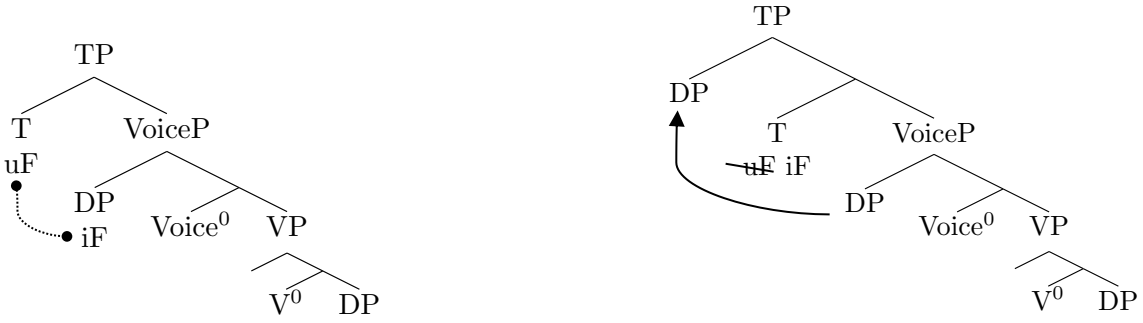
Many models of person marking differ on whether different types of person markers across the spectrum of boundness instantiate the same phenomenon. Functionalist literature often argues for or assumes unity (see discussion on boundness in Siewierska 2004:40-46) while Generative literature tends to divide them. Most Generative models, frameworks, and programs propose that agreement is the result of an operation in which features in one part of the tree are located and copied to another part of the derivation.

Within the Minimalist Program, this takes the form of the operation Agree through feature checking (Chomsky 2000). In Chomsky (1993) and onward, lexical items come into the derivation with features that must be checked. These features can be Weak or Strong. Strong features are uninterpretable at either the interface with motor expression (PF) or semantic interpretation (LF) (Chomsky 1995). The operations Movement and Agree serve to satisfy features on either the goal or target by bringing them into relationships with other syntactic objects with features that satisfy the interpretability requirements. Only when an Agree relationship holds between a functional head F (the goal) and an XP (the target) does movement of XP to the specifier of F occur (Chomsky 2000; Chomsky 2001).

The application of this to person marking is simple (Baker 2008). A head like T (Tense) or Asp (Aspect) may be merged with uninterpretable ϕ- (person) features. It then probes the tree for

an XP with features that satisfy those requirements, finding it in the form of a DP, whether a noun or pronoun. This establishes the Agree relationship and the features are now present on the probing head when the derivation is sent to the interfaces. At PF this means that the features may trigger a distinct phonological realization for both the pronoun itself and on the agreeing head where the features are now present.

Figure 2. Agree and Copy to SpecTP



Thus for example, in the Spanish utterance *Yo leo los libros* 'I read the books', the verb word can be divided up into *le-* 'read' and *-o* '1SG.PRES', where the *-o* affix conveys both tense and the features of the pronoun *yo* 'I' or [1SG]. In this framework, the T head merged with uF for the person and number features and probing, found the DP in SpecVoiceP with the interpretable feature set [1,SG]. When pronounced, the feature set is produced both as the pronoun *yo* and as agreement *-o* on the present tensed verb.

(7) SPANISH (ROMANCE; INDO-EUROPEAN)

Yo	*le-o*	*los*	*libro-s*
1SG.INDEP	read-**1SG**.PRES	DEF.MASC.PL	book-PL

'I read/am reading the books'

Similar proposals have been made for clitics except that the moved copy of the pronoun (whatever size the syntactic unit may be) then reduces and rebrackets with the probing head (Matushansky 2006), producing one phonological word in the PF output (see Baker & Kramer 2016:3, Nevins 2011, Preminger 2009, and discussion in Anagnostopoulou 2016: 47-50). These

analyses align clitics more with pronouns than merely the PF exponence of a satisfied Agree relationship on the goal.

These differences between agreement and pronouns in Generative models do not however greatly impact this dissertation. Regardless of the framework, if a given person form is phonologically and/or morpho-syntactically distinct from another, and this difference can be used by a speaker to determine a difference in the feature values of the referent, then at some point along the line of derivation, those features must be contrasting, whether immediately as in Functionalist models or through a chain of reference in Generative ones.

From the point of view of this dissertation then, models that posit some bound person forms as 'non-pronominal' exponence do not impact whether a given change in reference is PMRS or not, they simply add steps to what is meant by 'reference'. In any framework, if a form, whether bound or not, ceases to be used in some reference contexts or gains reference contexts, then some reference relationship has shifted. The only place where this distinction does need to be taken into account are cases where diachronic change results in homophony between the realization of different feature sets *only* in the agreement and not in the accompanying independent pronouns (or vice versa). This is usually due to paradigm leveling or other forms of epiphenomenal 'shifting' and is taken up in detail in Section 2.2.1.

Person marking then is defined broadly for this dissertation to include all markers of (at least) PERSON and NUMBER features, along the entire boundness spectrum from free to bound, including everything from independent pronouns to clitic and affixal 'agreement'. This corresponds to the definition of 'pronoun' used in Helmbrecht (2015) and Siewierska (2004) but contra Song and Heine (2010), which only includes free pronouns. What is important is the

connection between the form that is used and the set of referents it can felicitously be used with in speech contexts.

1.3 Diachronic Change in Meaning

There are two competing frameworks of diachronic syntactic and semantic change that apply to our discussion of reference shifts in person marking. These I will refer to as Smooth versus Discrete change and they correspond roughly to Functionalist and Formalist approaches to syntax and semantics respectively.

1.3.1 Smooth Change

Beginning in the 1980s, American Functionalism put forward the idea that the majority of what we see in language variability is the accidental end result of processes of historical change that can largely be subsumed under the umbrella term grammaticalization (sometimes grammaticization). For this approach, there is no underlying structure to linguistic utterances besides the phonological string and its associated semantic web of meanings. Frequency of use and correlation, both on the phonological and morpho-semantic sides, is the main underlying motivator both of stability and change (Bybee 2006). All apparent syntactic structure is a result of general memory mechanisms like chunking in which long sequences that cannot be accurately stored in memory as such are divided into digestible pieces for a compromise between short and long-term memory (Givón 1984). The important notion for this dissertation is that rather than discrete packages of features, lexemes may come in flavors. A progressive aspect morpheme may, for example, have grammaticalized from a verb for going or walking. Not only may the synchronic morpheme have the 'grammaticalized' tense meaning but it may also retain 'flavors' of its original sense of motion.

1.3.2 Discrete Change

Conversely on the side of Discrete change, Formalists (often Generativists) model syntax as rules governing the hierarchical combination of lexemes into propositions. These approaches posit lexemes as discrete packages of features that are combined in syntax and build semantic meaning compositionally. The task of the learner is to take phonological strings and fit them to a (more or less) constrained set of possible syntactic compositions given the lexemes that are present within. This means that one of the primary factors driving diachronic change in these models is ambiguity-driven reanalysis (Harris & Campbell 1995). In other words, a learner or hearer is presented with a string that is ambiguous between two (or more) underlying structures that fit with context.[4] The hearer has a choice as to which structure to posit. This choice may lead to a different analysis than the speaker, resulting in language shift. This also applies to semantics as well since it is compositional (Eckardt 2012). Ambiguity in the interpretation of a given part of the phonological string may be triggered by contextual ambiguity or usage-based ambiguity.

1.3.3 Some Specific Sources of Change

Smooth or Discrete approaches explain the trajectory and sources of semantic change differently. Here I will discuss three well-studied pathways of change and briefly how the two frameworks make sense of them.

The first is semantic 'bleaching', which has also been referred to as 'desemanticization' (Claudi & Heine 1986), semantic 'weakening' (Traugott 1988), or semantic 'generalization'

[4] It should be made clear here that claims about the exact nature of the hearers that drive reanalysis, whether it occurs during first language acquisition, second language acquisition, or later life reanalysis of one's native language, or about the personal or community thresholds that must be reached in order for a reanalysis to take hold and become a transmittable part of the language inheritance are beyond the scope of this dissertation. Throughout, the term 'hearer' is used broadly and naively, as in Eckardt (2012) and other preceding literature on reanalysis, without making a claim about the particular circumstances under which a 'hearer' might reanalyze, besides the abovementioned combination of semantic and pragmatic pressures. As such, I will avoid the use of terms like 'language learner' in favor of 'hearer'.

(Eckardt 2011), is the observation that during grammaticalization items often appear to lose meaning, even as they gain new uses, retaining only those pieces of the original intent that allow them to serve their new more grammatical function. The output meaning of 'bleaching' must be a subset of the original meaning. For Smooth change, bleaching simply involves the weakening over time of some of the connections between a phonological string and a part of its semantic correlate. For a Discrete change approach, bleaching involves the distinct loss of a subset of a lexeme's features. However, informal bleaching models often lack a firm delineation between the semantic contibution of a lexeme to the composition and its pragmatic content in context. This is a problem of formalization in the representation of meaning. When we see a novel use for an item in the historical record, how do we know whether this new meaning was a 'part' of the old meaning? Is an implicature a 'part' of an item's denotation? For instance in the case of the common grammaticalization path from verbs like *go* to FUT, in what way would we say that FUT is a part of the meaning of the lexical verb *go*? Is it part of the denotation, an entailed meaning, or some implicature given certain context? Finally, most approaches that invoke bleaching remain informal and imprecise in their denotation of semantic meaning. Without formal ways to represent meaning, it has been noted (Eckardt 2012) that the difference between the source and output meanings in a given change remains nebulous and it is difficult to say what has changed, how much, or whether it was a gain, a loss, or neutral.

The second source of meaning change to discuss is Invited Inferencing (Traugott & Dasher 2002). Invited Inferencing Theory of Semantic Change posits semantic strengthening as coming from outside of a source item's coded semantics in the pragmatic content associated with it. "[W]hat starts life ... as a *conversational* implicature [can] become conventional" (Grice 1975). Semantic content (coded noncancelable mapping between form and meaning) and pragmatic

content (cancelable associations between the item and an intent) differ and new meaning can be recruited from pragmatic associations. Pragmatic content is divided between conversational implicatures, similar to Levinson's (1995) 'one-off' utterance token meanings, and conventionalized implicatures, which here are commonly implied meanings but may still be cancelled. In this view, semantic change proceeds as outlined in **Figure 3** and can be monitored over time by tracking a consistent phonological form *f* through the different stages of the process. 'P' stands for the original meaning and 'q' the new meaning. In stage 2, 'q' is an implicature of 'p', while in Stage 3 it is conventionalized. Finally, if the original meaning is lost, whether for dependent (e.g. avoid homophony) or independent (e.g. language shift) reasons, the new meaning is all that is left and is 'coded' in the semantics.

Figure 3. Stages in Semantic Change: from Traugott (2011:2)[5]

	Stage 1	Stage 2	Stage 3	Stage 4
Form	*f*	*f*	*f*	*f*
Meaning	'p'	'p' (+> 'q')	'p', 'q'	'q'

Finally, throughout the 1980s and 1990s[6], research on grammaticalization saw metaphor as the key source of semantic change. The reason for application of metaphor to the grammar was that since more 'grammatical' concepts are often conceived of as more abstract, not being easily understood in their own terms, a common strategy is to speak about these abstract concepts metaphorically in terms that are 'close[er] to human experience' (Claudi & Heine 1986:328). To take the example of *go* > FUT again, a metaphoric approach would say that this change took place based on a metaphoric extension from movement through space to movement through time. Compare the common path of *come* > PERF and other 'spacio-temporal metaphors' (Traugott 1988:408). In a Smooth continuous approach to semantic change, the line between semantic and

[5] Based in turn on Enfield 2003:29.
[6] See for example: Sweetser (1990), Heine, Claudi & Hunnemeyer (1991), and Bybee, Perkins & Pagliuca (1994).

pragmatic content is constantly renegotiated. In formal models, the two are separate and the conventionalization of implicatures is a step-wise reanalysis from one meaning to the next.

1.3.4 Modern formal models of semantic change

While these outlined models accounted for cases of both meaning 'loss' and 'gain' and came up with what appear to be testable ideas about the sources of resultant semantic meaning at the end of a given change, they remain difficult to apply. In 'bleaching' the resulting content was always there. For invited inferencing, the new content began life as an implicature that somehow became the primary expressive purpose of the use of the morph. But one of the primary difficulties with evaluating these models in new arenas like PMRS lies in defining exactly what (if anything) was lost or gained.

Semantic formalists have recently highlighted and tackled this issue and in the process exposed a new set of sources for the materiel of semantic change. The key notion of these formalisms is that semantic change is equivalent to structural semantic reanalysis (Eckardt 2011, 2012). The most basic observation that can be made about them is that a phonological form has remapped from one reading to another. What drives the reanalysis is a mismatch between the pragmatic presuppositions of a speaker and hearer.

> "Assume that *u* [the utterance] in the old sense ϕ_{old} requires unbacked presuppositions. The speaker makes his utterance under the assumption that the interpreter will accommodate them. The interpreter may see this possibility but finds the required accommodations implausible. As an interpretive alternative, H [the hearer] hypothesizes a new message ϕ_{new}, leading to reanalysis." (Eckardt 2012:2688)

In other words, hearers cease accommodating unbacked presuppositions (Schwenter & Waltereit 2010). Intriguingly, after examining several cases of semantic reanalysis in formalized detail, Eckardt claims that a new meaning 'may come about as [the old meaning] plus implicatures,' as with previous models, '[but] may also come about by interpretative processes outside the core language system, in the extreme case by chance guessing' (Eckardt 2011:10 and 2012:2687). In other words, 'any salient possible denotation can be coupled with an item' (Eckardt 2012:2695). This is a radical loosening of the possible sources of semantic content compared to previous proposals.

However, while this freedom of source for semantic content may be true for the reanalysis of many lexical items, there is evidence that the process of recruitment is much more constrained for core pieces of the syntactic structure in functional domains like tense, aspect, and negation (Deo 2015); and thus for person marking as well. Citing common examples like the Jespersen cycle along with new evidence from aspectual changes like PROGRESSIVE > IMPERFECTIVE, Deo shows that the relationships between the sources and goals of these changes involve asymmetric entailment between members of privative Strong/Weak dyads as outlined in Horn (2007) and later work. Deo (2009) and (2015) show that when one exhaustively and formally denotes the semantics of aspects like progressive and the imperfective, it becomes clear that 'PROG is a "semantically narrower" version of IMPF' (Deo 2015:15) when eventive and together they constitute a private dyad of the form <S,W> as <PROG, IMPF>.

As in other quantitative scales (see Horn 2004), not only does S entail W but W also implicates ¬S and hearers must negotiate based on context what the choice of using one form or another means for a particular utterance.

(8) HORN SCALES (Horn 2004, 2007, Deo 2015)

<S,W>	Strong/Weak dyad
S → W	Use of Strong form entails Weak meaning
W +> ¬S	Use of Weak form implicates Strong meaning cannot apply

Deo claims that this relationship underpins the possibility of reanalysis. Normally language users regularly acquire the pattern that one should only use the strong form S when the specific strong meaning requirements are met and only use the more general weak form W when one wants to mean ¬S. However, since the strong form S is the more semantically specific form, users will have to decide whether a specific instance licenses the use of S or just W. This negotiation naturally (according to a game theoretical analysis) leads to some speakers using S when others hearing would have used W. Reanalysis occurs when a user (and then a population of users) mislearns this pattern based on this mismatch. Since the weak meaning (W) is true everywhere S can be used (given that S entails W), these users reanalyze utterances with the form S that were originally meant to invoke the strong meaning S as just having the weaker meaning W. This results in the hypothesis of functional semantic change outlined below.

Figure 4. Hypothesis of Semantic Change (Deo 2015:47)

a. A semantic grammaticalization path in the functional domain must be structurally underpinned by some privative contrast between a specific and a general meaning.

b. Changes in functional domains characterized by a privative semantic contrast are cyclic in nature because increasing frequencies of (some) strategies in the population lead to increased probability of mis-learning out of that strategy.

The directionality of the changes stem from the underlying relationship between members of a privative dyad. Given that for any private dyad <S,W>, S entails W but W does not entail S, if reanalysis in the functional domain only recruits novel meanings that are entailed by the original usage then only one direction of change between S and W should be observed: S > W.

The question of which model best describes PMRS must wait until after PMRS is more fully surveyed (Chapter 2) and formalized (Chapter 3). Only then can we clearly see exactly what is shifting in the meaning of these markers and tell whether the shift was discrete or smooth, loss or gain of semantic material, and exactly what (if anything) constrains its directionality and the sources of semantic content in the final result. This issue will be taken up in Chapter 4.

1.4 Previous Literature

Finally, before delving into the current study of PMRS, it is essential to take note of work that has come before on the subject. Papers previously published on shifts in person marking reference include Song and Heine (2010), Heine and Song (2011), Helmbrecht (2015), and Song and Heine (2016). All of these papers also have other primary concerns beyond PMRS. Helmbrecht (2015) was concerned with synchronic non-stereotypical uses of pronouns and which, if any, translated into diachronic changes. The other three papers focus on the sources of personal pronouns. The main conceptual sources of personal pronouns are (Song and Heine 2010:121):

- Nominal concepts (e.g. 'slave' in South Asian languages)
- Spatial deixis (e.g. 'here/this')
- Identifiers (reflexives, intensifiers, and identity pronouns like 'the same')
- Pluralization (Plural > singular)
- Shift in Deixis (3rd person > local [1st or 2nd person] pronoun)

Only two of these sources are shifts in reference to existing person markers, namely, pluralization and shifts in deixis. Pluralization, or *plurification* as it is called in Heine and Song (2011) as well as Song and Heine (2016), involves shifting from plural to singular reference. Mostly the examples found by the authors were from 3PL > 2SG and 2PL > 2SG (Song and Heine 2010:130). Some 1PL > 1SG examples were found ('Royal we' in Ethiopic, Khmer, & Thai) but

questions remained as to whether these were diachronic changes or synchronic social uses. In other words, when the speaker uses a plural form in a presumably singular context, are they still inviting the hearer to parse it as 'plural' for some synchronic social purpose or are they truly aiming for a 'singular' interpretation, suggesting a true diachronic change? What the authors refer to as Shift in Deixis involves shifting from 3rd person reference into a 1st or 2nd person pronoun. This was claimed to be the 'major' source of new personal (1st and 2nd person) pronouns.

The purpose of Helmbrecht (2015) was to uncover 'non-stereotypical' uses of personal pronouns synchronically and see if they had the ability to last as diachronic changes. The primary method was to compare reconstructed proto-languages to modern varieties, unlike the other papers which relied much more on historically documented changes. The results for the diachronic changes are given below.

Table 1. Diachronic Results (Helmbrecht 2015)

NUMBER	PERSON
1PL > 1DUAL	1PL > 2SG
1PL > 1SG	1PL.INCL > 2SG.HON
1PL > 1DUAL.INCL	2PL > 1PL.INCL[7]
1PL.INCL > 1DUAL.INCL	3PL > 1PL[1]
1PL.INCL > 1SG	3PL > 2PL.HON
2PL > 2DUAL	3PL > 2SG.HON
2PL > 2SG.HON	3 > 1PL.EXCL
2PL > 2 > 2SG	3SG > 2SG.HON
3PL > 3DUAL	
3PL > 3SG	
3PL > 3SG.HON	
3PL > 3SG	

In addition, two proposals were put forward about the general directionality of the shifts seen (Helmbrecht 2015:188):

[7] This proposed 2PL > 1PL.INCL shift is questionable. The author puts the candidate languages, Sanuma (Yamomani, Brazil) and Tiwi (isolate, Australia), with question marks and does not mention these examples again. Also the 2PL > 1PL proposed for Kiowa from PKT is on weak ground (p.c. Andrew McKenzie 2018) and has a question mark in the author's work. These shifts will not be used in the analysis portion of this paper.

1. Number shifts proceed plural-to-singular, or 'less specific to more specific'

2. Person shifts only go up the person hierarchy 3 > 2 > 1.

Again this claim was based on specificity/accessibility in speech act, with the speaker being the most specific/accessible person in the speech act and someone who is not the speaker or addressee as the least. However, counterexamples to Proposal 2 can be found even in the data cited by the author, specifically shifts from 1st to 2nd person in both Austronesian and Uto-Aztecan.

(9) INCLUSIVE TO 2SG
Proto-Austronesian: **i-(k)ita* '1PL.INCL' (Blust 2009)
S/SE Sulawesi Malay '2SG.HON' (Donohue and Smith 1998:69-71)

(10) INCLUSIVE TO 2SG
Proto-Uto-Aztecan: **=ta* '1PL' (Langacker 1977b:126)
Proto-Takic **-ta* '2SG' (Langacker 1977a:99)

1.5 Conclusion

To summarize, previous literature identified a strong general trend from plural to singular number and a possible tendency, although with caveats, for shifting up the person hierarchy. What does this mean for how PMRS fits into proposed models of language change and what does that mean for processes of reanalysis in general? The next chapters of this dissertation explore this question in the following ways. First, in Chapter 2 the simple set of features outlined in this chapter are applied to a wider survey of PMRS to come up with a more complete picture of the set of possible types of reference shifts taking place. Chapter 3 offers a more exacting formulation of the nature of person marking features and what exactly is taking place on a featural level during the different kinds of PMRS. Finally, Chapter 4 extends those findings to other aspects of person marking and compares the details of those findings to the models of reanalysis outlined in previous literature.

Chapter 2: Types of PMRS

2.1 Introduction

In this chapter I develop a more comprehensive typology of PMRS by adopting strict criteria for inclusion in the set, expanding the survey to exhaustivity within a set of well-reconstructed families, and then examining example shifts in fine detail where historic or reconstructed data allow. The first conclusion of this exercise is that if PMR shifts are viewed as one phenomenon, then they may be largely unconstrained due to the existence of counter-examples to almost every claim of directionality. However, when these shifts are looked at in more detail, meaningful differences arise allowing us to split the shifts into two categories: dependent shifts and independent shifts. This chapter provides evidence for the existence of both types as well as ideas about their respective triggers and outcomes.

2.2 Surveying PMRS Broadly

In order to establish more completely the set of posssible feature shifts that make up PMRS, we must first examine the methodology used to identify and classify them. After adopting consistent criteria, we can apply them in exhaustive surveys.

2.2.1 Criteria for identifying PMRS

The previous studies addressing shifts in person marking reference included both examples comparing written usages across time and those lacking a written record to track, which is the case for most languages of the world. Including examples without a written record requires the survey to compare the use of a person marker to reconstructions for the language family, instead of comparing to some other documented use at an earlier date. Implicit in the inclusion of these examples is the assumption that the reconstruction used constitutes a valid hypothetical earlier

version of the languages in the family; bringing us to our first criterion for sorting the examples of previous literature and surveying language families.

Criterion 1: High confidence reconstructed proto-system

Evidence for high confidence will be common citation by specialists and historical linguists working in that family and adherence to the generally accepted comparative methodology. Language specialists are the most likely to recognize if a reconstruction is based on faulty data, dubious hypothetical morphemic composition, and many other common pitfalls in reconstruction. The next two criteria have to do with how we define PMRS.

Criterion 2: Consistent form but change in reference

This criterion refers to morpho-phonological consistency, allowing for sound change and changes in boundness but not the additon of new morphemic material. Sound change may be regular or irregular, including analogical, as long as the changes themselves were in no way conceptualized as adding morphological matter or contributing semantically. Consistency does not exclude changes in boundness. A plethora of examples can be brought to bear showing that the grand majority of phonological changes and changes in boundness (whether to more bound or more free) have no bearing on changes in reference. Vice versa, changes in reference often occur with no changes to the form at all.

Criterion 3: Exclude paradigmatic leveling and epiphenomenal "shifting"

Paradigm leveling is an analogical process driven by forces such as uniformity. It usually occurs when by chance a minority of the forms in a paradigm differ from the form of the rest, which are uniform (Kuryłowicz 1947). In paradigm changes that result in a decrease of paradigmatic contrast, it can sometimes be difficult to tell the difference between PMRS and paradigm leveling. One way to tell in languages with both free pronouns and agreement is to see

if the pronouns and agreement changed together. If so, then this is probably an example of PMRS, where an entire pronoun/agreement set has shifted reference from one set of features to another. If only the agreement changes, and especially if it changes to regularize with a form that is more frequent or feature-less, then this is not counted as PMRS.

An example of this sort of paradigm leveling exists in some dialects of American English that have spread 3rd person singular present tense *-s* to all persons and numbers. So speakers of these varieties would say *we walk-s to the store* as well as *he walk-s to the store.* However, the 3rd person pronouns themselves were not spread with it and each person/number feature combination still retains its specific pronoun. In paradigm-leveling cases involving person marking, the spread of a form more often points to its complete reanalysis from marking person/number to something else entirely. In this English case, it is probable that *-s* came to be parsed as an 'optional' [PRESENT] tense marker only, and was able to be used with other persons, first optionally, then obligatorilly. Given that telling leveling from PRMS requires intra-paradigm comparison, evidence for or against leveling will have to be examined on a language-by-language basis.

An example of epiphenomenal 'shifting' is 3 > 2 agreement shift seen in languages like German and Spanish. Spanish had a paradigm of optional free pronouns with obligatory explicit verbal agreement of the person and number features. Third person agreement was seen with all non-pronominal NPs. Beginning in the 14th century, an NP *vuestra merced* 'your mercy/grace' began to be used as an indirect form of 2nd person address in formal settings (see discussion in de Gonge, 2005). Being a full NP, this form of address triggered 3rd person singular agreement. By the 17th century, this practice had grammaticalized into the 2nd singular honorific pronoun *usted*. The shift from 3 > 2 is epiphenomenal because it came as a result of a non-PMR shift as defined in Chapter 1; viz. as reference shifts involving morphemes already within the person marking

system. Instead, in this and similar cases, extra-systemic materiel in the form of a noun (phrase) was grammaticalized into the person marking system bringing its 3rd person agreement with it.

A few other criteria will also serve to narrow the scope of the current study and create a foundation for future work.

> **Criterion 4:** Exclude person marking systems in which forms reference more than one grammatical role at once.

This excludes language families with specialized markers for specific combinations of arguments with different θ-roles. What may be included are personal pronouns standing in the place of just one thematic role and bound person markers that reference only one such NP, even if it is a coordinate NP, at a time. Excluded are undecomposable portmanteau markers and inverse marking. The problem lies in the complex nature of interaction of these markers within a paradigm and our ability to say what features are changing over time. So for instance, Kiowa (cited in Helmbrecht 2015) utilizes a wide variety of suppletive pronominals for specific combinations of subjects and objects. If we analyze Kiowa suppletive portmanteau pronouns truth-conditionally, we must take into account both arguments. If a shift occurs, did it happen in relation to just the features that shifted or also in their relation to the other argument? What predictions can be made in those circumstances?

Perhaps the reference shifts are as straightforward as they seem and future work can elucidate on these types of marking. However, for this study all proto-languages that exhibit these types of marking are not examined for now (e.g. direct/inverse marking in Proto-Mixe-Zoqean). If a language developed such marking but the proto-language does not have it, only that language's examples must be excluded. Although most of the examples from previous literature also meet this criterion, sorting them does exlude (for now) a few.

Criterion 5: Only include data from two language families per continent

The last criterion is specific to the exhaustive survey in this paper and is only included for reasons of practicality. The language families of Europe are a special exlusion from the survey due to their ubiquity in other work on the diachrony of person reference.

2.2.2 Exhaustive Shift Survey

Adopting the above criteria further allows us to perform exhaustive surveys of the person marking systems of language families boasting well-established reconstructed proto-languages while making clear the limitations of the present study for future work. Such an exhaustive survey is also of course constrained by the availability and detail of descriptions of the person markers in the modern or attested varieties. Ten families were chosen for this survey based on this criteria.[8] These are (in alphabetical order): Arawakan, Bantu, Dravidian, Mayan, Mongolic, Paman (Pama-Nyungan), Panoan, Semitic, Southern Pama-Nyngan, and Uto-Aztecan. In total, 430 language varieties were surveyed. Details about the language families, their reconstructions, and the specific languages and citations used for the survey can be found in Appendix A.

2.2.3 Survey Results

The results of the survey are displayed in two ways. First, the results are organized by family in **Table 2**. Then **Table 3**, **Table 4**, and **Table 5** show the shifts organized by what features shifted, giving the names of the specific languages in each family that underwent each kind of shift. Family names are abbreviated: Arawakan (A), Bantu (B), Dravidian (D), Mayan (Ma), Mongolic (Mo), Paman (Pm), Panoan (Pn), Semitic (S), Southern Pama-Nyungan (SP), and Uto-Aztecan (UA).

[8] Totonacan-Tepehuan data was not included here despite its inclusion in Bates (2018). Personal communication with experts in that family showed that the reconstruction used there is constroversial. Specifically the morphemic breakdown of the Tepehuan independent 1st and 2nd person singulars as including plural morphemes suggesting a PL > SG shift, only impacting the independent pronouns, may not hold up under further scrutiny.

Table 2. PMRS by Family

Family	# Surveyed	# w/ PMRS	PMRS Types			
Africa						
Bantu	173	7	1PL > 1 1SG > (1 >) 1PL		2PL > 2 2SG > 2 2SG > (2 >) 2PL	
Semitic	54	7	1PL > 1 > 1SG			
Asia						
Dravidian	23	11	1PL > 1 > 1SG 1PL > 1PL.INCL 1PL.INCL > 1PL	1PL.EXCL > 1PL 1PL > 1PL.EXCL 1SG > (1 >) 1PL	2PL > 2 > 2SG	
Mongolic	13	12	1PL > 1 > 1SG 1PL > 1PL.INCL 1PL > 1PL.EXCL	1PL.INCL > 1PL	2PL > 2	
Australia						
Paman	22	17	1PL > 1PL.EXCL 1PL > 1PL.INCL 1PL.EXCL > 1DUAL.EXCL	1DUAL > 1DUAL.INCL 1DUAL > 1DUAL.EXCL	2PL > (2) > 2SG	3DUAL > 3PL
Southern Pama-Nyungan	21	18	1PL > 1PL.EXCL 1PL > 1PL.INCL 1PL.INCL > 1PL	1DUAL > 1DUAL.INCL	2PL > 2SG	3PL > 2SG(HON) 3DUAL > 2DUAL
North America						
Mayan	31	14	1PL > 1 > 1SG 1PL > 1PL.INCL 1PL > 1PL.EXCL	1PL.INCL > 1DUAL.INCL 1PL.INCL > 1DUAL.EXCL 1PL > 1SG		3 > 2
Uto-Aztecan	36	24	1PL > 1PL.INCL 1PL.INCL >1DUAL.INCL 1PL > 1PL/2SG	1PL/2SG > 2SG		3PL > 2PL 3SG > 2SG
South America						
Arawakan	40	6	1PL > 1PL.INCL 1PL > 1PL.EXCL 1PL.INCL > 1DUAL.INCL	IMPERSONAL > 1PL.INCL		
Panoan	17	5	1PL > 1SG 1PL > 1PL.INCL 1PL.INCL > 1DUAL.INCL	1DUAL.INCL > 1PAUC.INCL	2PL > 2DUAL	3PL > 3 3PL > 3DUAL
Total	**430**	**121**				

Table 3. PMRS by Shifting Features (1st Person)

Shift	**Varieties**
1PL > 1PL.INCL	Palikúr (A), Mawayana (A), Resigaro (A), Ashéninka (A), Matsigenka (A), Tamil (D), Akatek (Ma), Chuj (Ma), Q'anjob'al (Ma), Mam (Ma), Teko (Ma), Moghol (Mo), Oirat (Mo), Bonan (Mo), Kuku Yalanji (Pm), Uradhi (Pm), Bungandidj (SP), Warrnambool (SP), Iskonawa (Pn), Kashibo-Kakataibo (Pn), Comanche (UA), Isthmus Nahuatl (UA), Kawaiisu (UA), Mono (UA), Shoshoni (UA), Timbisha (UA), Ute (UA)
1PL > 1PL.EXCL	Tariana (A), Lakantun (Ma), Itza' (Ma), Mocho' (Ma), Mopan (Ma), Yukatek (Ma), (PMo), Shira Yughur (Mo), Alngitt (Pm), Anguthimri (Pm), Aritinngithigh (Pm), Awngthim (Pm), Ayabadhu (Pm), Kugu-Muminh (Pm), Linngittigh (Pm), Mbiywom (Pm), Ntra'ngitt (Pm), Ngkott (Pm), Wik-Mungknh (Pm), Wik-Ngathan (Pm), Umpila (Pm), Madhi-Madhi (SP), Wemba-Wemba (SP), Yabula-Yabula (SP), Yaraldi (SP), Yota-Yota (SP)
1PL > 1DUAL	Northern Paiute (UA)
1PL > 1	Pove (B)
1PL > (1 >) 1SG	Gondi (D), Ch'ol (Ma), Chontal (Ma), Tojolabal (Ma), Tzotzil (Ma), Tzeltal (Ma), Mangghuer (Mo), Matis (Pn), Shipibo-Konibo (Pn), Algerian Arabic (S), Dhofari Arabic (S), Egyptian Arabic (S) [dialectal], Libyan Arabic (S), Moroccan Arabic (S), NW Egyptian Bedouin Arabic (S), Tunisian Arabic (S)
1PL > 2SG	P-Takic (UA): Serrano-Garbielino, Cahuilla, Cupeño, Luiseño-Juaneño; P-Aztecan (UA): Classical Nahuatl, Tetelcingo Náhuatl, North Puebla Nahuatl, Huasteca Nahuatl, Michoacán Nahual, Isthmus Nahuatl, Pipil, Pochutec;
1PL.INCL > 1PL	Tamil (D), Malayalam (D), Kannaḍa (D), Koḍagu (D), Telugu (D), Gondi [dialectal] (D), Koṇḍa (D), Kui (D), Kuvi (D), Buryat (Mo), Bonan (Mo), Khamnigan Mongol (Mo), Mangghuer (Mo), Moghol (Mo), Mongghul (Mo), Ordus (Mo), Oirat (Mo), Santa (Mo), Shira Yughur (Mo), Wemba-Wemba (SP)
1PL.INCL > 1DUAL.INCL	Palikúr (A), Akatek (Ma), Q'anjob'al (Ma), Chuj (Ma), Iskonawa (Pn), Kashibo-Kakataibo (Pn), Kawaiisu (UA), Mono (UA), Ute (UA)
1PL.EXCL > 1PL	Kuku Yalanji (Pm)
1PL.EXCL > 1DUAL.EXCL	Lakantun (Ma), Mocho' (Ma), Ayabadhu (Pm), Kugu-Muminh (Pm), Wik-Ngathan (Pm), Yota-Yota (SP)
1DUAL > 1DUAL.INCL	Anguthimri (Pm), Ayabadhu (Pm), Kugu-Muminh (Pm), Kuuk Thaayorre (Pm), Wik-Mungknh (Pm), Wik-Ngathan (Pm), Bungandidj (SP), Burraba (SP), Djadjawurrung (SP), Dhudhuroa (SP), Gippsland (SP), Madhi-Madhi (SP), Tjapwurrung (SP), Warrnambool (SP), Wathawurrung (SP), Wemba-Wemba (SP), Wimmera (SP), Yitha-Yitha (SP)
1DUAL > 1DUAL.EXCL	Kuku Yalanji (Pm)
1DUAL.INCL > 1PAUC.INCL	Iskonawa (Pn)
1SG > (1 >) 1PL	Brahui (D), Koti P311 (B), Makhuwa (B)

Table 4. PMRS by Shifting Features (2nd Person)

Shift	**Varieties**
2PL > 2	Yao P21 (B), Written Mongol (Mo), Shira Yughur (Mo)
2PL > 2DUAL	Kashibo-Kakataibo (Pn)
2PL > (2 >) 2SG	Gondi (D), Djabugay (Pm), Barngarla (SP), Ngayawang (SP), Yitha-Yitha (SP)
2SG > 2	Leke C14 (B), Uru-wund L53 (B)
2SG > (2 >) 2PL	Doko C50 (B)

Table 5. PMRS by Shifting Features (3rd Person)

Shift	**Varieties**
IMPERSONAL > 1PL.INCL	Tariana (A)
3PL > 3	Matsés (Pn)
3PL > 3DUAL	Kashibo-Kakataibo (Pn)
3PL > 2PL	Mam (Ma), Lower Pima (UA), Northern Paiute (UA), Northern Tepehuan (UA), O'odham (UA), Southern Tepehuan (UA)
3PL > 2SG(HON)	Wirangu (SP)
3DUAL > 2DUAL	Dhudhuroa (SP), Wathawurrung (SP), Woiwurrung (SP), Yabula-Yabula (SP), Yota-Yota (SP)
3DUAL > 3PL	Uradhi (Pm), Umpila (Pm)
3SG > 2SG	Mam (Ma), Lower Pima (UA), Northern Tepehuan (UA), O'odham (UA), Southern Tepehuan (UA)

2.2.4 Discussion

Perhaps the most important finding of this survey is the apparent lack of directionality in these shifts. This lack is best seen in contrast with the findings of earlier surveys. For example, although Helmbrecht (2015) and Song & Heine (2016) both found PL > SG shifts, their data did not contain the SG > PL shifts seen here. This led these authors to claim PL > SG shift as unidirectional, with attempts to explain why it would not change the opposite way. However, this study finds that SG > PL shifts in both second and first person, although relatively rare, are confidently attested.

Furthermore, change in number is not the only shift which appears on the surface to be bidirectional. This study not only found shifts from 1PL to 1PL.INCL or 1PL.EXCL but also from 1PL.INCL or 1PL.EXCL to 1PL, effectively neutralizing in those languages the clusivity contrast. The presence of bidirectionality is the norm for the majority of the shifts, defying the previous attempts at positing underlying (socio)linguistic or pragmatic factors at play in reference shift.

2.3 Shifts in Detail

Given that PMR shifts show no directionality when taken as a whole, the next question is whether it is possible to divide PMRS into different sub-types. The key to dividing them up is to look at the shifts in detail using both historical documentation and comparitive methods. Using these two pieces of evidence together, a difference emerges in which some shifts occur independently and extend the reference of the marker while others always correlate with the addition of a contrasting marker to the paradigm and always restrict the reference of the marker to a subset of its original contexts. This section examines the shifts one by one based on the features shifting.

2.3.1 PL > SG Shifts

One of the most common PMR shifts previously noted in the literature involves what Song & Heine (2016) refer to as *plurification*, when a pronoun that originally referred to a group comes to refer to an individual. While the majority of PL > SG shifts written about previously were from 2PL to 2SG, like Latin *vos* '2PL' to French *vous* '2SG' or the parallel development of English *you*, the most common cases of PL > SG shifts cross-linguistically are actually 1PL to 1SG as seen below.

(11) TUNISIAN ARABIC (SEMITIC) Isaksson (1998)

**ʔa–*	[1SG]	**ni–*	[1PL]
ni–	[1SG]	*ni–. . . –u*	[1PL]

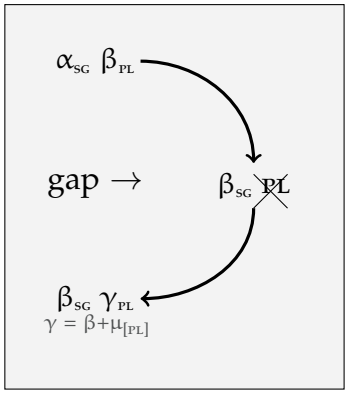
(12) GONDI (DRAVIDIAN) Krishnamurti (2003)

**ya:n*	[1SG]	**ñam*	[1PL]
ñam	[1SG]	*ñam–o̤t*	[1PL]

On the surface, these shifts, whether in 1st or 2nd person, look straightforward: a plural marker shifts to singular reference and this shift correlates with the innovation of a new plural marker, usually based on the singular plus a plural marker. However, this formulation leaves quite a few options for the actual trajectory of the change. For instance, was the innovation of a new plural marker triggered by the shift from plural to singular? Or perhaps vice versa? A common

assumption is that cycles like this involve an initial stage followed by extension, leading to a 'gap' stage, and a final stage after innovation to fill the gap (see Helmbrecht 2015). Applying this to the plural-to-singular cycle, extension would involve the initial plural shifting to singular meaning, leaving a 'gap' in the plural part of the paradigm, which speakers fill by the innovation of a new plural.

Figure 5. The "plural gap" model



However, when this model is examined against the data, the 'gap' stage appears nonsensical. What would such a 'gapped' paradigm look like, with marking for singular but incapable of expressing plural? Instead of plurals becoming singulars and leaving a gap, what we do observe are languages in which a plural has shifted to number-general reference (covering both singular and plural contexts) and become the only marker for that person, whether 1st or 2nd. This is the case for several languages in the survey such as Yao (Bantu), but also for English.

(13) YAO (P21, BANTU) Babaev (2008)

PB:	*ʊ–	[2SG]	*mʊ–	[2PL]
Mod:	*mu–*	[2SG]	*mu–*	[2PL]

(14) ENGLISH (GERMANIC) [most dialects]

EMod:	*thou*	[2SG]	*you*	[2PL]
Mod:	*you*	[2SG]	*you*	[2PL]

Evidence that this is truly the intermediate stage of the PL > SG cycle comes from varieties that took this one step further, created a plural form out of existing pluralizing morphology, like

English *y'all* or *yous(e)/youz*. Notably, these forms were not innovated to fill a gap. Instead, in many varieties the new plural co-exists with the generalized form, which is perfectly capable of expressing both singular and plural meaning. However, in some varieties where the new plural becomes highly conventionalized and frequent, the generalized marker finally shifts to only singular reference.

(15) ENGLISH (GERMANIC) [some dialects]

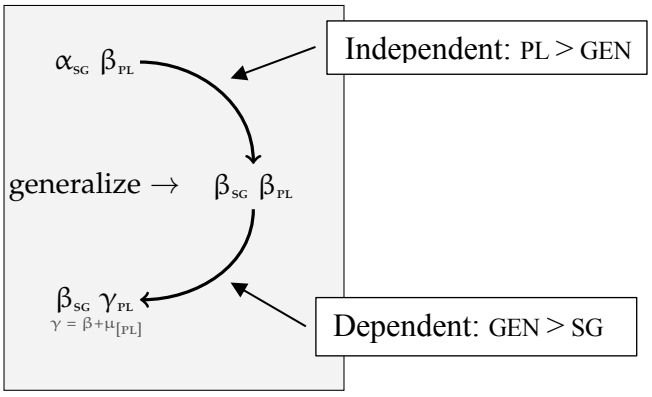
EMod:	*thou*	[2SG]	*you*	[2PL]
<19c:	*you*	[2SG]	you	[2PL]
Mod:	*you*	[2SG]	*you-s*	[2PL]

(16) MONGOL (MONGOLIC) Janhunen (2003a,b)

EMod:	**ci*	[2SG]	**ta*	[2PL]
<19c:	*ta*	[2SG]	*ta*	[2PL]
Mod:	*ta*	[2SG]	*ta-nar*	[2PL]

This data shows that what superficially looks like a PL > SG shift is actually two shifts. The first is a shift from plural to general (number-neutral) reference that appears to be independent in the sense that it is not correlated with any other additions, or necessarily losses, to the paradigm. The second shift, from general reference to singular reference conversely is always correlated with, and temporally follows, the addition of a new plural marker. This type of shift will be called a dependent shift.

Figure 6. Two shift PL > SG change



2.3.2 PL > DUAL Shifts

In fact, we know what happens when a new plural marker is innovated without an independent shift from plural to general number taking place first. In the 2nd and 3rd persons, the introduction of a new plural into a system that already has a singular and plural distinction results in the old plural being relegated to dual reference, as in Kashibo-Kakataibo ((17) and (18)).

(17) KASHIBO-KAKATAIBO (PANOAN) Zariquiey (2011:221)

PPan:	**mi*	[2SG]			**mato*	[2PL]
K-K:	*mi*	[2SG]	*mitsu*	[2DUAL]	*mi-kama*	[2PL]

(18) KASHIBO-KAKATAIBO (PANOAN) Zariquiey (2011:221)

PPan:	**ha*	[3SG]			**hato*	[3PL]
K-K:	*a*	[3SG]	*atu*	[3DUAL]	*a-kama*	[3PL]

Like the GEN > SG shift above that followed the innovation of a new plural, this shift can also be classified as dependent. From these together we can begin to see a defining characteristic of dependent shifts, that the resulting context of use for the shifting marker is always a subset of the contexts in which it could be used before. In this example, the markers **mato* '2PL' and **hato* '3PL' could always be used in dual contexts but are relegated to *only* those contexts in modern Kashibo-Kakataibo upon the innovation of morphologically explicit plural forms based on the singular plus a plural marker *-kama*.

2.3.3 1PL > 1PL.INCL or 1PL.EXCL Shifts

In the 1st person however, the addition of a new plural does not lead directly to a shift from plural to dual. Instead, another of the most wide-spread shifts involves 1PL markers shifting reference to either 1PL.INCL or 1PL.EXCL upon the innovation (or renewal) of clusivity in the language through the addition of a new 1PL marking either 1PL.INCL or 1PL.EXCL. For example, in the Yukatekan

(Mayan) languages, Yukatek, Itza', Mopan, and Lakantun, the reflex of the 1PL was shifted to exclusive reference correlating with the innovation of a new inclusive.

(19) YUKATEK (MAYAN) Bohnemeyer et al. (2015:53)

Pre-Yuk:	*in*= [1SG]			*k*=	[1PL]	
Yuk:	*in*= [1SG]	*k*=	[1PL.EXCL]	*k*=	*...-o'one'ex*	[1PL.INCL]

The same pattern has been posited for the shift from Pre-Proto-Mongolic to Proto-Mongolic. The Pre-Proto-Mongolic system had no clusivity contrast, with **ba* serving as a general 1PL and **bi* as '1SG'. Then a morphologically transparent inclusive was formed from the combination of **bi* '1SG' + **ta* '2SG' making Proto-Mongolic **bida* '1PL.INCL'. The introduction of **bida* '1PL.INCL' to the Proto-Mongolic system "restricted [**ba* '1PL'] to the exclusive function" (Janhunen 2003a:19). In the Mayan example, the suffix *-o'one'ex* that is being used to mark inclusiveness is clearly made up of the Yukatekan Set B markers *-o'on* '1PL' (< PM **=o'nh*), and *-e'ex* '2PL' (< PM **=ex*), and is common to all four of the extant Yukatekan languages. The correlation between the shift 1PL > 1PL.EXCL and the innovation of a morphologically salient 1PL.INCL holds across all the languages showing this shift, whether in Arawakan, Mayan, Mongolic, Paman, or Southern Pama-Nyungan, making it a dependent shift. Sources for new 1PL.INCL seen in the survey are diverse, as shown in **Table 6**.

Table 6. Sources of new 1PL.INCL

1PL + 2PL	Akatek (Ma), Chuj (Ma), Itza' (Ma), Lakantun (Ma), Mocho' (Ma), Mopan (Ma), Q'anjob'al (Ma), Yukatek (Ma), PMo, Madhi-Madhi (SP), Wemba-Wemba (SP),
1PL + 2DUAL	Alngitt (Pm), Anguthimri (Pm), Aritinngithigh (Pm), Awngthim (Pm), Linngittigh (Pm), Mbiywom (Pm), Ntra'ngitt (Pm), Ngkott (Pm),[9]
1PL + 3DUAL	Ayabadhu (Pm), Kugu-Muminh (Pm), Wik-Mungknh (Pm), Wik-Ngathan (Pm), Umpila (Pm),
1PL + PL	Shira Yughur (Mo),
IMPERSONAL	Tariana (A)
Unknown	Yabula-Yabula (SP), Yaraldi (SP), Yota-Yota (SP)

[9] Note that the *(m)pul* syllable of the 1PL.INCL in Alngitt (Pm), Anguthimri (Pm), Aritinngithigh (Pm), Awngthim (Pm), Linngittigh (Pm), Mbiywom (Pm), Ntra'ngitt (Pm), and Ngkott (Pm) either comes straight from the combination of 1PL *ngan-* [PPN **ngana* '1PL'] with **pula* '3DUAL' or perhaps from **nyun-pula* '2DUAL' > *(m)pul* '2DUAL'. I have assumed '2DUAL' since that is more conducive with inclusive meaning. However, the close fit with the form *pula*, found in Umpila (Pm) and other Paman 1PL.INCL, may mean 3DUAL is a better fit.

The same case for identification as dependent can be made for shifts from 1PL > 1PL.INCL, which simply correlate to the innovation of a 1PL.EXCL marker. Consider in the Mawayana example in (20) how the original SG/PL dichotomy was disrupted when the speakers borrowed an exclusive pronoun *amna* from a neighboring Carib language Waiwai.

(20) MAWAYANA (ARAWAKAN) Aikhenvald (2018:34) & Aikhenvald (2017:18)

PA:	*nu-*	[1SG]			*wa*	[1PL]
Maw:	*nu-*	[1SG]	*amna*	[1PL.EXCL]	*wa*	[1PL.INCL]

This pattern of shifting from 1PL > 1PL.INCL in response to the innovation or borrowing of a new exclusive person marker again holds across all the languages exhibiting this shift in Arawakan, Dravidian, Mayan, Mongolic, Paman, Southern Pama-Nyungan, Panoan, and Uto-Aztecan. The various sources of new exclusive pronouns are given in **Table 7**.

Table 7. Sources of new 1PL.EXCL

1SG + PL	Ashéninka (A), Matsigenka (A), Tamil (D), Iskonawa (Pn), Kashibo-Kakataibo (Pn), Isthmus Nahuatl (UA), Kawaiisu (UA), Mono (UA), Shoshoni (UA), Timbisha (UA), Ute (UA)
1PL + 1PL	Akatek (Ma), Chuj (Ma), Mam (Ma), Q'anjob'al (Ma), Teko (Ma), Tojolabal (Ma), Tzeltal (Ma), Tzotzil (Ma)
1PL + 3PL	Chontal (Ma), Mocho' (Ma), Kuku Yalanji (Pm), Uradhi (Pm),
1PL + 1SG	Chol (Ma), Warrnambool (SP),
1SG + 3PL	Lakantun (Ma)
1PL + PL	Oirat (Mo)
1PL + SGLTV	Bonan (Mo)
1PL.CASE	Moghol (Mo)
Borrowing	Mawayana (A), Resigaro (A),
Unknown	Palikúr (A), Ayabadhu (Pm), Bungandidj (SP), Comanche (UA),

2.3.4 1PL.INCL or 1PL.EXCL > 1PL Shifts

Unlike 1PL shifting to 1PL.INCL or 1PL.EXCL, shifts in the opposite direction, from an originally clusive marker, whether 1PL.INCL or 1PL.EXCL, to plain 1PL are paradigm-independent, in that they are never concommitant with additions to the paradigm. Instead of showing similarities to the dependent GENERAL-to-SG shift seen in the 1PL > 1SG cycle, these act like the 1PL-to-GENERAL shifts. First, the clusive marker begins to be used non-stereotypically beyond its original bounds,

extending into the space of the opposite clusive marker, and competing for the same contexts of use. Interestingly, in the survey, only one example of 1PL.EXCL > 1PL was found in the Paman language Kuku Yalanji (Patz 1982) versus twenty examples of 1PL.INCL > 1PL across three families. This suggests that the trigger for shifts from 1PL.INCL > 1PL is much more common than that for 1PL.EXCL > 1PL. Synchronic accounts of the non-stereotypical extension of inclusive, such as the English *author's 'we'* or *pluralis modestiae*, shed some light on this difference. The purpose of this extension is to include the hearer even when it is not a given that the hearer should be included, for quite a few reasons pertaining to social deixis (Siewierska 2004:219).

Either shift can lead to the destruction of the clusivity contrast.[10] If the non-stereotypical use of the clusive marker out-competes the other marker, the clusive distinction is lost.

(21) ORDUS (MONGOLIC) Georg (2003b:202)

PMo:	**bi*	[1SG]	**ba*	[1PL.EXCL]	**bida*	[1PL.INCL]
Ord:	*bi*	[1SG]			*bida*	[1PL]

Just like the number contrast in the 1PL > 1SG cycle, the clusivity contrast may be renewed through the innovation or borrowing of a specifically clusive marker. The presence of this new marker will over time force the general 1PL marker into the clusivity value opposite the new one. Depending on whether it is a 1PL.INCL or 1PL.EXCL that is added, the resulting dependent shift may either end with the extended clusive marker returning it original clusivity, as in Tamil (Krishnamurti 2003:247-249), or being pushed into the opposite of its orginal value, as in (22).

(22) SHIRA YUGHUR (MONGOLIC) Nugteren (2003:272)

PMo:	**bi*	[1SG]	**ba*	[1PL.EXCL]	**bida*	[1PL.INCL]
P-Sh:	*bi~bu*	[1SG]			*buda*	[1PL]
Sh:	*bi~bu*	[1SG]	*buda*	[1PL.EXCL]	*buda-s*	[1PL.INCL]

[10] It should be noted that, again similar to the 1PL-TO-GENERAL shift, the 1PL.INCL/EXCL > 1PL shifts sometimes only occur in a specific CASE or form of the pronoun. So in Mongolic, in the majority of languages with 1PL.INCL > 1PL shifts, it only impacted the NOM case (see discussion in Janhunen 2003a). Similarly, in Tamil and other Dravidian languages, it impacted one case first and then spread to others until the shift and competition stages were complete.

The end of the cycle sets the stage for the cycle to begin again as in Wemba-Wemba, (23).

(23) WEMBA-WEMBA (SOUTHERN PAMA-NYUNGAN) Blake & Reid (1998:20-28)

PPN:	**ngay*	[1SG]			**ngana*	[1PL]
1:	*-ngek*	[1SG]	*ngan-*	[1PL.EXCL]	*ya-ngurra*	[1PL.INCL]
2:	*-ngek*	[1SG]			*yangurra*	[1PL]
W-W:	*-(ng)ek*	[1SG]	*yangurrang*	[1PL.EXCL]	*yangurrein*	[1PL.INCL]

Based on comparison with closely related varieties in Southern Victoria like Madhi-Madhi, the first stage of the cycle for Wemba-Wemba can be deduced. In this stage the Proto-Pama-Nyungan **ngana* '1PL' first shifted to *ngan-* '1PL.EXCL' due to the innovation of a new 1PL.INCL, *ya-ngurrV*, itself composed of the descendent of either PPN **ngay* '1SG' or **ngana* '1PL' and a descendent of PPN **nyurra* '2PL'. Then the cycle began again in the next stage, as *yangurra* '1PL.INCL' independently extended to general 1PL use, outcompeting *ngan-*. Finally, the clusivity contrast was re-established by adding the bound forms of the 1st and 2nd singular pronouns. The form *-(ng)in* '2SG' was suffixed to *yangurra* to form *yangurre-in* '1PL.INCL' and *–(ng)ek* '1SG' was added to form *yangurra-ng* '1PL.EXCL'.

In summary, a clusivity cycle also exists parallel to the number cycle seen in **Section 2.3.1**. The independent shift reduces clusivity by extending one or the other clusive marker until it outcompetes the other and remains the only 1PL marker. The dependent shift involves the (re-) establishment of clusivity by the innovation of a new clusive marker that pushes the general 1PL marker into the opposite clusivity.

2.3.5 1PL > 1DUAL

In addition to the shifts from 1PL to 1SG or 1PL.INCL/EXCL, the survey also turned up a number of cases where the first plural marker of the proto-language appears as a first person dual marker in the descendent variety. This shift type can be clearly labeled a dependent shift since all of the

languages that participated in this shift shared the same correlating additions to the paradigm; viz. they innovated both a new 1PL.INCL and a new 1PL.EXCL.

(24) LAKANTUN (MAYAN) Bergqvist (2008:92)

PM:	**nu=*	[1SG]			**qa*	[1PL]
Pre-Yuk:	*in=*	[1SG]			*k(a)=*	[1PL]
Lak:	*in=*	[1SG]	*(i)k=*	[1DUAL.EXCL]	*(i)k= ... -e'x*	[1PL.INCL]
					in= ... -o'b'	[1PL.EXCL]

Like the other Yukatekan languages mentioned in **Section 2.3.3**, Lakantun innovated an inclusive first plural form based on the addition of *–e'x* 'B2PL' to the first plural marking, correlating with a shift of bare *('i)k-* 'A1PL' and *-o'n* 'B1PL' to exclusive contexts. Then the speakers went one step further and innovated a new exclusive based on the use of the third person plural absolutive marker *-o'b',* from PM **=eb'*, with the first singular markers *in(w)-* 'A1SG' and *-een* 'B1SG', meaning roughly a group including the SPEAKER and 'those others'. It was in this circumstance, peculiar to Lakantun among the Yukatekan languages that the unmarked reflexes of the PM 1st plural markers, *(i)k-* and *-o'n*, further came to reference only 1DUAL.

As was the case for the plural-to-singular shift, the languages participating in the plural-to-dual shift are also genealogically disparate, even within their language families. This means that there exist languages closely related to them that did not undergo the shift but some that were more distantly related did. For example, in Mayan, although four of them, Q'anjob'al[11], Chuj, Akatek, and Mocho' do come from the Q'anjob'alan branch, the fourth, Lakantun, is Yukatekan. Additionally, since Popti' (the remaining Q'anjob'alan language, minus Tojolab'al) and two dialects of Q'anjob'al do not have a dual or even the innovation of clusitivity, the 1PL → 1DUAL shift does not appear to have been a Proto-Q'anjob'alan innovation either but either spread areally

[11] Besides the two Akatekan dialects in their survey, Raymundo et al. (2000) show that only the Q'anjob'al dialects in Santa Eulalia and Santa Cruz Barillas exhibit the shift. Those in San Juan Ixcoy and San Pedro Soloma do not.

among the languages or innovated separately. The same can be said for the Arawakan, Panoan, Paman, Southern Pama-Nyungan, and Uto-Aztecan languages showing these shifts as well.

Like the 1PL > 1PL.INCL and 1PL > 1PL.EXCL shifts above, the origin of the new clusive marker does not matter as much as the fact that it was innovated and now takes up those contexts of use that previously the bare 1PL could be used in. The Q'anjob'alan languages went about forming the inclusive and exclusive a different way but with the same result. The formation of the new exlusive, which was formed first in these languages, used a clitic *=onh* [oŋ], based on PM *=o'nh* 'B1PL', added in predicate-final position in addition to reinforce existing 1PL marking. For independent reasons, in these languages, a clitic *=aq/=eq* had already begun to be appended to predicates with second person participants for emphasis. Speakers of Chuj, along with speakers of some dialects of Q'anjob'al, innovated the use of this clitic with the 1st plural markers *ko-* 'A1PL' and *-o'n* 'B1PL', resulting in a frame around the predicate, like *ko-…eq*, that explicitly marks second person inclusion in the group including the speaker, forming a new 1PL.INCL. The forms in these languages were Chuj *-hek* and Q'anjob'al *heq* respectively. Akatekan varieties, on the other hand, appended in the same predicate-final position a form *wex* (> *wej* in RAF), which is a clitic 2PL marker based on absolutive *=ex* 'B2PL'. The result was the same dependent shift to dual reference.

Interestingly, almost all these duals are biased for one or the other clusivity, with the lone exception of Northern Paiute (UA). So in roughly half, the dual is reported to be a dual exclusive, unambiguously not including the hearer[12]. Meanwhile in the others, the authors specifically state that the forms are dual inclusive, often remarking that this is to the exclusion of non-speech act

[12] Lakantun (Bergqvist 2008:92), Mocho' (Kaufman 1969:xii), Ayabadhu (Verstraete & Rigsby 2015), Kugu-Muminh (Johnson 1991:208), Wik-Ngathan (Sutton 1978:244), and Yota-Yota (Blake & Reid 1998:20-28)

participants[13]. Comparing again with closely related languages that innovated only one of the two new clusive markers, the pattern clearly emerges that the final clusivity value of the dual depends only on which clusivity it, in its first use as a 1PL marker, was originally forced into. Compare the Akatek example in (25) to the Lakantun example in (24).

(25) AKATEK (MAYAN) Zavala (1992); Raymundo et al. (2000)

PM:		**qa-* [1PL]		
P-Q'an:		**ko-* [1PL.INCL]	*ko- ... -on*	[1PL.EXCL]
Akatek:	*ku-* [1DUAL.INCL]	*ku- ... wex* [1PL.INCL]	*ku- ... -on*	[1PL.EXCL]

In (24), the Yukatekan languages first innovated an inclusive, forcing the 1PL marker *ka=* into only exclusive contexts. This was common to all four Yukatekan languages. Then Lakantun alone of the four innovated an morphologically explicit exclusive form and the combined presence of both the clusive forms pressured the bare exclusive into exlusive dual reference. In Akatek, on the other hand, an exclusive was formed first, forcing 1PL into inclusive space, and then the subsequent innovation of an inclusive resulted in the bare 1PL only filling dual inclusive contexts. When compared against closely related sister languages, this step-wise pattern holds true for all the languages that underwent the 1PL > 1DUAL shift. In other words, there are never any true, one-step, 1PL > 1DUAL shifts among the surveyed languages. All shifts of this kind actually either proceed 1PL > 1PL.INCL > 1DUAL.INCL or 1PL > 1PL.EXCL > 1DUAL.EXCL.

One final important observation remains to be made about 1PL > 1DUAL shifts. Reference grammars for the languages in the survey often explicitly comment that these new 'duals' are only pragmatically restricted to dual reference (e.g. Bergqvist 2008:92 for Lakantun). In other words, like the 1PL > 1PL.INCL, 1PL > 1PL.EXCL, and 1 > 1SG shifts seen in the previous sections, the 1DUAL

[13] Palikúr (Launey 2003:65,68), Q'anjob'al (Raymundo et al. 2000:55), Akatek (Zavala, 1992:84), Chuj (Maxwell 1982:137), Iskonawa (Zariquiey 2015:98), Kashibo-Kakataibo (Zariquiey 2011:221), Kawaiisu (Zigmond et a. 1990:45-46), Mono (Lamb 1958:174,184,330), and Ute (Press 1979:44,46,77),

markers are only restricted to dual reference because of the existence of an option to use a marker that more clearly fits the context. However, in certain speech contexts, for example when a previous utterance has already established the number or clusivity of the group including the speaker, the 'restricted' marker may be used more generally. The individual languages appear to differ on just what circumstances allow this pragmatic lifting of the paradigmatic pressure but there is agreement that it can take place. Seeing as all these shifts including those to dual reference are paradigm-dependent, we may take this quality to be a general feature of dependent shifts.

In summary, there are three essential findings that come from examining these 1PL > 1DUAL shifts. 1. The shift always correlates with the innovation of both a marked exclusive and a marked inclusive. 2. The clusivity of the resulting dual is inversely correlated to the whichever marked clusive was innovated first. 3. The old PLURAL is only pragmatically restricted to 'DUAL' reference. Given the right discourse context, it can be used as a general plural.

2.3 Dependent & Independent Shifts

Taken together, the evidence from these different types of shifts leads us to a strong case for a two-way categorization of PMRS. Independent shifts, like 1PL > 1, 1PL.INCL > 1PL, and 1PL.EXCL > 1PL, are characterized by extension of a marker's reference due to non-stereotypical use, followed by competition with other markers already used in those contested contexts. When the competition results in the extended marker winning, this reduces paradigm contrasts. This is a true diachronic shift in meaning and, since it is not dependent on the marker's relationship with any other part of the paradigm, it cannot be overridden pragmatically. Dependendent shifts on the other hand, such as 1 > 1SG, 1PL > 1PL.INCL, 1PL > 1PL.EXCL, and both 1PL > (1PL.EXCL) > 1DUAL.EXCL and 1PL > (1PL.INCL) > 1DUAL.INCL are synchronic restrictions of a marker's reference to a subset of its original contexts due to an increase in contrasts within its paradigm resulting in new competition

for contexts of use against a more specific marker. Since this is a synchronic restriction, certain speech contexts mean that the shift can be overridden pragmatically and the marker can still be used in its original contexts of use. The differences between these categorizes of PMRS are summarized in **Table 8**.

Table 8. Differences between Independent and Dependent Shifts

INDEPENDENT	DEPENDENT
Reference Extension	Reference Restriction
Reduces paradigm contrasts	Increases paradigm contrasts
Cannot be overridden pragmatically	Can be overridden pragmatically
Diachronic	Synchronic

Chapter 3: Formalizing PMRS

3.1 Introduction

The primary goal of this chapter is to formalize our representation of pronominal features by locating them syntactically and separating out their truth-conditional semantics from their pragmatic effects. Formalization is an essential step in the process of identifying what has changed during PMRS and making claims from this about models of diachronic change.

Furthermore, I argue that the discovered qualities of person marking reference shifts, including the dependent/independent split, are by-products of the way pronominal meaning relies on both semantically interpretable features and paradigmatic contrast. Specifically I show that the operation of economy rules, like Maximize Presupposition, active both in acquisition and conversation, working on a limited collection of privative features, are sufficient to produce the required pragmatic restriction for dependent shifts and triggers for independent ones. The mapping of pronominal features to actual contexts of use is not one-to-one because pronouns are part of a closed class creating a paradigm of weak and strong pairs. The more general weak forms have features conducive to a range of possible contexts of use but are normally restricted to a subset of that range due to the existence of strong forms with a more specific set of features. This directly causes dependent shifts. Independent shifts on the other hand, are triggered when speakers use strong forms non-stereotypically for social purposes, taking advantage of conversational maxims. When a naïve listener is presented with these uses, principles of economy lead them to posit a new featural set for that pronoun that encompasses both its original usage and the contexts where it is being used strategically.

3.2 Features & Paradigms

Person markers in a given language, as a closed class, naturally form paradigms. Similar to other functional categories like deixis, tense, and aspect, this attribute of person marking makes it possible to describe the differences between person markers in a paradigm in terms of distinct values that separate them from one another. It is a longstanding practice of linguists, across theoretical barriers, to delineate the differences between these options within a person marking paradigm using a set of features, including (but not always limited to) person and number (Siewierska 2004). So the fact that English *I* and *she* differ in number from *we* and *they* respectively can be captured by the use of number feature [SG] versus [PL].

3.2.1 Commonalities in Feature/Paradigm Models

Although there are different popular approaches arguing the best way to organize these features, two related notions unite them. The first is that a marker is defined by both its features and its place in a paradigm. In other words, the range of possible usage contexts for a given person marker is not only defined by that marker's features but also by the pragmatic pressure of its existence within a paradigm with other contrasting markers. We can see this clearly by looking just at the sets that a pronoun references, as in **Table 9**.

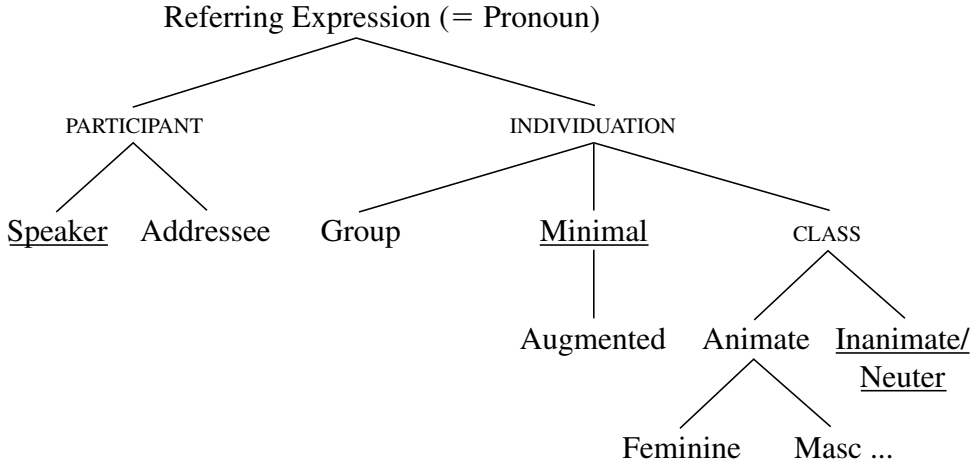
Table 9. Value to Referent Correspondence (reproduced from Helmbrecht 2015:177)

PERSON/NUMBER Values		Referential Sets		English Examples
1SG		{1}		*I*
2SG		{2}		*you (SG)*
3SG		{3}		*he/she/it*
1PL	INCL	{1+2_{1-n}} {1+3_{1-n}}	{1+2_{1-n}} {1+2_{1-n}+3_{1-n} }	*we*
	EXCL	{1+2_{1-n}+3_{1-n} }	{1+3_{1-n}}	
2PL		{2_{2-n}} {2_{1-n}+3_{1-n}}		*you (PL)*
3PL		{3_{2-n}}		*they*

The singulars simply reference the speaker, addressee, etc. and need make no reference to number. They are restricted to singularity by their opposition in the paradigm with the more

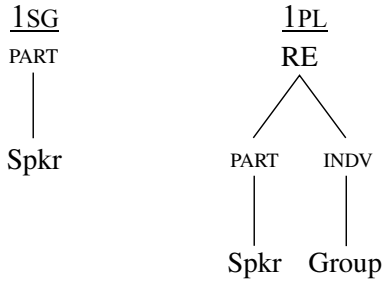
referent-specific plurals. This is a common part of person featural models as well (Harley & Ritter 2002; Ackema & Neeleman 2018). The second notion these models share stems from the first and it is that person marking paradigms do not have gaps.

Figure 7. Full Feature Geometry (Harley & Ritter 2002)



For example, in Harley & Ritter's (2002) Feature Geometric approach outlined in **Figure 7**, where again no dedicated singular feature appears, the restriction of a pronoun with just the speaker feature to singular contexts is due to contrast with plural geometries thanks to a morphological blocking effect.

Figure 8. First person contrast in Harley & Ritter (2002)



In **Figure 8**, the geometry on the left would map to both first person plural and singular contexts of use in languages like Pirahã with no singular/plural contrast in the person marking paradigm. However, it would only map to first person singular in a language like English that has a plural form to contrast with, which maps to a clearly plural (group) geometry, like the geometry

on the right. In both Harley & Ritter's model and Helmbrecht's, the assumption is made that a language will never have true gaps in the paradigm. A language will never have only a pronoun like that on the right in **Figure 8** without one like that on the left. If a language has a more featurally-rich pronoun, it must also instantiate a pronoun with the more general, or less specified, geometry.

3.2.2 Basic Assumptions for Feature Formalization

Adopting at least these commonalities from several models of person marking available, this disseration will pursue an analysis of the distinction between referent reanalysis and referent restriction by appealing to the syntactic structure and semantic content of the pronouns that underlie person marking systems. This sort of analysis requires us to make a few assumptions.

> **Assumption 1**: All φ-feature exponence (whether affix, clitic, free) underlyingly makes reference to features of a pronoun (overt *or* silent).

This assumption was discussed in detail in Chapter 1 on person marking. To recap, whenever we see a phonological distinction between person marking morphs that correlate with different feature set, whether in the agreement or independent pronoun paradigms, these contrasts inform us as to the minimum amount of underlying featural contrast utilized by the language at hand. This is the evidence that we will use to determine the full feature set of a pronoun; by comparing its contrasts with other pronouns as well as the contrasts exposed by its associated agreement. It is also the evidence a language learner has access to.

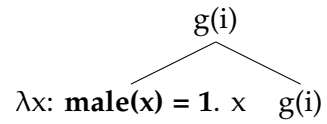
> **Assumption 2:** Pronouns are built from φ-features. Those for (at least) GENDER and NUMBER impose presuppositions, while PERSON features are assertive.

Pronouns are built from φ-features [F], where the denotation of [F], or ⟦[F]⟧ is commonly taken to be a partial identity function (e.g. Cooper 1979 and Heim & Kratzer 1998). A pronoun's

syntactic features impose a presupposition on the entity the pronoun denotes. Features put conditions on composition. A classic example used in the literature is the feature associated with GENDER[14] as in **Figure 9**.

Figure 9. Gender φ-feature in composition

$[\![g(i)_{[MASC]}]\!]^{g,u}$ =



The presupposition takes effect by placing a condition on composition. In the example above, the pronoun g(i) is *masculine*, a GENDER category based on notions of biological sex. The GENDER feature combines with the pronoun in such a way that it returns the pronoun only if g(i) in the utterance (u) is perceived to be 'male'. If not, the composition fails and the pronoun fails to refer at all as in (26).

(26) Presupposition Failure

a. Context: Hadley identifies as male. Hadley's boss just gave him extra vacation time. Another co-worker, who does not know Hadley, overheard the announcement and asks about the situation.

b. Proposition under question: Did the boss just give her more vacation time?

In the context given, when the proposition under question in (26) contains unsupported presuppositions, here the feminine gender assignment to Hadley, assigning a true/false value to it will not give the interlocutor any information regarding the gender of the referent. That value must

[14] As discussed in Chapter 1, GENDER here is used in the linguistic sense as a classificatory system of nouns into classes or more properly genera. GENDER is, as one author put it, "the sorting of nouns into two or more classes, as reflected in agreement morphology" (Kramer 2015:65). It should not be confused either with cultural notions of gender or biological definitions of sex although at times there exists a correlation between them. So for example, many European languages with two or three noun genders divide two of them into masculine and feminine based on a correlation with notions of biological sex. However, GENDER may not involve biologicial sex at all and languages may also divide genera according to animacy or human-ness or even physical characteristics like length, texture, etc., resulting in the possibility of a plethora of noun classes and dichotomies. For this paper I use GENDER correlated with biological sex as an example because it is the only distinction so far found in 1st and 2nd person pronouns (Corbett 1991:241-248).

be presupposed in order to return a true or false value. These same lines of evidence will be gathered in support of a presupposition-triggering account for NUMBER features later in this chapter as well.

However, the same cannot be said of PERSON. It has been noted that PERSON features do not interact semantically in the same way as those for GENDER and NUMBER (Stokke 2010, Sudo 2012). Instead first and second person pronouns compositionally contribute to the truth value of the proposition. When the same tests are run for PERSON mismatch as were done for GENDER, the result is not uncomposible but simply infelicitous (Stokke 2010:98-99).

(27) Assertive PERSON (example reproduced from Sudo 2012:143)

a. Context: David is looking at a shop window. On the other side of the glass, there is a man who looks just like him, and David therefore mistakes the window for a mirror. Suddenly, he notices that the person's pants are on fire.

b. Proposition: “My pants are on fire!” – David

Unlike (26), the proposition in (27) is incorrect precisely because of the mistaken first person feature in ‘my’. An onlooker giving the proposition a false value will be directly negating the proposition that it is David’s pants that are on fire. I build this chapter with the assumption that PERSON features behave as stated here.

Assumption 3: φ-features are organized privatively and contrast pragmatically

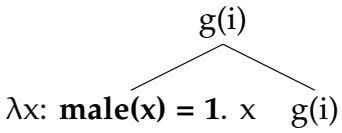
This possibility can be exemplified with GENDER as well. In many languages with masculine/feminine contrast, mixed sex groups receive one or the other gender designation. In the languages of Europe, this is masculine default. One way to model this is that masculine is featurally, and thus semantically, rich while feminine is the exponence of an empty feature, making

it semantically null[15]. Thus the co-occurence of a masculine feature with a feminine feature will result in masculine exponence. How then does one correlate feminine forms merging on their own with the concept of femininity? Through pragmatic competition.

Figure 10. Gender φ-features in competition

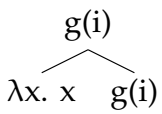
$[\![[\text{MASC}]]\!] = \lambda x\text{: male}(x) = 1.\ x$

$[\![\ g(i)_{[\text{MASC}]}\ ]\!]^{g,u} =$



$[\![[\text{FEM}]]\!] = \lambda x.\ x$

$[\![\ g(i)_{[\text{FEM}]}\ ]\!]^{g,u} =$

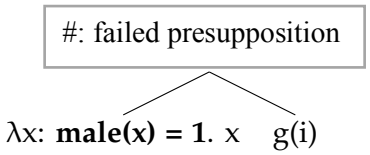


In other words, the interpretation of pronouns depends on the pragmatics of contrast (see Percus 2011). Just because feminine pronouns do not impose a presupposition, does not mean they can be used wherever. They are only licensed in contexts where merging masculine would result in a presupposition failure. In a context where a person giving a talk at a conference is female, it is felicitous to say *She$_i$ is giving the talk* but not *He$_i$ is giving the talk*. The masculine would impose a false presupposition that the speaker is male. In other words if, as in **Figure 11**, g(i) denotes a female person, g(i) simply cannot be composed with $[\![[\text{MASC}]]\!]$.

Figure 11. Using *he* for female referent → presupposition failure

he ↔ [3],[MASC]

$[\![he_i]\!]^{g,u} =$



[15] The *masculine* GENDER feature is the semantically rich one here for illustrative purposes only. In fact, for many languages of Europe, evidence suggests that it is the *feminine* feature that is semantically rich, while [MASC] in those languages null (e.g. Percus 2006, Heim 2008, Sauerland 2003, 2008, Singh 2011). This is to say nothing of the possible privative relationships in an animate/inanimate system or other more complex noun classification patterns.

On the other hand, when the referent is male, the feminine feature (being an identity function) is still available. In other words, its use with a male referent would not result in presupposition failure. Then why is it not used? Instead, it is rejected due to a pragmatic constraint called Maximize Presupposition. The GENDER features exist in opposition that results in pragmatic competition, and this principle of interpretation decides between them.

(28) MAXIMIZE PRESUPPOSITION (Heim 1991)
Given a choice of two alternative morpheme forms, where the use of either would be felicitous, choose the one with more presuppositions satisfied by the context.

A speaker is faced with a choice between using [MASC] or [FEM] and either would be felicitous. But when the referent is male, the presuppositional content of the [MASC] feature clearly matches the context more fully than [FEM]. This sort of competition resolution will be applied to all dichotomous features.

Assumption 4: Hornian correspondence between morphological and semantic markedness

How then do we decide which feature in a dichotomy is semantically marked and which is not? As with the masculine/feminine pair, we can look for evidence like default masculine and masculine marking of mixed sex groups. In other cases, like progressive versus imperfective aspect (Deo 2015), independently formalizing both members of the pair results in an observation that one is the logical subset of the other, making the more specific of the two the more semantically marked.

As another line of evidence, I take morphological markedness as a sign of semantic markedness (see Jakobson (1939) in Horn (2001), van Rooij (2004), Farkas & de Swart (2010)). This has statement has been referred to as the *Horn pattern* or *Horn's division of pragmatic labor* and can be described thus: "...one member of an opposed pair is literally marked (overtly signaled)

while the other is unmarked (signaled via the absence of an overt signal). Semantically, the marked category is characterized by the presence of some property *P*, while the corresponding unmarked category entails nothing about the presence or absence of *P* but is used chiefly (although not exclusively) to indicate the absence of *P*" (Horn 2001:155). The simple case to be made is that all else being equal, if one of the pair is overt for language learners, they will correlate semantic markedness with morphologically salient expression. This will become important in the discussion of clusivity later on.

3.3 Formalizing & Locating φ-features

The next step is to formalize the featural concepts that we identified in Chapter 1 and which appeared in our survey in Chapter 2. These are the PERSON and NUMBER features in **Table 10**.

Table 10. Features to be defined

PERSON	NUMBER	
[1], [2], [3]	[SG], [PL]	[DUAL], [PAUCAL]

The goal of the section is to capture all nine of Helmbrechts' (2015:177) possible referential sets made through person combinations[16].

Table 11. Possible Referential Sets (reproduced from Helmbrecht 2015:177)

PERSON/NUMBER Values	Referential Sets	English Examples
1SG	{1}	*I*
2SG	{2}	*you (SG)*
3SG	{3}	*he/she/it*
INCL	{1+$2_{1\text{-}n}$} {1+$2_{1\text{-}n}$+$3_{1\text{-}n}$ }	*we*
EXCL	{1+$3_{1\text{-}n}$}	
2PL	{$2_{2\text{-}n}$} {$2_{1\text{-}n}$+$3_{1\text{-}n}$}	*you (PL)*
3PL	{$3_{2\text{-}n}$}	*they*

[16] Helmbrecht (2015) has one more set than Cysouw (2003), namely {$2_{2\text{-}n}$}. The difference is that Cysouw does not expand on the possible numbers of hearers but rather focuses solely on possible and attested person combinations. Cysouw's referent combinations are as follows: 1, 2, 3, 1+2, 1+2(+3), 1(+3), 2(+3), 3(+3).

In this section, I propose an equivalence between nominal plurality, as it is described formally in Farkas & de Swart (2010) i.a., and pronominal plurality. Not separating the two runs contra Cysouw (2003), Helmbrecht (2004, 2015), and Kratzer (2009). In this view, singular is semantically empty, amounting to an identity function at LF, and the use of plural and singular forms in context is mediated by the pragmatic principle MAXIMIZE PRESUPPOSITION. I show that a special pronominal plural is unnecessary when the features [1] and [2] are properly formalized as including the speaker and addressee respectively instead of identifying the pronoun with the speaker and hearer (Kratzer 2009). Given these definitions of the person features, the singular feature becomes unecessary and assuming a contentful plural and empty singular best fits the facts of the pragmatic <Strong,Weak> Hornian relationship between them in the pronominal arena.

3.3.1 Formalizing [1], [2], [SG], and [PL]

The first four features to be defined semantically must be formalized together since the issues related to their formalizations are intertwined. On the surface, defining [1] and [2] appears trivial since they are used to denote the speaker and hearer (or rather addressee) respectively. However, defining those features as in (29), raises a variety of issues.

(29) Initial Attempt at Formalization of [1] & [2]

a. $[\![[1]]\!]^u = \lambda x$: x is the SPKR(u). x

b. $[\![[2]]\!]^u = \lambda x$: x is the ADDR(u). x

Specifically, this results in difficulties finding equivalence between plural number as expressed in pronouns and regular plural number in other nominals. This problem has recognized, with various resolutions, across the literature (see Corbett 2000, Schlenker 2003:413, Kratzer 2009:224). Simply stated the problem is as follows: the plural of ‘chair’ is a set of ‘chairs’ but if ‘I’ is the speaker in a given context, does the plural ‘we’ refer to a set of ‘speakers’? Of course, this is one possible scenario where ‘we’ could be used but it is definitely not the only one and is

not even the most common. To resolve this issue, we must look more closely at the semantics of number.

3.3.1.1 The Semantics and Syntax of Number

Before going too much further, we must take an aside to look more precisely at nominal number to see just why it would be incompatible with the plurality seen in pronouns. Kratzer (2009:224) cites the incompatibility based on a traditional theory of pluralization semantics in which a * plural operator serves to pluralize predicates in which it occurs, where * is an operation that maps "sets that come with a sum operation to their smallest cumulative superset" (Kratzer 2005:3, Link 1983). Thus a predicate like (30)a is essentially equivalent to (30)b.

(30) PREDICATE PLURALIZING OPERATOR
   a. Michelle and Michael laughed.
   b. [[**laughed*]] = {<Michelle, laughed$_1$>, <Michael, laughed$_2$>, <Michelle+Michael, laughed$_1$+laughed$_2$ >}

The proposed difficulty with a pronoun like *we* is the distribution of predicates to the 'singulars' of *we*, namely the speaker. This would suggest *we* always means 'the set of speakers'. However, this view is based on a model in which a plural or singular feature in D, which denote sums or atoms respectively, spreads to the predicate. The semantic equality of singularity and plurality should not be taken for granted however.

For some time the idea has existed that one or the other of this pair in languages with a 'simple' singular/plural system is semantically empty. Specifically, following Krifka (1989), authors such as Sauerland (2003), agree that it is the plural that is semantically unmarked, able to reference both atoms and sums, but blocking effects due to the presence of a truly atomic singular are the cause of its restriction, in normal grammatical environments, to sum readings. The arguments for this are based off of some quirky behavior of plurals in certain grammatical

environments. For example, in (31), both answers are felicitous reponses to the question containing a plural noun 'trees'.

(31) Q: Did you see palm trees in Florida?
  a. Yes, I saw one at the beach!
  b. Yes, I saw two crossing, forming an X.

These authors argue that it is only in specific grammatical environments, where the blocking impact of the singular is itself blocked, that the true *inclusive* nature of the plural is seen[17]. However, this argument sets up a situation in which morphological markedness (marked plural) and semantic markedness (marked singular) do not align, which is an oddity in its own right. Furthermore, it must necessarily weaken MAXIMIZE PRESUPPOSITION and make it responsive to the syntax in order to allow the inclusive plural to surface at all (see discussion in Farkas & de Swart 2010:6). Finally, there are issues with regards to the suspension of MAXIMIZE PRESUPPOSITION needed to make the model work that call it into question (see Spector 2007).

In order to sustain a Hornian correspondence between morphological and semantic markedness and address some of the issues with the previous model, Farkas & de Swart (2010) argue the opposite: The plural is contentful while the singular is unmarked. The plural imposes the presupposition that the entity is a sum of other entities, and the singular imposes nothing. The plural, in their view, is homophonous across two meanings, one of which includes both sums and atomic reference (inclusive) and the other just sums (exclusive).

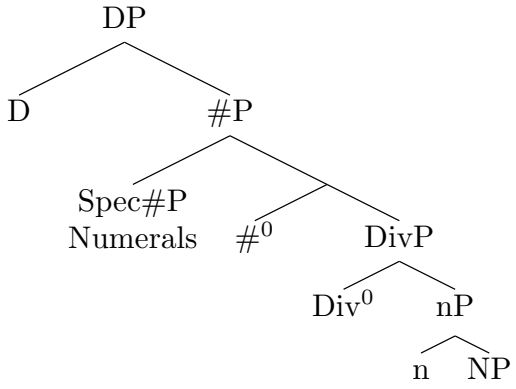
(32) Singular and Plural (adapted from Farkas & de Swart 2010)
  a. $[\![[\text{SG}]]\!] = \lambda x\text{: } x$
  b. $[\![[\text{PL}]]\!] = \lambda x\text{: } x \in \text{sum}.\ x$ OR $\lambda x\text{: } x \in \text{SUM} \cup \text{ATOM}.\ x$

[17] The terms *inclusive* and *exclusive* here should not be confused with the 1st plural inclusive and exclusive. Here they refer to the ability of a plural feature to refer to atoms (inclusive) or just sums (exclusive).

These two possible uses are mediated by a pragmatic, not grammatical, principle Strongest Meaning Hypothesis (SMH), that predicts the same distribution as the previous studies. This, they point out, fits the empirical facts better for plural marking across both English and Hungarian as well as psycholinguistc findings. Furthermore, the choice between the singular and the plural is fully mediated by a normal form of the pragmatic principle MAXIMIZE PRESUPPOSITION, which simply favors the use of the contentful plural *wherever* a sum value is possible, and the more general singular elsewhere.

As pointed out by Mathieu (2014:5-6), data in Grimm (2013) support Farkas & de Swart's model over the others, showing that the inclusive plural reading is licensed not by downward entailment or the reversal of scalar implicatures, but by contextual pragmatic factors, lending credence to the role of SMH. Finally, the Farkas & de Swart plural semantics is much more easily correlated with findings in the syntax of plurality. Borer (2005) finds that the function of plural is not 'counting' as had at times been assumed. Rather its role is to take nouns, which merge undifferentiated between mass/count into the derivation, and divide or portion them out, individuating them so that a counting function may operate on them. Thus plurals instantiate a Division or Div^{o} head, while a higher number head #^{0} projects actual numerals in its specifier. This Div^{0} fits well with the 'double meaning' of plurals in Farkas & de Swart (2010).

(33) DP structure of NUMBER (based on Borer 2005)



3.3.1.2 Nominal Number = Pronominal Number

Turning back to pronominal number, why should we desire equivalence between pronominal and nominal plural? For one, in many languages in the present dissertation's survey, PMRS caused them to lose a plural/singular contrast. This contrast was subsequently renewed through the addition of plural morphology. Although some diversity did exist as to the exact form of the morphology, a very common source was simply the 'normal' pluralizing morphology in the language, as with dialectal English *yous*, in (34), utilizing English *-s* 'PL'.

(34) ENGLISH (GERMANIC) [some dialects]

EMod:	*thou*	[2SG]	*you*	[2PL]
<19c:	*you*	[2SG]	you	[2PL]
Mod:	*you*	[2SG]	*you-s*	[2PL]

Even more importantly, however, pronominal plurals simply act like Farkas & de Swart's plurals in two key ways: they show both plural meanings as well as pragmatic mediation between the use of a weak general singular and a more specific strong plural. Consider the context in (35).

(35) Q: Did they see us?

Context: Playing hide and seek and run, a team member (A) who is well hidden asks another member (B) if the other team has seen them yet in order to determine whether they should run yet. Team member B clearly sees that a member of the other team has seen a third member (C) of the hiding team but has not seen A or B.

a. Yes, they saw us! Run!

b. #No, they didn't see us yet.

It is clear from the judgement that the 1st person plural pronoun *us* is compatible with a reading in which the proposition under question need be true for only one of the atoms making up the sum. Answer (a) would also be true if the member of the opposing team had seen the entire group as a whole or any sized sub-group of them. This is consistent with the "sum" or "sum ∪ atom" meanings of plural.

3.3.1.3 Formalizing [1] and [2]

Given the difficulty with reconciling features [1] and [2] with normal plurality as it stands, several solutions have been proposed, the majority of which focus on changing the definition of pronominal plurality to something more like Corbett's (2000) associative plurality (e.g. Katzer 2009:225). However, given the similarities outlined above between the plurality in both, a more promising route is to edit our formalization of [1] and [2], as in Schlenker (2003). In that paper, the author argues that the indexical features for [1] and [2] are not equivalent with 'speaker' and 'hearer' but rather should be defined as 'containing' them. The author adopted this formalization to deal with the plurals, but formalizing [1] and [2] this way also still captures Helmbrecht's (2015:177) referential sets for the singulars. As pointed out by Schlenker (2003:413), 'containing' the speaker or addressee, respectively, does not pose a problem for singulars since the only way an atomic entity could 'contain' one of those roles is to "*be* the speaker" or hearer (Schlenker 2003:413). Thus I propose that the pronominal singulars are in fact bare number-less PERSON feature sets as in (36).

(36) Speaker [1] and Addresse [2] Features

$[\![[1]]\!]^u = \lambda x\text{: } \textsc{spkr}(u) \leq x.\ x$

$[\![[2]]\!]^u = \lambda x\text{: } \textsc{addr}(u) \leq x.\ x$

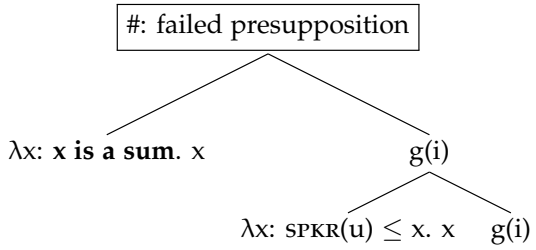
Now that we have the PERSON features, we can put them together with the NUMBER features to show the last way that pronominal number is like Farkas & de Swart's nominal number, namely that the choice between pronouns depends on the pragmatics. Assume again that singular pronouns do not impose a presupposition, but are only licensed in contexts where the singular is most applicable. In a context where you are giving a talk at a conference by yourself, it is felicitous to

say I_i *am giving the talk* but not *We*$_i$ *are giving the talk*. The plural would impose a false presupposition that you are a sum of other individuals.

(37)

we ↔[1],[PL]

$[\![we_i]\!]^{g,u}$ =



On the other hand, in a context where the plural is licensed the singular is still available. For instance, if you are giving a talk with a colleague, splitting time evenly, *We*$_i$ *are giving the talk* is true. The subject is a sum that includes the speaker. However, #I_i *am giving the talk* is not false—the subject still includes the speaker. Instead, it is rejected due to MAXIMIZE PRESUPPOSITION. The singular and plural here enter a pragmatic competition, and MP decides between them. Since the plural form has a plural presupposition that fits the context, while the singular (i.e. [1]) does not, the plural wins out.

Defining the features this way makes for simple correlations with Helmbrecht's (2015:177) referential sets for the first person plurals: inclusive $\{1+2_{1\text{-}n}\}$ and $\{1+2_{1\text{-}n}+3_{1\text{-}n}\}$ and exclusive $\{1+3_{1\text{-}n}\}$. The inclusive sets are simply the combination of the features [1] and [2] as [1.2] or, in other words, 'x includes the speaker' and 'x includes the addressee'. The exclusive are simply the combination of [1] and [3].

Furthermore, the presence of a [PL] feature makes it possible to have specifically plural versions of each of these, like [1.2.PL], that will be essential to our understanding of how independent clusivity shifts work. In addition, the feature [1] can be simply put together with [PL] as [1.PL] without specifying the other members of the sum. This is essential for formalizing a pronoun like English *we* that can have either inclusive or exclusive reference.

The same arguments apply to the 2nd person as well, making it possible to capture both 2PL referent sets, $\{2_{2\text{-}n}\}$ and $\{2_{1\text{-}n}+3_{1\text{-}n}\}$, identified by Helmbrecht (2015:177) with the simple set of features: [2], [3] and [PL]. The 'standard' second person plural is simply [2.PL] but there may be a pronoun in contrast with it that specifies that others beyond the speech act are part of the sum: [2.3] and [2.3.PL].

For formalization of [3], I will follow the argumentation in Kratzer (2009:221) that third person pronouns minimally contain a definiteness feature but may variably contain other features like GENDER, NUMBER, and deictic information (Van Gelderen 2011). There is however, evidence that some third person markers are serving other roles, being bound etc. These issues, and their relation to PMRS, will be discussed in more detail in Chapter 4.

3.3.2 Formalizing and Locating [DUAL], [TRIAL], [QUADRAL], and [PAUCAL]

In many languages, the pronominal duals and other numeric levels share morphology with nominal duals, etc. or even with the numerals 2, 3, or 4 themselves (Siewierska 2004). A good example is the morphology *tu-* 'DUAL' and *tri-* 'TRIAL' present in Tok Pisin, which are equivalent to the numerals two and three respectively.

(38) Dual morphology in Tok Pisin (www.tokpisin.info/)

	SG	DU	TRL	PL
1EXCL	mi	mitupela	mitripela	mipela
1INCL		yumitupela	yumitripela	yumi
2	yu	yutupela	yutripela	yupela
3	em	emtupela	emtripela	ol

This evidence strongly suggests that the standard dual is an instantiation of Borer's #P and clearly signifies two atoms. The same can easily be extended to trial and quadral.

(39) Number formalizations in #P

a. $[\![[\text{DUAL}]]\!]^{g,u} = \lambda x$: x consists of two atoms. x

b. $[\![[\text{TRIAL}]]\!]^{g,u} = \lambda x$: x consists of three atoms. x

c. $[\![[\text{QUADRAL}]]\!]^{g,u} = \lambda x$: x consists of four atoms. x

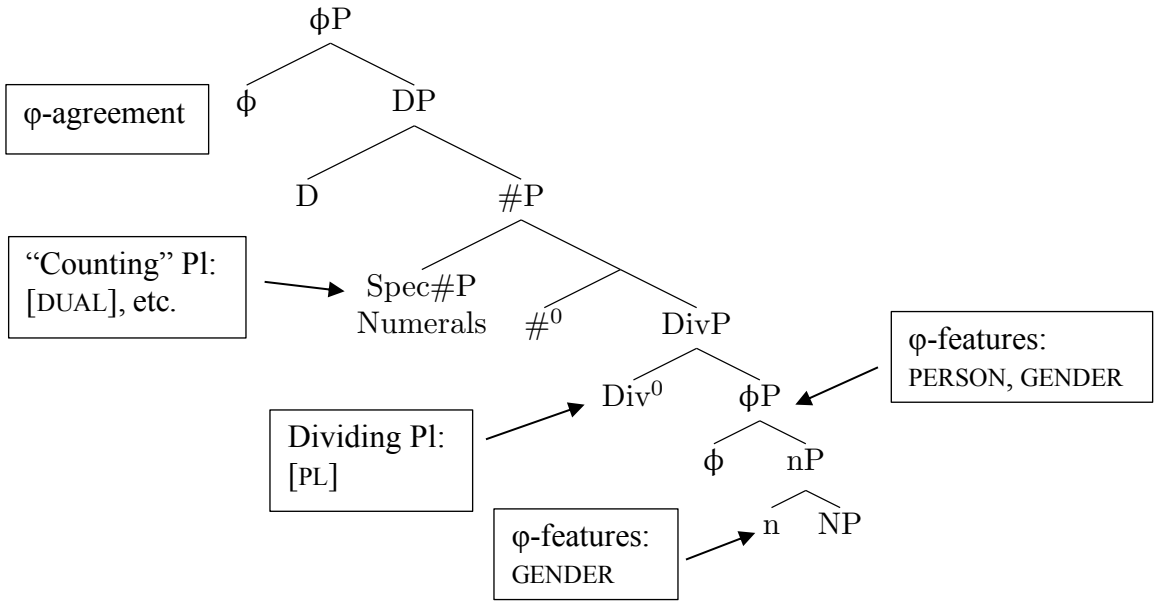
However, this does not explain [PAUCAL] or the pragmatically restricted 'duals' seen in the PMRS examples in Chapter 2. I propose that these are not related at all to the numeral-based features above but are pragmatically restricted plurals. More detail will be given below in the sections on the individual PMR shifts that result in these features.

3.3.3 Locating φ- and Num-features in DP structure

Although there is some disagreement about the details of the merging of pronominal features (see Cardinaletti & Starke 1996, Déchaine & Wiltschko 2002, and van Gelderen 2011), some commonalities remain. It is generally assumed that pronouns may come in different sizes, corresponding to more or less structure (Déchaine & Wiltschko 2002:410). The smallest structure is the nP, where the features are quite limited. Kramer (2015) also makes the case that, at least in some languages, GENDER features are merged in n^0. The second level above nP is the φP, where merge the features we are most familiar with associating to pronouns like PERSON (and in some cases GENDER).

Near this projection and beneath D are the number projections of Borer (2005): Div^0 and $\#^0$. The largest structure for a pronoun is the DP, where all of the features below are accumulated on D^0. This structural level is necessary for referentiality. Finally, there may exist a φP above DP, the purpose of which is to assemble all of the features beneath it into a whole and is utilized in pronominal coordination to make the resulting coordinate agree with the combination of the features in the constituent DPs rather than having Agree target just one or the other (Sauerland 2003, 2005).

(40) DP structure of Features



3.4 Feature Reanalysis and Pragmatic Restriction in PL > SG

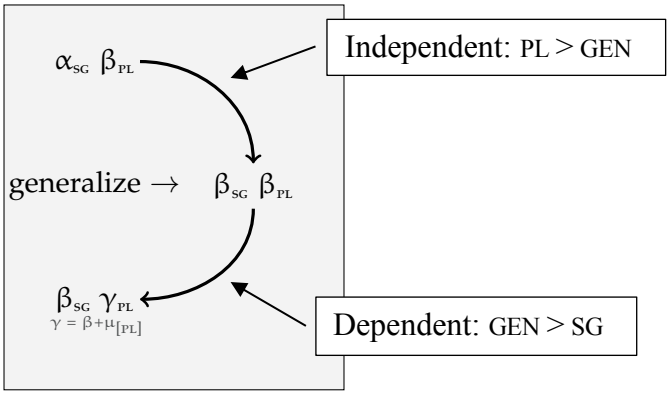
In the previous chapter, it was noted that PMRS cycles, like PL > SG, involve both identified kinds of shift; independent and dependent. This makes them a perfect place to begin to look in detail at what is taking place in those types of shifts in terms of underlying features.

Table 12. Differences between Independent and Dependent Shifts

	INDEPENDENT	DEPENDENT
Observed	Reference Extension	Reference Restriction
	Reduces paradigm contrasts	Increases in paradigm contrasts
	Cannot be overriden pragmatically	Can be overridden pragmatically
	Diachronic	Synchronic

The plural-to-singular cycle was broken down into two shifts: A generalizing shift involving a plural marker shifting to number-neutral reference (covering both singular and plural contexts), and a second shift in which the marker changes from number-neutral to only singular reference. However, in the previous section, the [PL] feature was shown to impose a presupposition while the [SG] does not. This leads to the conclusion, right off the bat, that only the first stage of this cycle involves any necessary change to the featural content of the pronoun.

Figure 12. Two shift PL > SG change



Since we saw that plural pronouns are restricted, not pragmatically, but by presupposition failure from use in singular settings, what is the process by which a pronoun with plural features comes to be used as a singular? What drives this shift? The only way for an erstwhile plural form to be used in singular contexts is for it to be reanalyzed by listeners as lacking the plural feature, essentially dropping the plural presupposition. As discussed in Chapter 1, formal models of presupposition dropping do exist (Eckardt 2012, Schwenter & Waltereit 2010). These models state that presuppositions are dropped, and sometimes replaced with other content, when the required effort to support the speakers use of the morpheme becomes too burdensome in context. This is Eckardt's principle of Avoid Pragmatic Overload (APO).

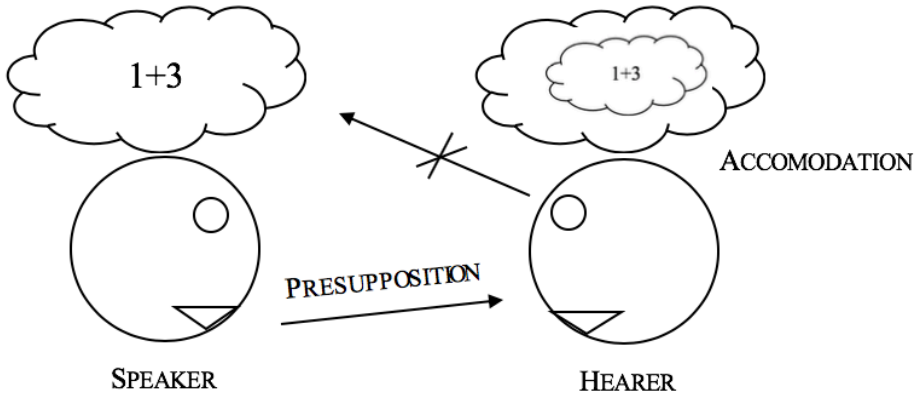
Assuming that presupposition dropping has taken place from [PL] to number-neutral, what triggered semantic reanalysis? Under what circumstances would the plural presupposition accompanying the use of a plural person marker become so unbacked that speakers would reanalyze their interpretation and drop it from their structural representation?

3.4.1 Unbacked presuppositions in non-stereotypical use of [PL] pronouns

The answer begins with the common ground disparity between speakers and hearers. Oftentimes, a speaker felicitously uses plural first-person reference when the hearers are unable to verify the plurality of the reference. This includes many different event contexts outside the immediately

observable context of the utterance itself, including past events, future events, and psychological realities such as beliefs, attitudes, and the like. For example, when the speaker utters *We were at the ballgame* but is the only member of the group present for the utterance, the use of the plural requires the hearers to accommodate a presupposition about the size of the group the speaker was a part of in order to arrive at a truth value for the utterance. For the same reasons, when the utterance is about the addressee, whether interrogative or declarative, the speaker is not expected to always be aware of the number of group the addressee was involved with.

Figure 13. Speaker/Hearer Knowledge Mismatch and Accomodation



Some speakers take advantage of this accommodation habit, and use the plural strategically for social reasons. For example, some languages use the plural to imply a social positioning dynamic of higher versus lower vertical social distance, a process referred to as Plurification (Song & Heine 2016). Different first plural clusivities are used socially to place the speaker in a separate group from the hearer (like the 'royal *we*') or in the same group (like the waiter who asks *What are we having tonight?*). Still other uses express an honorific or pejorative sense toward the referent (Siewierska 2004: 214–245). Crucially, each one of these involves the strategic manipulation of the plural presupposition; no shift in features has occurred. The speaker is still trying to trigger a plural message.

The hearers do not always take the bait. When hearers find the invitation to accommodate a plural presupposition implausible, they have two options (based on Schwenter & Waltereit 2010):

i. Assume the speaker is using the form uninterpretably (e.g. a speech error)

ii. Reanalyze the message as containing a homophonous but unfamiliar lexical item

If the hearer analyzes the use as infelicitous, then no reanalysis takes place and the grammars of both speech act participants remain the same. But if the hearer instead decides for the second option they must ascertain a meaning for the item in question that is satisfied in the speech context. Crucially, this new meaning will have to be felicitous in the 'non-stereotypical' context.

Recall that we are dealing with the features [SG] and [PL], that plural is semantically strong and singular is semantically weak. Deo (2015) makes the point, when examining changes, such as the oft-cited Jespersen cycle in negation or aspectual changes such as [PROGRESSIVE] > [IMPERFECTIVE], that the relationships between the sources and goals of these changes appear to consistently involve asymmetric entailment between members of privative Strong/Weak dyads as outlined in Horn & Abbott (2012). Deo 2009, 2015 demonstrates that, in formal denotation, [PROGRESSIVE] is semantically stronger than the more general [IMPERFECTIVE], entailing it, so they form a Strong/Weak (or S/W) dyad.

Deo claims that this scale underpins the reanalysis process for functional morphemes: They all involve privative features shifting from stronger to weaker meanings. Since the S entails the W, the truth-conditions are not affected. On the other hand, the W form only implicates that the S form is false. Our present observations about [PL] to [SG] shifts fit this pattern very well given that [PL] entails [SG], and is the stronger of the two. Thus, speakers must rely on pragmatics to negotiate when [1.PL] should be used over [1.SG], since they are both felicitous when the speaker and others participated in an event or state with the same thematic role. This negotiation results in the standard

implicature that the use of [1.SG] (Weak general form) implies that the [1.PL] (Strong specific form) could not have been used.

However, some speakers use a strategy in which they invite accomodation of plural presupposition when only the person feature can be verified in context. In such a case, a hearer may not accommodate the number presupposition and will simply assign new meaning to the form that is entailed by the previous one. The reanalysis results in the assignment of the Weak semantics to a form previously associated with Strong. In this case, the singular meaning is attached to the plural form.

Of serious importance for this dissertation, the process leading to reanalysis produces a strong directionality because it is driven by the avoidance of unintepretability. Conversely, the use of the weak form in contexts the hearer would expect the strong will only result in a pragmatic difficulty, because the use of [1.SG] only implicates that [1.PL] could not have been used, so there is no need to drop the plural's presupposition, and there is no presupposition on the singular to drop.

3.4.2 Removal of the old singular

It is important to remember that when the [PL]-to-general shift took place, it was not that the morpheme 'shifted' to a new meaning. Instead a hearer, faced with accommodation of presuppositions (via ϕ-features) that they found unlikely ceased to accommodate unbacked presuppositions (Schwenter & Waltereit 2010). Instead, they posited a new lexeme with an identical form but lacking the offending presupposition, leaving the rest intact. This step is exemplified by English and Mongol in (41).

The end result of Stage 2 is that reanalysis has created a homophony of plural (old) and general (new) forms. Once the reanalysis has taken place, the plural form is used not only in strictly plural contexts but also in those that where number was ambiguous. The two β forms will always

reduce to just the one with more general features since they are homophonous, meaning that language learners have no reason to piece them apart. The more feature-general form covers all contexts, so in one generation (or less) the β:β competition is resolved.

(41) Stages of the Plural to General Shift

a. Stage 1: Featural distinction

	α[2]	β[2],[PL]
English	*thou*[2]	*you*[2],[PL]
Mongol	**ci*[2]	**ta*[2],[PL]

b. Stage 2: Semantic reanalysis (via feature drop)

	α[2]	β[2]	β[2],[PL]
English	*thou*[2]	*you*[2]	*you*[2],[PL]
Mongol	**ci*[2]	**ta*[2]	**ta*[2],[PL]

c. Stage 3: Generalize

	~~α[2]~~	β[2]	~~β[2],[PL]~~
English	*thou*[2]	*you*[2]	*you*[2],[PL]
Mongol	**ci*[2]	**ta*[2]	**ta*[2],[PL]

Now the general β form is also semantically equivalent to the old singular (α), and thus competes with it. Faced with competition between morphemes for the same contexts of use, learners will search for some way to disambiguate the two (Shin & Miller forthcoming). If they find no way, they will prefer the more frequent item (β) and the less frequent will fall out of use.

3.4.2.1 Competition-driven Register Split

However, if speakers of the language *can* find some contextual way to disambiguate the use of the pronouns, the competition may result in a stable situation preserving both 'singular' forms. The social causes of semantic reanalysis from plural to general sometimes provide just such contexts (Brown & Gillman 1960, Silverstein 2003).

As previously stated, evidence shows that speakers often used number for social reasons, either to honor or denigrate themselves or the hearer by association or disassociation with a group.

It is clear that person marking is often not the only cue speakers use in honorific or pejorative contexts. In fact, a whole host of cues often accompany such uses resulting in honorific registers (Agha 1998). If those acquiring the language associate these cues with newly reanalyzed plural, they may assume that the new general lexeme is a lexeme for use in the formal or polite register only. In this case, the necessary competition only takes place in that register and the familiar register is left with the old dichotomy. This process is exemplified in (42) for French.

(42) Middle French Register Split

	formal/polite register			familiar register	
Original	*tu*[2]		*vous*[2],[PL]	*tu*[2]	*vous*[2],[PL]
Reanalysis	*tu*[2]	*vous*[2]	*vous*[2],[PL]	*tu*[2]	*vous*[2],[PL]
Generalization	*tu*[2]	*vous*[2]	*vous*[2],[PL]	*tu*[2]	*vous*[2],[PL]

A register split is not the only way to preserve both forms. In Terêna (Arawakan), competition resulted rather in clusitivity split (Nascimento 2012:100, 104). The non-stereotypical use of *v-* '1PL' in 1SG-expected contexts was originally for the purpose of inclusion (avoiding appearance of selfishness). In addition, *v-* '1PL' is used in '2SG' contexts for politeness, although this shift is incomplete and speakers still look to trigger a 1PL.INCL reading. The result of using a 1PL in singular contexts for inclusion however, has pragmatically restricted the original [+nasal] '1SG' to an exlusive reading (Ekdahl & Butler 1979:67)[18]. In both Romance and Terêna, the factors leading up to the non-stereotypical use were what provided those acquiring the language with fodder to posit separate spheres for each form.

[18] "Quando se usa a primeira pessoa do plural, abrange geralmente a pessoa a quem se fala: vítuke 'nosso (nosso e seu)'. Compare-se a forma singular induke 'meu/nosso (mas não de você)'. Se a pessoa que fala não quer parecer egoísta, pode usar a primeira pessoa do plural quando se espera a primeira do singular. Às vezes quem fala usa a primeira pessoa do plural, mesmo quando ele próprio não está incluido: motóvaa vánjea tamborna ûti? 'posso tomar emprestado nosso tambor?' (que pertence ao ouvinte)."

3.4.3 Renewing the NUMBER Distinction: Dependent Shift

Even for those languages, where the competition results in only one form lasting, the plural-to-singular cycle is not finished yet. The general form does not itself denote singular yet, until the formation of a new plural pushes it there. This process will also involve the semantics and pragmatics working in concert.

In some languages, a new form emerges consisting of the general form bearing a new morpheme and denoting the plural. The purpose of the new form is emphatic plural. The new morpheme is a plural form, often but not necessarily an affix, drawn from elsewhere in the grammar. Often it is simply the plural affix for regular nouns. Mongol and certain dialects of English exemplify this:

(43) Process: $\beta_{[2]} + \mu_{[PL]} = \beta\text{–}\mu_{[2],[PL]}$

a. English: *you*$_{[2]}$ + *-s*$_{[PL]}$ = *yous*$_{[2],[PL]}$

b. Mongol: *ta*$_{[2]}$ + *-nar*$_{[PL]}$ = *tanar*$_{[2],[PL]}$

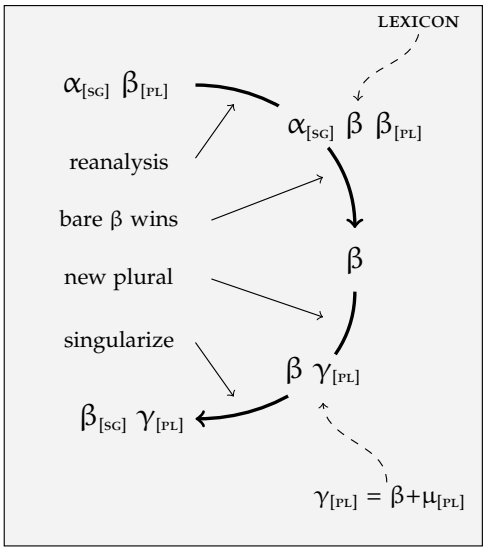
Since β has no number feature, this new construction poses no risk of a feature conflict. The language now has two related forms: Bare general $\beta_{[2]}$ and distinctly plural $\beta_{[2]}\text{–}\mu_{[PL]}$. Once again, as it was in the beginning, pragmatics leads speakers to distinguish between them, and they begin to use β only for SG contexts. This stage will be called 'singularize'. As noted in Chapter 2, this stage is not instantaneous. Since it is based on pragmatic competition, the 'singular' is used with a plural referent in fewer and fewer contexts as the new plural becomes conventionalized.

3.4.4 Independent + Dependent = Cycle

The plural-to-singular cycle ends where it began, with a stable <Strong,Weak> dyad of <PL,SG.>. Ending in that way sets the stage for the cycle to take place again. The cycle involved an independent shift, from [PL] to general, in which actual featural reanalysis occurred. This shift led

to competition, resulting in only the shifted marker remaining. A dependent shift then brought the cycle full-circle with the renewing of number contrast. The full cycle appears in **Figure 14**.

Figure 14. Full plural-to-singular reanalysis cycle



3.5 Dependent vs. Independent: Pragmatic Restriction vs. Reanalysis

The next goal of this chapter is to classify all of the shifts found in Chapter 2 based on their Independent or Dependent status. Preliminary results are shown in the categorization in **Table 13**. Each kind of shift will be looked at closely in light of the feature semantics outlined above.

Table 13. Independent and Dependent Shifts

DEPENDENT	INDEPENDENT
1 > 1SG	1PL > 1
1PL > 1PL.INCL	1PL.INCL > 1PL
1PL > 1PL.EXCL	1PL.EXCL > 1PL
1PL > (1PL.EXCL) > 1DUAL.EXCL	1PL > 2SG
1PL > (1PL.INCL) > 1DUAL.INCL	2PL > 2
1DUAL.INCL > 1PAUC.INCL	3PL > 3
2 > 2SG	
2PL > 2DUAL	
3 > 3SG	
3PL > 3DUAL	

3.5.1 Dependent Shifts as Pragmatic Restriction

First we will tackle the dependent shifts and show that they involve no change in features but only pragmatic restriction of the expression of existing features to a subset of their original contexts of use. The model example was already outlined in the plural-to-singular cycle in which the erstwhile plural, now a general marker, was finally restricted to only singular contexts due to pragmatic pressure, through MAXIMIZE PRESUPPOSITION, from a more specifically plural form. Can this same pattern be applied to all of the dependent shifts?

Seen in only Kashibo-Kataibo, but present nonetheless, 2PL > 2DUAL and 3PL > 3DUAL shifts were classified as dependent since they correlated with the innovation of a new 2PL and 3PL respectively. As with the general-to-singular shift, we may assume that the original purpose of the new markers was for plural emphasis. The form of the new plurals combined the 'singular' with a plural morpheme *-kama* used elsewhere in the nominal system. Following the format of the general-to-singular shift, we could assume that the new plurals forced the old pragmatically down.

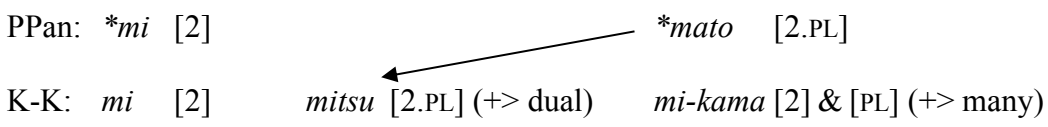
(44) KASHIBO-KAKATAIBO (PANOAN): REFERENCE Zariquiey (2011:221)

PPan: **mi* '2SG' **mato* '2PL'

K-K: *mi* '2SG' *mitsu* '2DUAL' *mi-kama* '2PL'

However, unlike the general-to-singular shift, since the original Proto-Panoan 2nd and 3rd person plurals had the feature set [2.PL] and [3.PL], they could not be forced completely out of the plural contexts down to singular reference. Instead, they were forced into contexts of use that were not emphatically plural but were also consistent with the sum portion of their semantics. This is apparently the source, throughout the survey, of what I will call 'pragmatic duals'. They are pragmatically confined to contexts that are 'merely plural', i.e. literally the least plural amount one can reference and still be plural. But if the shifting plurals already had plural features, what possible set of features could have been *more* plural than them to compete with them?

(45) KASHIBO-KAKATAIBO (PANOAN): FEATURES Zariquiey (2011:221)



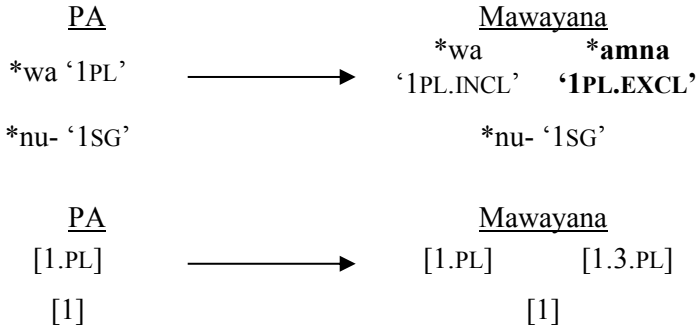
The new plurals began as structures for the explicit utterance of plurality for emphasis. In other words, the form, the 2SG *mi-* and the plural morpheme *kama*, had an implicature of 'many' individuals. This would hypothetically be enough at the outset to begin to restrict the old plural out of its plural space. But [2] & [PL] are merely the features that the new plural *entered* the paradigm with. Once a pronoun is part of the system, its features are defined by contrast. The question of what that feature would be is taken up in the Conclusion to this chapter.

There is another important related question. Does the state of affairs in (45), which is dependent on pragmatic restriction, remain the same (that is pragmatically motivated) over generations? Or can the dual implicature for the old plural eventually 'harden'? For example, since Kashibo-Kakataibo *mitsu* lacks any overt connection to plural morphology, might those acquiring the language simply acquire it as a 'true' dual, with a feature corresponding to the numeral 'two', and *mikama* as the new undecomposable 2nd plural? Standing in the way are the contexts in which *mitsu* is pragmatically released and allowed more generally plural reference. Exposure to those contexts of use would hypothetically be enough to continually inform new first language learners about its [2.PL] feature set. However, even without these contexts, is it possible that in a 3-way number system, the feature used for 'dual' is simply *always* [PL], the same as that used for the higher number in 2-way singular/plural systems? This issue will be taken up in the Conclusion.

3.5.2 1PL > 1PL.INCL/EXCL Shifts: Pragmatic Restriction

In Chapter 2, we saw that 1st plurals shifted to a clusive value when an overt marker of the opposite clusivity was innovated. The featural trajectory of these shifts appears fairly straightforward.

(46) MAWAYANA (ARAWAKAN) Aikhenvald (2018:34) & Aikhenvald (2017:18)



What is not as straightforward as plural and singular is the pragmatic relationship between inclusive and exclusive. Neither is featurally speaking a subset of the other. In fact it is the bare [1.PL] that is clearly the weak form of both. It appears as though clusivity markedness depends entirely on morphological markedness. What does this mean for the long-term stability of acquiring the pragmatic restriction in, for example, a <S,W> <[1.2.PL],[1.PL]> dyad instead of just positing them as opposites? Are all clusive distinctions underlyingly a competition between a truly clusive marker and a general one?

3.5.3 1PL > 1PL.INCL/EXCL > 1DUAL.INCL/EXCL Shifts: Pragmatic Restriction

We do know what happens to a [1.PL] person form if *two* new forms of opposite clusivity are innovated in sequence. The process, outlined in 2.3.5, has two stages, the initial dependent shift from 1st plural to the opposite clusivity of an innovated clusive marker and then a second dependent shift that forces the plural out of even that space upon the innovation of an overtly clusive marker to fill the clusive space it was pragmatically sequestered into. The evidence from primary sources does confirm that even generations along after the shift has occurred, these ‘duals’ are still only pragmatically confined to their clusive dual contexts and can easily be set free for more general plural reference under the right discourse contexts.

What happens if a 1DUAL is already present in the language when new clusives are innovated in sequence? This situation took place in six of the Pama-Nyungan languages in the

survey[19]. The outcome is exactly like what happens if a new 1DUAL of a specific clusivity is innovated; viz. the old dual is pragmatically forced into the opposite clusivity. This is visualized in

Figure 15 for the language Wik-Ngathan and in feature notation in **Figure 16**.

Figure 15. 1PL > 1DUAL with endogenous 1DUAL: WIK-NGATHAN Sutton (1978:244)

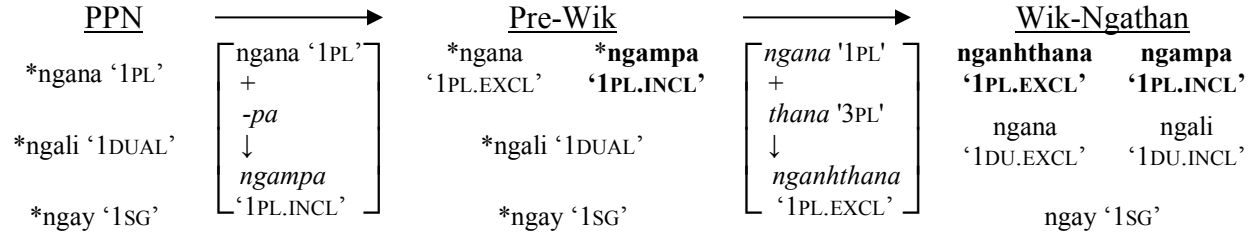
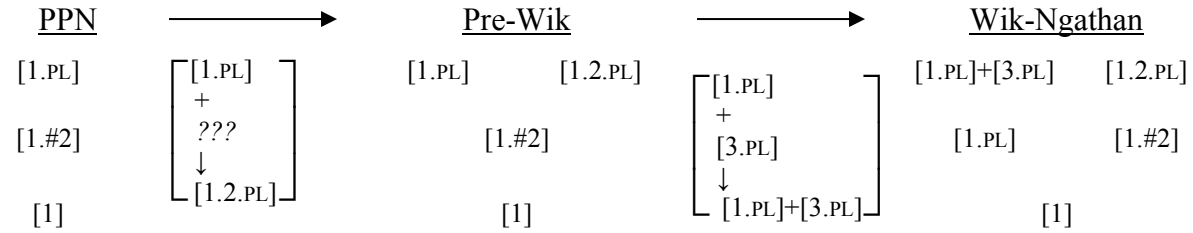


Figure 16. 1PL > 1DUAL with endogenous 1DUAL: FEATURES ONLY



3.5.4 1PL > 1PAUC.INCL

Another interesting case from the Panoan language family suggests this sequence of dependent shifts can proceed even further if a morphologically explicit dual is innovated after a shift from 1st plural to dual. Compare the Proto-Panoan personal pronouns to those of Iskonawa (Panoan).

Table 14. Proto-Panoan Pronouns (Oliveira 2014)

	1st	2nd	3rd
SG	*ʔɨ̵	*mi	*ha[a]
PL	*no[-]	*mato	*hato

[19] Ayabadhu (Pm), Kugu-Muminh (Pm), Wik-Mungknh (Pm), Wik-Ngathan (Pm), Djadjawurrung (SP), Madhi-Madhi (SP)

Table 15. Iskonawa Pronoun Bases (Zariquiey 2015:98)

	1.EXCL	1.INCL	2	3
SG	ea-		mi-	oa
DUAL (#2)		no rabe		
PAUCAL (#3-4)	eabo	no	mibo	abo
PL (> #4)		nobo		

The Iskonawa reflex of the Proto-Panoan 1PL *no* has had its original space divided up between not only an innovative 1PL.EXCL and 1PL.INCL but also an explicit dual. Given that the forms based on *no* all express inclusivity, we can propose the following order of innovations and pragmatic shifts to account for the present Iskonawa distribution.

Figure 17. Development of Iskonawa no '1PAUC.INCL'

1. no [1.PL] '1PL' > no [1.PL] '1PL.INCL'
   - New *eabo* '1PL.EXCL' = *ea* '1SG' + *-bo* 'PL': [1] & [PL]
2. no [1.PL] '1PL.INCL' > no [1.PL] '1DUAL.INCL'
   - New *nobo* '1PL.INCL' = *no* '1PL.INCL' + *-bo* 'PL': [1.PL] & [PL]
3. no [1.PL] '1DUAL.INCL' > no [1.PL] '1PAUC.INCL'
   - New *no rabe* '1DUAL.INCL' = no '1DUAL.INCL' + *rabe* 'two': [1.PL] & [#(2)]

First *no* was forced out of its exclusive space by the innovation of *eabo* '1PL.EXCL', made from the combination of *ea* '1SG' and *-bo* 'PL'. Then it was pushed down to just dual reference by the parallel innovation of *nobo* '1PL.INCL', from *no* and *-bo* 'PL'. We can safely assume that the original emphatic purpose of *nobo* was to emphasize the largeness of the group including the speaker (and pragmatically the hearer). The marker *no* was first restricted to 'non-large' pluralities and then upon full integration of *nobo*, eventually to minimal plurality, i.e. dual. Finally, the use of *no rabe* '1DUAL.INCL' for explicit dual reference, itself built from *no* and the numeral *rabe* 'two' in Spec#P, only left the number space directly above dual but below 'large groups' for *no* [1.PL], resulting in paucal reference, the specifics of which would be determined in context.

3.5.5 Independent Shift as Referent Reanalysis

Besides the plural-to-general shifts outlined in their own section above, viz.. 1PL > 1, 2PL > 2, and 3PL > 3, there are quite a bit fewer kinds of independent shift than dependent. The only three that can be said for certain to be independent are: 1PL.INCL > 1PL, 1PL.EXCL > 1PL, and 1PL > 2SG.

The first two involve clusivity loss. It is quite clear how these shifts could fit the pattern set in the plural-to-general shift. The clusive markers, at least in their most plural underlying forms, do form Hornian <Strong,Weak> pairs with the bare first plural [1.PL]. Again, social purposes call for the use of Strong forms in circumstances where only the Weak form is truly licit. For the clusive markers these purposes are to either include or exclude the hearer or to weaken the inclusion/exclusion of the hearer through strategic dispensation of the clusive forms. For example, using an inclusive form in a circumstance where there is no reason the hearer should be included with the speaker, but using it anyway to avoid the social reprecussions of exclusion.

Just like with the <[PL],[SG]> pair, the use of the weak form [1.PL] will not trigger a dilemma leading to reanalysis for a language hearer since the weak form is only pragmatically restricted from those contexts anyway. In other words, anywhere where [1.3.(PL)] or [1.2.(PL)] could be used, [1.PL] could as well. This again sets up the foundation for a Strong → Weak directionality since only using the Strong form in Weak contexts could possibly lead to reanalysis.

Similar to the use of the inclusive for general 1st plural contexts in order to artificially accommodate the addressee when only speaker participation is warranted, the inclusive [1.2.PL] can also be used to artificially include the speaker so as not to isolate the addressee, in cases where only addressee reference is warranted. This can lead to shifts from 1PL.INCL > 2SG. This shift is present in two diffterent branches of Uto-Aztecan, the Takic and Aztecan branches. The idea behind it is simple. Hearers witness a speaker including themselves with the hearer when only

hearer features are justified in context so speakers have a choice between infelicitousness or reanalysis as meaning what is justified in context, i.e. addressee reference. This leads to reanalysis of the person martker from referencing [1.2(PL)] to [2]. In other words, a speaker uses a 'we' form, when only 'you' is justified, so as not to single out the hearer, leading the 'we' form to be reanalyzed as a 2nd person pronoun.

3.5.6 The Case for SG > PL as dependent Referent Restriction

There yet remain a few of the shifts from Chapter 2. Some will be picked up in Chapter 4 but SG > PL shifts deserve attention here for the possibility that they may be dependent shifts involving referent restriction. This sort of change from singular to plural is interesting because it runs directly opposite of the PL to SG cycle we have seen robustly attested above. Five languages participated in this shift; three (Koti, Makhuwa, and Doko) from Bantu and one (Brahui) from Dravidian.

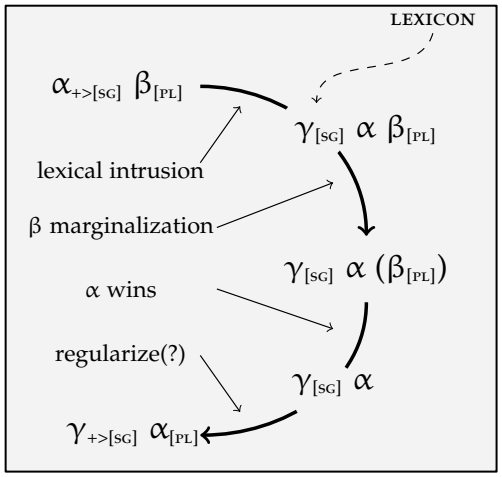
We will look first at the Dravidian language Brahui since it is the only one for which there is a published hypothesis concerning the diachronic trajectory it took to get the pronominal reference distribution it has today. Brahui has plurals of the first person that were originally first singulars in the earlier versions of the language. So Brahui *nan* '1PL.NOM' and *nan-* '1PL.OBL' descended from Proto-South Dravidian **ña:n* '1SG' and the Brahui agreement suffix *-in* '1PL' from the Proto-Dravidian 1SG agreement suffix **-e(:)n* (see Andronov 2001, Krishnamurti 2003). Meanwhile, the new Brahui first singular pronoun *i:* and 1SG agreement suffix *-iv* descend from the Proto-Dravidian near demonstrative iC 'this'.

Table 16. Brahui 1st Person Paradigm (Andronov 2001)

		SG	PL
Independent	NOM	i:	nan
	OBL	kan-	nan-
Agreement		-iv, -e:v, -v, -r	-in, -n

Given the apparent cognateship, Andronov (2003) proposes that *iC* 'this' 'disturbed' the plural/singular contrast, causing *nan* to 'oust' the old 1PL. If this is the case, the addition of *iC* 'this' as a [1SG] marker increased the 1st person contrast to a 3-way contrast between *iC* 'this (body)', *nan* [1], and *nam* [1.PL]. Pragmatic pressure from *iC* (> *i:*) forced *nan* out of narrow singular reference. The demonstrative *i:* would be used when just the speaker is meant, *nam* for establishing specifically plural contexts, and *nan* would have expanded its niche as a general marker for use wherever referent number had already been established in the discourse, or was unavailable or unimportant. There it competed with, and eventually out-competed *nam*, reducing the contrast again. We can imagine that this result came down to simple frequency effects, since *nan* was used in the majority of plural contexts blurring the line between their respective spheres of existence. Language learners were eventually presented with ambiguous input and eventually saw the two as direct competitors. The one used with greater frequency in a larger number of plural discourse contexts won out.

Figure 18. Possible singular-to-plural pragmatic restriction cycle



The intrusion of a (very) near demonstrative into the pronoun space is essentially equivalent to what we would expect if a singulative 1st person marker had been innovated. With

more specific 'singular' reference, it pragmatically pushed the marker with a bare PERSON feature into general contexts. Does this proposed trajectory fit the SG-to-PL shifts seen in Bantu?

Recall that in the Bantu P31 languages, Makhuwa and Koti (P311), we see a *ki-* '1SGS' ~ *ni-* '1PLS' paradigm, where the first plural *ni-* '1PLS' is descended from PB **ɲi-* '1SGS/O'. Where did *ki-* come from? The first singular form *ki-* is part of a general Zone P and S change towards having a *ki/kɛ* '1SGS', which are portmanteau forms made from a morpheme *k-* with the first singular *ni-* (Babaev 2008:144). The *ki* forms spread geographically, not genetically, to Makhuwa and Koti. Although a full explanation is lost to time, it is possible that the areal spread of *ki* was due to its use as an emphatically singular. In that case, the trajectory could very possibly have followed that for Brahui. In the second person, PB **ʊ-* '2SGS' has shifted to Doko C50 *ò-* '2PLS', which borrowed the form *dò-* for '2SGS' from a neighboring Ubangi language (Babaev 2008:145). Once again, we lack of historical information, but the facts are at least consistent with the proposal.

Admittedly the sample size for these languages is small, but it does seem telling that in all the cases where the singular went all the way to becoming a plural, the language either borrowed or innovated a new, more specifically singular form, that language acquirers would have to sort out in competition with the old singular. Basing our analysis on the trajectory proposed for Brahui, it appears that this competition results in forcing the erstwhile singular into a general/paucal, which competes in frequency with (and wins out over) the more discourse-restricted plural.

3.6 Conclusion

In this chapter, it was shown that the formalization of person marking features allows us to see more clearly what has changed during the two types of PMRS: independent and dependent shifts. First, a case was made for a specific set of semantic features independent of their role in PMRS. These included two assertive PERSON features, [1] and [2], merging in ϕP, which were tailored to

include the speaker or hearer respectively in the mass rather than directly index them as atoms. The next to merge, in DivP, is the dividing plural [PL], whose purpose is to portion out inherently mass entities (Borer 2005:95). This plural feature is privative and no corresponding singular needed to be posited, since the pragmatic pressure of the mere existence of a distinctly plural option caused Div-bare pronouns to be restricted, more or less, to singular contexts by MAXIMIZE PRESUPPOSITION. Finally, a number phrase #P was posited above DivP, where numerals and quantifiers are merged as specifiers. This accounted for true 'morphologically transparent' duals, trials and quadrals, etc.

3.6.1 Featural Anatomy of PMRS

The next step was to apply these features to specific shifts. In some cases, like the plural-to-singular cycle, there is ample documentation of the different stages allowing for confident analysis of the semantic and pragmatic relationships between the markers all along the way. This formed the basis for establishing a featural account of the trajectories of the independent and dependent shifts involved, telling what exactly changed (or didn't change) in the course of these shifts. The patterns that were identified were then compared against the facts known for less well documented shift trajectories and found to be consistent.

Table 17. Independent Shifts: Feature Reanalysis Summary

INDEPENDENT	FEATURES SHIFTED
1PL > 1	[1.PL] > [1]
1PL.INCL > 1PL	[1.2.PL] > [1.PL]
1PL.EXCL > 1PL	[1.3.PL] > [1.PL]
1PL > 2(SG)	[1.2.PL] > [2]
2PL > 2	[2.PL] > [2]
3PL > 3	[3.PL] > [3]

Specifically it was discovered that independent shifts are the result of actual feature reanalysis, while dependent shifts involve no change in features but rather a shift in the pragmatic relationship of a marker to its paradigm. Dependent shifts restrict a marker to a subset of its original

contexts of use because a new marker was introduced/grammaticalized into the paradigm, with features more specifically consistent with some of the more general marker's contexts.

Table 18. Dependent Shifts: Pragmatic Restriction Summary

DEPENDENT	IMPLICATURE	COMPETITOR
1SG > 1(PL)	[1] +> '1' +> '1PL'	vs. [PROX]
1 > 1SG	[1] +> '1SG'	vs. [1.PL]
1PL > 1PL.INCL	[1.PL] +> 'INCL'	vs. [1.3.PL]
1PL > 1PL.EXCL	[1.PL] +> 'EXCL'	vs. [1.2.PL]
1PL > 1DUAL.INCL	[1.PL] +> 'INCL' +> 'DUAL'	vs. [1.3.PL] then [1.2.PL]
1PL > 1DUAL.EXCL	[1.PL] +> 'EXCL' +> 'DUAL'	vs. [1.2.PL] then [1.3.PL]
1DUAL.INCL > 1PAUC	[1.PL] +> 'DUAL' +> 'PAUC'	vs. [1.3.PL] then [1.2.PL] then [1.DUAL]
1DUAL > 1DUAL.INCL	[1.DUAL] +> 'INCL'	vs. [1.3.PL] or [1.PL] +> '1DUAL.EXCL'
1DUAL > 1DUAL.EXCL	[1.DUAL] +> 'EXCL'	vs. [1.2.PL] or [1.PL] +> '1DUAL.INCL'
2SG > 2(PL)	[2] +> '2' +> '2PL'	vs. [2.???]
2 > 2SG	[2] +> '2SG'	vs. [2.PL]
2PL > 2DUAL	[2.PL] +> 'DUAL'	vs. [2.#]
3 > 3SG	[3] +> '3SG'	vs. [3.PL]
3PL > 3DUAL	[3.PL] +> 'DUAL'	vs. [3.#]

3.6.1 Pragmatic Number

As this analysis progressed, it became essential to more clearly suss out the semantic and pragmatic divides within the number system. Specifically, many dependent shifts required the existence of 'pragmatic' duals: person markers that are primarily used for dual reference but came to that condition through pragmatic restriction in the presence of another plural, not feature reanalysis. In other words, the features of the original plural remain [PL] but are pragmatically restricted to use in contexts involving the lowest number of referents consistent with that feature: two. In 2nd and 3rd person, the former plural was reduced to dual reference when an emphatic 2nd or 3rd person plural was introduced to the system. The pragmatic assumption is that if greater numbers of referents were intended, the speaker would have used the emphatically plural marker. In 1st person, plural-to-dual took place when both an inclusive and exclusive first plural were formed. Furthermore, it was shown in languages like Iskonawa (**Figure 17**), that if a 'true' numeral dual was then innovated, the dual-restricted plural then became pressured from 'dual' into 'paucal'.

This set of affairs lends itself to a general theory of pronominal number that differs from existing proposals. The primary thrust of the proposal is that the same plural feature that underlies the plural in simple two-way singular/plural systems is also the feature in the dual of three-way singular/dual/plural systems. For clarity's sake, I will use [DIV] for this feature in **Figure 19**, instead of [PL] designation that is used above.

Figure 19. Possible singular-to-plural pragmatic restriction cycle

a. Two-way system: Singular [ ], Plural [DIV]

b. Three-way system (2nd/3rd person): Singular [ ], Dual [DIV], Plural [#]

OR (1st person): Singular [ ], Dual [DIV], Inclusive [1.2(.DIV)], Exclusive [1.3(.DIV)]

c. Four-way system: Singular [ ], Dual [#2], Trial/Paucal [DIV], Plural [#]

d. Five-way system: Singular [ ], Dual [#2], Trial [#3], Quad/Paucal [DIV], Plural [#]

In other words, in systems that contrast three or more numbers, the highest number under the plural, whether it is a pragmatic dual, trial, or paucal is featurally merely plural (mass divided). Its specific realization depends on the content of #P in the other markers within its paradigm. Recall that #P is the phrase hosting numerals and quantifiers like 'many' in its specifier. The high plural in these systems has a contentful number feature [#] but no numeral or quantifier specifier limiting the range. This counting plural head is a 'plural of plural' that only allows exclusive sum (and not sum and atom) reference (Mathieu 2014:17). This I take to be the 'hardened' grammaticalized feature realization of the emphatic plural implicature 'many' that forced the plural into the dual space in the first place. Any subsequent addition of markers involving actual numerals (i.e. true duals and trials) will force the plural upward into minimally plural contexts excluding whatever is being explicitly marked.

In first person, restriction of an old plural to dual does not require the $\#^0$ head. Instead the progression from plural to dual is stepwise. First a clusive marker is innovated and the plural is

forced to the opposite clusivity. Then if a marker of that clusivity is brought in, no room is left in the plural context space for the plain plural. This follows since if the speaker meant a group including the hearer, they should use the explicit 1st inclusive and if they meant a group without the hearer, they should use the 1st exclusive. Thus the bare 1st plural is forced (without necessary reference to #P) into dual reference. From there, the addition of explicit numeral duals (and trials, etc.) will do the same thing as in 2nd and 3rd person: force the plural up out of those contexts.

Chapter 4: Modeling PMRS & Conclusions

4.1 Introduction

This final chapter has two purposes. The first purpose is to look at the remaining cases of PMRS that do not involve an <S,W> dyad. This will lead to a wider sense of the possibilities for feature reanalysis. The second purpose is to compare and contrast the details of the shifting features from Chapter 3 against the models of semantic change outlined in Chapter 1. These included 'bleaching', 'invited inference', Eckardtian reanalysis, and Deo's Hypothesis for Semantic Change in functional domains. In Chapter 3, it was found that Independent shifts involve actual reanalysis of a pronoun's feature set, while dependent shifts do not.

Table 19. Independent Shifts: Interim Feature Reanalysis Summary

INDEPENDENT	FEATURES SHIFTED
1PL > 1	[1.PL] > [1]
1PL.INCL > 1PL	[1.2.PL] > [1.PL]
1PL.EXCL > 1PL	[1.3.PL] > [1.PL]
1PL > 2(SG)	[1.2.PL] > [2]
2PL > 2	[2.PL] > [2]
3PL > 3	[3.PL] > [3]

So far, the reanalysis that we have seen is instigated by the use of a pronoun in contexts where a presupposition necessary to its original interpretation is not adequately backed by contextual cues. As I outlined in detail in the previous chapter, this reanalysis is equivalent to saying that hearers posit a new morpheme, homophonous to the old pronoun, but lacking the offending presuppositions. In all the independent shifts that were investigated, the resulting feature set is a subset of the original features. But is this the case with all of the examples of actual reanalysis? We will see it is not. Furthermore, on the surface, this subset > superset meaning reanalysis could be analyzed as regular 'bleaching'. The pronoun lost semantic content, leaving it with a wider range of contexts for its use. However, some issues remain. First, we have not dealt with some of the 'features' that appear in a few of the shifts documented in Chapter 2.

Specifically, some of the shifts result in an honorific pronoun. Are honorifics pronominal features like PERSON and NUMBER (Corbett 2006)? If so, all of the changes involving it show honorific quality only in the output, never the input, of PMRS. Is this an example of feature gain? In this chapter, I argue that it is not a feature but that honorific forms are simply pronouns built the normal way but restricted to specific honorific registers.

The next issue that is tackled is the difference between 'bleaching' and Deo's (2015) Semantic Change in Functional Domains. Deo claims that not only will functional reanalysis proceed along lines from semantic superset to subset, specific to general, what underlies the specific-to-general directionality is the <Strong,Weak> Horn scale relationship between them. What would this mean for a privative dichotomy in which the members do not form a <Strong,Weak> pair? I investigate this by looking into shifts in the GENDER feature and find that these do not exhibit strong directionality, consistent with the proposal from Chapter 3 that it is the underlying asymmetric entailment between the members of an <S,W> dyad that results in directionality.

The last shifts to be considered are ones in which the resulting PERSON feature is not a subset of the shift source features. All of the documented examples involve shifts from 3rd person. I show that the shifts seen in this survey represent two different phenomena, separating 3-to-SAP shifts from impersonal-to-SAP shifts like French *on*. The latter I show are not reanalysis but Semantic Redistribution. The 3-to-SAP shifts in the surveyed languages are regular reanalysis, like the other independent shifts described in **Table 19**, but are triggered not by unbacked presuppositions per se, but by a social practice called Indirect Reference.

Finally, all of the shift types seen and formalized in this dissertation will be compared against the four models of semantic change that were outlined in Chapter 1; Semantic Bleaching,

Invited Inferencing, Eckardtian Semantic Reanalysis, and Deo's Semantic Change for Functional Categories. Discrete versus smooth change is discussed. I show that it is not that case that reanalysis always follows an S > W cline. In fact, it is remarkably unconstrained in most cases. It is only in those cases where the pronoun is part of an <S,W> pair that the directionality emerges. Thus it is better to say that W > S directionality is restricted.

4.2 Application to other Features

In this section, I will examine how shifts in honorifics, gender, and 3-to-SAP fit, or do not fit, into the patterns of diachronic change that we have seen so far.

4.2.1 Honorifics via Register Split

A few of the shifts seen in this dissertation's survey result in an honorific sense to the resulting person marker. One possible way to view these shifts is that the honorific 'feature' is actually an implicature and honorificness or other respect values are subsets of the markers original contexts of use. This would classify shifts to honorific as pragmatic restriction, aligning with other dependent shifts. However, the shifts involved, like 2PL > 2SG.HON, are clearly independent shifts, not being necessarily accompanied by any additions to the paradigm that could pragmatically force them into only honorific contexts. If they are independent shifts and honor/respect is a ϕ-feature like any other, this would constitute independent feature gain, breaking our generalization that independent shifts involve reanalysis from a superset to a subset of features.

(47) Middle French Register Split (copied from Chapter 3)

	formal/polite register			familiar register	
Original	*tu*[2]		*vous*[2],[PL]	*tu*[2]	*vous*[2],[PL]
Reanalysis	*tu*[2]	*vous*[2]	*vous*[2],[PL]	*tu*[2]	*vous*[2],[PL]
Generalization	*tu*[2]	*vous*[2]	*vous*[2],[PL]	*tu*[2]	*vous*[2],[PL]

However, in Chapter 3, I presented evidence towards the claim that honorifics are not phi-features in the same way as PERSON, NUMBER, and GENDER. Neither are they implicatures

associated with person markers. Instead, honorific person forms are simply instantiations of the normal pronominal features within respectful or honorific registers. Evidence for this comes from how these markers are used. Seen in context, honorific person markers are but one part of a constellation of other honorific (or pejorative) signals that speakers use in specific settings (Agha 1998). This means that the use of honorific pronouns, along with other linguistic and non-linguistic signals, for the expression of respect is no different than using any other sociolect or dialect in their appropriate circumstances. Thus honorific 'features' need not be accounted for in our general theory of PMRS.

4.2.2 Gender

How do we distinguish between bleaching and directionality along a <S,W> relationship? One way is to look for features that are formally privative but semantically do not hold any subset/superset relation. GENDER, as described in Chapter 3, is just such a feature. Recall that gender distinctions in personal pronouns (1st and 2nd person) tend to be based on categories of biological sex (Corbett 1991:241-248). Although GENDER is often claimed to be privative (see Heim & Kratzer 1998), no argument can be made that one natural gender is the proper semantic subset of the other. In other words, the use of the more specific form does not assymetrically entail the weaker. Based solely on the privative relationship between the features, where one is contentful and the other null or identity, simple bleaching would predict directionality of gender mergers from contentful to null as shown in (48) for a hypothetical 2nd person gender merger.

(48) Sex-based GENDER features and Predicted Gender Merger

	Scenario 1			Scenario 2		
	⟦[MASC]⟧ = λx: male(x) = 1. x ⟦[FEM]⟧ = λx. x			⟦[FEM]⟧ = λx: female(x) = 1. x ⟦[MASC]⟧ = λx. x		
Predicted	$\alpha_{[2]}$		$\beta_{[2.MASC]}$	$\alpha_{[2.FEM]}$		$\beta_{[2]}$
	$\alpha_{[2]}$	$\beta_{[2]}$	$\beta_{[2.MASC]}$	$\alpha_{[2.FEM]}$	$\alpha_{[2]}$	$\beta_{[2]}$
	$\alpha_{[2]}$	$\beta_{[2]}$	$\beta_{[2.MASC]}$	$\alpha_{[2.FEM]}$	$\alpha_{[2]}$	$\beta_{[2]}$

'Bleaching' predicts that it will be the one with a contentful feature that will be reanalyzed to create competition. In Scenario 1, the language has a marked masculine feature. Something about the use of the 2SG.MASC pronoun in this language leads users to reanalyze it as having no masculine feature. Since it is homophonous with its old use ($\beta_{[2.MASC]}$), the two collapse. It also outcompetes the old bare 'feminine' α (really just the non-masculine category) through frequency since its features are consistent with both α and β's contexts of use. In Scenario 2, a different language semantically marks the feature associated with female referents. In this case, the marked feminine pronoun is the one that is reanalyzed, that collapses its old ($\alpha_{[2.FEM]}$) and new ($\alpha_{[2}$) uses, and that outcompetes the β 'masculine' (really just non-feminine).

There are two types of gender merger: *morphophonological erosion* and *redistribution of agreement patterns* (Di Garbo & Miestamo 2019:25). By far the most numerous and widespread mergers are phonologically driven, stemming from neutralization of phonemic distinctions, usually in a specific position like word-finally, that were necessary in order to keep the genders distinct. A few well-studied examples are seen in Germanic (Trudgill 2020:115). Phonological mergers will be disregarded since they do not tell us anything about the semantics. The other type of gender mergers are morphological mergers where one gender wins out over the other. We will focus on this type on the assumption that these mergers are semantically driven. This is assumed since in order for the gendered morphology to be in competition for the same contexts of use, there must have been some shift in features allowing them both to be licensed in those contexts.

One more note is necessary here. In the following sections, the gendered pronouns in 3rd person in Irish and Greek also refer to non-human and inanimate referents. This is called grammatical, or formal, gender and is contrasted with semantic masculine and feminine gender

that more closely correlates with notions of biological sex. In particular in the Greek example, the fact that non-human animals and objects were assigned gender and thus were referenced by the gendered pronouns was an important part of the gender merger. The question must be asked, are the features the same between gender assignment for human referents and the more arbitrary assignment for the others? Perhaps they are two completely different features, one semantically interpretable and the other only morphosyntactically important. This would fit with accounts like Foundalis (2002), which defend the case that grammatical gender is completely arbitrary, and all cross-linguistic correlation between a specific object (like a 'table' or 'hand') and a specific gender (e.g. *feminine*) is due to common genealogical descent. However, as Corbett (1991:63) pointed out, a purely formal "system is not found in any natural language: gender always has a basis in semantics. Furthermore, when semantic and formal criteria are both involved in gender assignment, they always overlap to some extent." Further, a significant literature has developed showing that what seems like arbitrary gender assignment may in fact have subtle roots in a perception of characteristics linking the object to that particular category and vice versa, the common characteristics of members of a given formal gender category may have semantic consequences on novel assignment[20].

Lack of consistency of grammatical gender assignment for specific nouns across languages is the rule, not the exception. However, these mismatches may not be evidence that the assignment of grammatical gender is completely arbitrary. Rather, they may be evidence that the specific physical characteristics honed in on in a non-human, and their association with a specific gender, simply differ from culture to culture. Following this logic, each language user acquires a 'feel',

[20] Ervin (1962) – Italian, Mullen (1990) – English pronouns to inanimate objects, Konishi (1993) – German, Spanish, Sera, Berge, & del Castillo Pintado (1994) – English, Spanish, Boroditsky & Schmidt (2000) – (1) Assignment is not arbitrary (animals > objects), (2) assignment has semantic consequences, Boroditsky and Phillips (2003), Rączaszek-Leonardi (2010) – Polish, Italian, Haertlé (2017) – Polish, French.

based on the distribution of grammatical gender in their language, for the attributes that cue assignment. Thus, as found by Boroditsky & Schmidt (2000:5), the relationship goes both ways: first, assignment to a grammatical gender is not completely semantically arbitrary and second, this assignment has semantic consequences in painting the non-human referent as more like the others in its category in the mind of the user.

For these reasons, and the more important fact that use of the gendered pronouns with human referents in natural language follows cultural boundaries of sex, I will continue in this paper to use the simplistic semantic representation that FEM is licensed when the referent is perceived to be 'female' (or female-like for non-humans or objects) and MASC correspondingly is used with the referent is perceived to be 'male'. However, the exact relationship between semantic and grammatical GENDER, although worthy of study in its own right, is beyond the scope of this dissertation. Suffice it to say that there is more to explore here and the formulation laid out here may, in the future, be determined to be too simplistic.

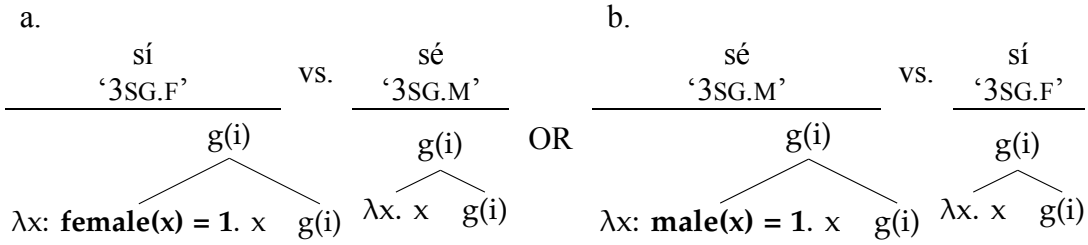
4.2.2.1 Gender Merger in Irish

The first example of semantically driven gender merger comes from modern varieties of Irish (Frenda 2011). Irish has a stereotypical Indo-European masculine/feminine gender divide (the neuter having been lost for independent reasons) that is based on perceptions of biological sex for pronouns and humans but also extends in a non-semantic way to other nominals including inanimate objects, for which sex-based categories are meaningless. In the third person pronouns, this contrast is expressed in the singular *sé* '3SG.MASC' and *sí* '3SG.FEM'.

Chapter 3 gave three pieces of evidence used to determine the semantically marked member of a contrasting pair like *sé* and *sí*. First, is either pronoun morphologically built off of the other (Hornian morpho-semantic correspondence)? In this case, neither is. Second, is either a

logical subset of the other? This is not the case either. Third, when both 'features' are present together for pronominal or agreement exponence, which one surfaces? That one is the semantically marked member. In Irish, there is only one plural 3rd person pronoun *siad* '3PL', so it does not help us distinguish the markedness. Since nominal gender marking, using *-án* and *-ín* for masculine and *-óg* for feminine, is also ambiguous for markedness, I propose that it was up to the individual speaker which was semantically marked in their grammar, as shown in (49).

(49) Pronouns by GENDER feature in Irish: Markedness ambiguity



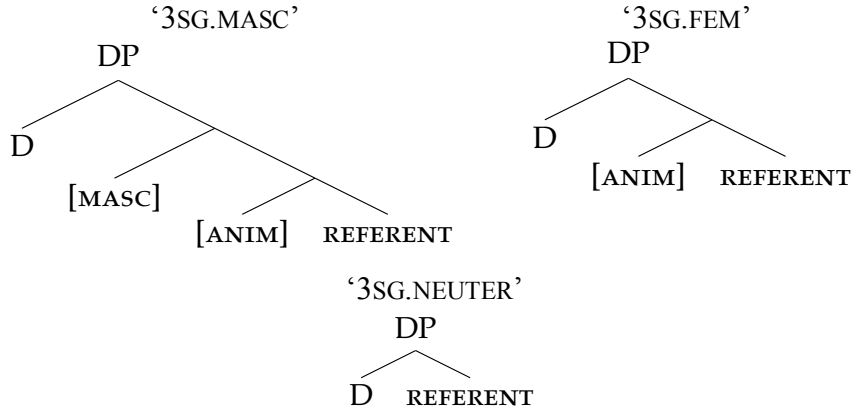
What happened is that instead of a system where inanimate nouns are assigned to one or the other gender, in modern urban Irish dialects, all of the inanimate nouns have taken on masculine marking, resulting in a clear markedness contrast between the marked feminine (i.e. [FEM.ANIM]) and a 'masculine' category that includes everything else (Frenda 2011).

However, no matter which markedness situation we posit for Irish in (49), the changes required to reach this final stage either involve semantic gain, which is opposite of that for other independent shifts, or involve semantic loss but do not follow a Strong > Weak directionality. If Situation (a) held, then the spread of the use of the masculine pronoun with all inanimates was simple due to a weakening of the pragmatic restriction but the feminine must gain a clear [ANIM] feature that restricts it to animate reference. If Situation (b) held instead, then the masculine lost its feature as predicted but once again the feminine gained features, in this version both [FEM] and [ANIM]. Neither situation fits the predictions of (48), suggesting that GENDER merger is not subject to the same constraints as other independent shifts.

4.2.2.2 Gender Merger in Greek

The examples we will examine next come from the Cappadocian dialect of Greek that developed in Asia Minor. In Classical Greek, there existed a three-way division between masculine, feminine, and neuter. All nominals were sorted into one of these three categories, with animate nouns referenced semantically according to their perceived sex, and inanimate nouns sorted non-semantically and arbitrarily. The neuter was restricted to inanimate nouns but many were sorted into masculine and feminine, resulting in a non-semantic system. Pontic Greek semanticized the system by correlating neuter pronouns and agreement with inanimacy (Di Garbo & Miestamo 2019:31). Given that mixed groups triggered masculine agreement, we can organize the feature distribution as in (50).

(50) Pronominal GENDER Feature Distribution in Pontic Greek[21]



Eventually, Cappadocian Greek completely neutralized the gender system by extending the use of neuter inflection across the board (Karatsareas 2014). The pressure for this extension was not the use of masculine or feminine forms for inanimate contexts but a 'generalization of the neuter agreement pattern to human nouns' (Di Garbo & Miestamo 2019:33). The neuter, as the unmarked member of the triad, had no trouble being used in the masculine or feminine contexts.

[21] The feature structure format used here to represent the feature structure of the DPs differs from previous examples simply for brevity and clarity of comparison between the pronouns.

But what factors relaxed the pragmatic pressure from the other forms that had previously relegated the neuter to inanimate reference only?

It appears that frequency was the primary driving factor in the extension of the neuter patterns. Once neuter was correlated with inanimate reference, and could be used when gender was unknown, it was by far the most frequent agreement pattern. Learners acquiring the language were faced with this ubiquitous general marker and simply, little by little, extended its use until the other agreement patterns were obsolete. This places the gender merger in Cappadocian Greek as a case of paradigmatic leveling rather than reference shift. No features shifted. The most frequent pattern simply won out over time.

4.2.2.3 Gender Merger in Aramaic

The last example we will examine comes from Aramaic, a Semitic language. Classical Aramaic had a male/female sex-based gender distinction in both the 2nd and 3rd person (Creason 2008:121). However, in some of the modern dialects, a merger has occurred in the morphology associated with gender in those persons. In Classical Aramaic pronouns, both masculine and feminine had special morphology and mixed-sex groups triggered masculine pronominal forms and agreement (Creason 2008:138). Following the example of NUMBER, in which a 'mixed group' of the semantically marked plural and a singular will result in plural morphology, this suggests that masculine is the semantically marked gender category.

(51) Gender markedness in Aramaic pronouns

FEATURE		Pronoun	FEATURE		Pronoun
[FEM]	→	hy '3SG.F'	[MASC]	→	hw '3SG.M'
$\begin{bmatrix}[\text{FEM}]\\[\text{FEM}]\end{bmatrix}$	→	hnyn '3PL.F'	$\begin{bmatrix}[\text{MASC}]\\[\text{MASC}]\end{bmatrix}$	→	hwm '3PL.M'
			$\begin{bmatrix}[\text{FEM}]\\[\text{MASC}]\end{bmatrix}$	→	hwm '3PL.M'

This system did not descend to the different modern dialects unchanged and in fact different varieties merged gender differently. In some, formal gender merger was masculine to feminine while in other cases it was feminine to masculine (Malone 2019). This lack of directionality is telling and differs markedly from what we saw in NUMBER reanalysis.

4.2.2.4 Conclusions from Gender Merger

These three findings showing a lack of directionality go against predictions based just on a privative relationship. Bleaching would predict that merger would always end in the semantically marked version winning out. First the features that made it distinct would be reanalyzed to allow it in contexts formerly relegated to the unmarked form. Then frequency competition would favor the ertswhile marked form because it is being used in both its original and new contexts. Since these features in pronouns are sex-based, and populations are generally equal in sex proportions, frequency would favor the reanalyzed marked form. In Irish, the pronouns gained features. In Greek, the merger was due to paradigmatic leveling based on frequency effects. In Aramaic, the data on features is unclear but the fact that different dialects merged the genders differently, with some having the masculine win out and others the feminine, is enough to conclude that it did not proceed according to what we would expect for feature reanalysis based on bleaching.

In Chapter 3, I claimed that the foundation for the directionality seen in most of the independent shifts was instead due to assymetric entailment. In other words, use of the semantically unmarked form in marked contexts was only *pragmatically* problematic, rather than semantically, while use of the marked form in unmarked contexts was infelicitous. Thus there is no impetus for reanalysis in the former but there is in the latter. Despite the privative relationship assumed for GENDER between masculine and feminine, there is no assymetric entailment between the two.

4.2.3 Issues with 3 > SAP Changes

The last set of shifts seen in Chapter 2 that have not yet been investigated are independent shifts involving PERSON, in which the resulting feature set is not a subset of the initial feature set. These shifts are listed in **Table 20**.

Table 20. Remaining Independent PERSON Shifts

INDEPENDENT
IMPERSONAL > 1PL.INCL
3PL > 2PL
3PL > 2SG.HON
3DUAL > 2DUAL
3SG > 2SG

Unlike other independent shifts in PERSON like 1PL > 2(SG), there is a feature set mismatch in these shifts from source to result. In feature notation, the shift from 1PL > 2(SG) is formalized as [1.2.PL] > [2]. This fits with the trigger for the shift, which was the use of an inclusive in 2nd person contexts so as not to isolate the hearer from the speaker (De Cock 2011). Clearly shifts like that fit with the featural superset to subset directionality seen generally in our set of independent shifts. These others with 3rd person sources and second person results do not.

4.2.3.1 Semantic Redistribution

The first thing I want to do is separate the 3 > SAP shifts from IMPERSONAL > 1PL.INCL seen in Tariana (Arawakan), and which is in the process of shifting in some other Arawakan languages. The former I argue involve familiar feature reanalysis (although with a different trigger) while the latter is due to a similar-looking, but competely distinct, phenomenon called Semantic Redistribution. Semantic Redistribution is a kind of reanalysis in which a piece of a semantic composition normally associated with one morpheme becomes instead associated with another phonological form that frequently, often obligatorily, co-occurs with it in composition. An

example of Semantic Redistribution that impacted a pronominal paradigm is the shift of French *on* (itself from Old French *home* 'man') from an indefinite unspecified impersonal person marker to 1st person plural (Heine & Song 2011:616). The progression proceeded as in (52).

(52) Progression of French *on* (based on Coveney 2000 and Kayne 2009)

a. Impersonal: En France, on mange du pain
P France IMPRS eat DEF bread
'In France, (a stereotypical) one eats bread.'

b. Impersonal with 1PL Topic: Nous, on mange du pain
1PL IMPRS eat DEF bread
'As for us, (a stereotypical) one eats bread.'
'We eat bread.'

c. Silent 1PL Topic: (nous) On mange du pain
1PL IMPRS eat DEF bread
'As for us, (a stereotypical) one eats bread.'
'We eat bread.'

d. Semantic Redistribution: On mange du pain
1PL eat DEF bread
'We eat bread.'

Standard French has only reached stage (c). On the surface, *on* and *nous* appear in free variation as the subject of a sentence with one exception; *nous* can appear in topic position with *on* in subject clitic position but not vice versa. Along with several other lines of evidence, this supports the notion that for Standard French *on* has not yet been reanalyzed and is still a version of the impersonal being used to reference a stereotypical individual among a topic group, *nous,* whether overt or silent (Kayne 2009:5). Step (d), involving true redistribution, has only occurred in colloquial versions of French, in which *on* is now the 1st plural subject clitic and *nous* is more completely relegated to topic or oblique uses (for data on distribution geographically and temporally, see Coveney 2000).

The [1.PL] features of the final resulting pronoun *on* were always present syntactically, and thus in the semantic composition, at every stage. The process of reanalysis simply redistributed a portion of the composition onto a phonological form that consistently accompanied that meaning. This is consistent with Aikenvald's description of a similar process in the Arawakan language Tariana (2018:11). Accordingly, it is difficult to call this process semantic gain or semantic loss since as a whole the composition became more simplistic but the pronoun itself ends up with features it was not previously associated with.

4.2.3.2 Reanalysis due to Indirect Reference

The final shifts that must be considered all involve independent shifts from 3rd to 2nd person of various numbers. Since the NUMBER feature values all either stay the same or follow the expected trend for independent shifts, viz. PL > SG, they are not in need of an explanation. But is it possible that the shift in PERSON from [3] to [2] is consistent with the S > W generalization as well? In other words, is it possible that 2nd person is a proper subset of 3rd person?

The simple answer is that it is not. Instead I propose that the S > W directionality is a result of the circumstances that lead up to, and trigger, the reanalysis in the other independent shifts we have seen. Specifically, the social use of a strong form in circumstances more fitting the weak form results in a hearer having to choose between massive pragmatic accommodation, infelicitousnes, or reanalysis. These 3-to-SAP shifts do not share those circumstances. Granted, they *are* triggered by the use of a pronoun in a circumstance where, to a naïve observer, its usual interpretation is not adequately motivated. However, that circumstance does not involve the use of a strong form in a weak context.

What is involved is a phenomenon I will call Indirect Reference (IR). The purpose of using a 3rd person pronoun for Indirect Reference is to obscure who is being addressed in a situation.

Use of IR is a face-preserving technique associated with other forms of indirectness such as averting gaze, directing posture away from addressee, and other obeisant body language (Heine & Song 2016). The key to the use of 3rd person forms for IR is that the difference between an addressee and someone not involved in the speech act is often a subtle one associated with just those gestures like gaze and posture. Simply looking at someone else in a speech situation can be enough to motivate switching from 2nd to 3rd person reference for that individual.

The actual reanalysis takes place when a hearer is presented with these uses but has strong reason to believe that the person being referenced is also actually being addressed. This comes as a result of reliance over time on the linguistic cue of 3rd person forms for IR instead of the whole package of gaze, posture, and body language. That is, if a hearer sees the speaker chronically look at and 'address' a person using a 3rd person form, it has become uneconomical to posit that form as only referencing 3rd person. Instead, they posit a new morpheme with the same form but with the feature [2]. Since there is no feature set that encompasses both [2] and [3], the result is a simple homophony between them without competition. The new 2nd person pronoun will instead compete with the old 2nd person marker of that number. If the hearers can associate the new form with other honorific cues, they could separate their use into registers to resolve the competition. If not, the more frequent will win out. These are independent shifts where the semantic content changed and it did not follow an S > W directionality. It appears as though that directionality is not a restriction on all reanalysis but simply constrains reanalysis direction between an <S,W> pair.

4.3 Comparison with Models of Semantic Change

Now that we have completed descriptive coverage of the shifts from Chapter 2, we have the data to compare our shifts with the models of semantic change from Chapter 1.

4.3.1 Semantic Loss

As stated before, the S > W directionality seen in the independent shifts involving <S,W> pairs superficially resembles semantic 'bleaching', also called 'desemanticization' (Claudi & Heine 1986), semantic 'weakening' (Traugott 1988), or semantic 'generalization' (Eckardt 2011). However, if loss of featural material was the only criterion we should expect that it should not matter what the pragmatic relationship was between the source and result.

We have seen however, that more than just loss is involved, as shown by GENDER. That feature, although it may be privative, does not exhibit asymmetic entailment between its contentful and weak values. Further, shifts involving GENDER did not exhibit the directionality we would expect. Instead, where directionality exists in the independent shifts, it is determined by the circumstances that triggered the reanalysis. So S > W directionality is governed by the assymetric entailment between contrasting <S,W> pairs. This fits with Deo's (2015) Hypothesis of Semantic Change (emphasis mine):

> a. A semantic grammaticalization path in the functional domain *must be* structurally underpinned by some privative contrast between a specific and a general meaning.
>
> b. Changes in functional domains characterized by a privative semantic contrast are cyclic in nature because increasing frequencies of (some) strategies in the population lead to increased probability of mis-learning out of that strategy.

However, this cannot be the whole story. As seen with 3-to-SAP shifts, directionality also exists in shifts that are definitely within the functional domain but do not involve a 'privative contrast between a specific and a general meaning'. We failed to see, across this survey and all

previous studies, any examples of SAP-to-3 shifts. This appears to have a similar cause as the S > W directionality but is not quite the same. I proposed that the S > W directionality was based on the fact that the use of S in W contexts could trigger reanalysis while the use of W in S contexts is only pragmatically strange and does not create the dissonance required for a trigger. A similar story holds for 3 > SAP directionality. If one uses a 3rd person pronoun, for face-saving purposes, in reference to a person they are looking at and speaking to, this has the potential to be reanalyzed. But if a speaker uses a 2nd person form while averting gaze, there is no impetus to reanalyze it as a 3rd person form. The speaker-addressee relationship, while made slightly strange, is still intact.

4.3.2 Semantic Gain

Now we can turn to possible examples where semantic content was added, as in the 3 > SAP shifts. In Chapter 1, I considered two models for accreting semantic material to a morpheme. The first is Traugott & Dasher's (2002) Invited Inferencing Theory of Semantic Change, or pragmatic hardening. This model puts the onus of change on innovative speakers who invite and conventionalize certain implicatures associated with the use of a given lexeme or functional item. Over time these speakers begin to see the primary purpose of the use of that morpheme as being for drawing speakers to what was previously only pragmatic material associated with it. Once this takes place, the meaning has been extended and the old meaning may drop off.

Figure 20. Stages in Semantic Change: from Traugott (2011:2)

	Stage 1	Stage 2	Stage 3	Stage 4
Form	*f*	*f*	*f*	*f*
Meaning	'p'	'p' (+> 'q')	'p', 'q'	'q'

In contrast, Eckardt's Semantic Reanalysis model concedes that while implicatures may be a common source of new meaning, 'any salient possible denotation can be coupled with an item' (Eckardt 2012:2695). Furthermore the burden of reanalysis is on the hearer and is triggered by a

pragmatic overload where the hearer is required to accommodate too many unbacked presuppositions and instead opts to reanalyze the offending morpheme as meaning something more close to the available context. This principle is called Avoid Pragmatic Overlord or APO (Eckardt 2012:2688).

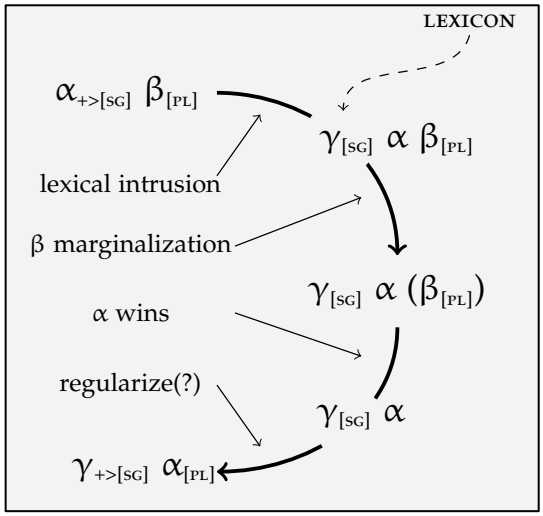
If cases of semantic gain were found in independent shifts in our PMRS data, it would further call into question the S > W directionality I linked to them in Chapter 3. Are there any examples among the PMRS data, besides the 3 > SAP shifts discussed above in the previous section, that show a net gain in semantic content in the process of the shift? In fact there are two possible candidate cases mentioned in Chapter 3: the end of the SG > PL cycle and clusivity hardening. If these cases actually involve semantic gain, what model of the two best describes the process?

4.3.2.1 Semantic Gain in SG > PL Cycle

The SG > PL cycle begins when a linguistic element, like a proximal demonstrative or a 1SG or 2SG marker borrowed from another language for singular emphasis, intrudes on a stable SG/PL system. This new element more nearly references the lone person of the speaker or hearer and so disrupts the pragmatic forcing of the NUMBER-bare marker into singular reference. Instead that featurally NUMBER-bare marker is forced up into general or non-singular reference. Competition with the plural comes down to frequency The general marker can win out if used more frequently or in more contexts. All of the steps so far rely on nothing more than pragmatic restriction. But what happens next? Does the number relationship remain [PROX] vs. [1] or does it regularize to [1] vs. [1.PL]? If it does regularize, this would constitute semantic gain. Standing against such a reanalysis would be the association of the proximal demonstrative with its use in other contexts (not a problem for languages that just borrowed an emphatic singular) and any discourse conditions under

which the general [1] +> 'PL' marker can have singular reference, which it would not be able to do if it truly had the features [1.PL].

Figure 21. Possible singular-to-plural pragmatic restriction cycle



Why might it regularize? In the previous chapter, I claimed that number contrast relies on universal logical relations between numbers. Thus the singular/plural pronominal feature contrast can be predicted to always maintain a <Strong,Weak> <PL,SG> relationship, regardless of the specific input a learner receives. Those acquiring a language natively can be expected to always deduce that the 'singular' including the speaker or hearer can logically be used in all number contexts involving that person but are restricted pragmatically to their singular number. What will differ from language to language, and to a lesser degree from speaker to speaker, are the specific amount of pragmatic discourse contexts in which plurality may be assumed or established enough for the number-neutral 'singular' to be used in sum contexts. Those pragmatic boundaries are predicted to shift over time, without directionality. Compare Tzeltal and English in (53).

(53) First Person Contrasts

TZELTAL (MAYAN)		ENGLISH (GERMANIC – IE)	
1SG/GEN	1PL	1SG	1PL
k-	*k-…-tik*	*I*	*we*

In Tzeltal, the 'singular' form can be used in both regular singular contexts as well as those where the plural number has already been established by the previous discourse. In order to establish that a subsequent use of *k-* meant just the speaker and not the speaker and the previously referenced group, a Tzeltal speaker would have to use a restricter like 'only'. On the other hand, in English, the use of singular *I* is more fully associated with contexts where *we* could not have been used. Accordingly, in discourse, if an English speaker says *We went to the store* and follows with *And I bought the pants*, the hearer would assume the discourse shift from using *we* to using *I* means that the rest of the group could not have been included in the pants-buying event, otherwise the speaker would have continued to use *we*.

So if at some point, the proximal demonstrative serving as a 1SG may become decoupled from its demonstrative source (if even necessary) and the [1] +> 'PL' marker may be fully restricted to non-singular contexts, like the English [1] +> 'SG' marker is to non-plural ones. We could call this a full conventionalization of the 'plural' implicature[22]. If this happens, what evidence would someone acquiring the language have to continue to posit a [PROX] vs. [1] relationship? What would stop it from regularizing to [1] vs. [1.PL], matching the most economical distribution of features that would fit the contexts they are already relegated to. This would be a case of implicature hardening, possible in both models of semantic gain under discussion. The process did involve conventionalization of the implicature, as proposed in Traugott & Dasher's model, but this was only lead up to the crucial discrete step when a hearer, faced with the conventional use,

[22] Although 'full conventionalization' is stable in a [1] +> '1SG'/[1.PL] system across generations due to the underlying logical relationship between singular and plural number, I do not believe that a [PROX] +> '1SG'/[1] +> '1PL' system would ever be fully conventionalized in one speaker. Rather, since languages learners acquire these systems under a paucity of input and expected to generalize, as the implicature becomes more and more conventional over time, and learners are exposed to fewer and fewer contexts of use that betray [1] as anything more than '1PL', any generation given few enough of those contexts to 'fully conventionalize' the implicatures would instead simply reanalyze the system as [1]/[1.PL]. Full conventionalization then, in this circumstance, is a useful abstraction rather than a psychological reality for any speaker. It is worth investigating if conventionalization of implicatures is more likely if they conventionalize in the direction of some universal feature or opposition.

radically reanalyzed the feature sets of both morphemes in the contrast due to the implausible amount of pragmatic common ground that would have been necessary to sustain the old interpretation, reflecting Eckardt's proposal that semantic change occurs as discrete structural reanalysis of the composition.

4.3.2.2 Semantic Gain in Clusivity Hardening

There is also good evidence to believe that in some cases, the pragmatic clusivity contrast, developed by a dependent shift, can harden into a semantic feature contrast over time. In other words, in featural terms a new [1.2.PL] / [1.PL] +> 'EXCL' or [1.3.PL] / [1.PL] +> 'INCL' contrast, where the [1.PL] member is only pragmatically relegated to a clusive value, may eventually harden into a true [1.2.PL] / [1.3.PL] semantic contrast.

Before talking about when hardening might happen, again it is useful to see when and why this hardening would not take place. In other words, what evidence would hearers have access to that would sustain a clusive/plain system versus a clusive/clusive one. The first piece of evidence would be the contexts in which the pragmatic restrictions on the bare [1.PL] are lifted and it is free to be used where normally the clusive marker would be. The existence of these contexts would provide language users with cues about the generality of the underlying feature set. The second piece of evidence is markedness. For some languages like Ashéninka, in (54), the form of one member of the clusive pair remains decomposable and morphologically marked.

(54) Ashéninka (ARAWAKAN) (Aikhenvald 2017:20)

	1PL.INCL	1PL.EXCL
FORMS	*a-*	*no-… -ni*
DECOMPOSITION	*a-*	*no-* '1SG' + *-ni* 'PL'

This markedness, together with the contexts in which the general meaning of the bare 1st plural is licensed, would serve to resist reanalysis. Conversely it would be the lack of those two pieces of evidence that would serve to allow semantic hardening. It may be tempting to propose

that all clusivity contrasts involve an <S,W> relationship and that even without evidence from morphological marking or pragmatic generalization, speakers of the language will simply posit one or the other as the weak bare 1st plural. Evidence against this comes from the shifts from 1PL to dual. In these shifts, it is specifically the innovation of both an explicit 1st inclusive and 1st exclusive that force the bare [1.PL] marker into dual reference.

So is it possible, in cases without a [1.PL] dual, for the clusivity contrast to be truly bivalent? The reasons behind the possibility of hardening in this case come down to the nature of clusivity. Clusivity contrast is fundamentally different than number contrast. As mentioned before, singular and plural exist as a <PL,SG> dyad. There is no such superset/subset relationship between 1st plural inclusive and 1st plural exclusive, which have the features [1.2.PL] and [1.3.PL] respectively. Clearly for a clusive/bare contrast to harden into a clusive/clusive one, the bare plural must gain featural content.

(55) Hardening Pragmatic Clusivity

	1PL > 1PL.EXCL	1PL > 1PL.INCL
STAGE 1: BARE	[1.PL]	[1.PL]
STAGE 2: PRIVATIVE	[1.2.PL] vs. [1.PL] +> 'EXCL'	[1.3.PL] vs. [1.PL] +> 'INCL'
STAGE 3: HARDEN	[1.2.PL] vs. [1.PL]/[1.3.PL]	[1.3.PL] vs. [1.PL]/[1.2.PL]
STAGE 4: REDUCE	[1.2.PL] vs. [1.3.PL]	[1.3.PL] vs. [1.2.PL]

Example (55) showcases how hardening would work in two different shifts. On the left is the shift from 1PL > 1PL.EXCL while the right shows 1PL > 1PL.INCL. In both examples, the language starts in Stage 1 with no clusivity contrast. A contrast is introduced in Stage 2 with the innovation of a clusive marker forcing the original [1.PL] marker into an implicature of the opposite clusivity. The 'hardening' step, Stage 3, would occur when a hearer sees the contexts that the [1.PL] morpheme is used in and reanalyzes it as [1.3.PL], even if they also keep a homophonous marker for general [1.PL]. Even if they do, since their distributions are equal, the competition would result in a reduction of the posited underlying structure as in Stage 4.

Clearly, this kind of reanalysis results in semantic gain. Specifically, what was previously an implicature of clusivity due to pragmatic pressure has become semantically real. Having implicature for a source in semantic change is consistent with both Traugott & Dasher's Invited Inference model and Eckardt's Semantic Reanalysis. However, the trigger for the hardening was not due to unbacked presuppositions and instead appears to have simply been the strength of the conventionalization of the implicature due to the erosion of morphological and discourse evidence that would force those acquiring the system to continue to posit a bare [1.PL] feature set. This aspect of the shift is much more in line with the Invited Inferencing model.

4.4 Conclusion

In conclusion, the principles governing PMRS should not be seen as necessarily combining what *can* shift into a class together but defining what will not result in a shift. Besides the use of a Strong form in a Weak context, we also saw Indirect Reference leading to 3rd > 2nd shift, frequency effects leading to reanalysis in GENDER merger, and plausible hardening of pragmatic clusivity and pragmatic plurality in the clusivity and 1SG > 1PL cycles.

Rather than telling us when semantic change is likely to occur, Deo's (2015) observations about Horn scales underlying semantic change in functional domains tell us when it is *unlikely* to occur. Specifically, when the weak member of a <S,W> dyad is used in a 'strong' context, the hearer is *not* faced with the impetus to reanalyze, since the utterance is still felicitous. Similarly when a 1st or 2nd person pronoun is used in a 3rd person context, the result is either incomprehensible or (in the case of 2nd person) it simply does not cause a problem.

In the end, Eckardt's unbounded recruitment hypothesis is mostly supported, except that there are more kinds of impetus than just strict APO and there are some highly improbable change directions due to pragmatic relationships within closed classes of functional material. All of the

evidence points to hearers as the initializers of these semantic changes that can then spread to wider portions of a language population.

4.4.1 Discussion of smooth versus discrete change

The final topic of this dissertation is the general discussion of whether the results of the analysis of PMRS support frameworks of smooth or discrete change. Truth-conditional meanings support discrete reanalysis. This conclusion cannot be avoided. Given a truth-conditional approach to the formalization of pronominal features, it was unavoidable that the reanalyses would appear on the surface to proceed discretely and step-wise.

However, when zoomed out, many of the changes have the appearance of smoothness, coming from multiple sources. One of the sources that can be readily seen even in the current formalization is pragmatic baggage. Some of the shifts recorded here were presaged by an implicature that 'flavored' the person marker's use in a certain way even before it was reanalyzed to more fully fit that context. This includes the hardening of clusives and 1st plural in the 1SG > 1PL cycle. But pragmatic material must be clearly distinguished from truth-conditional material. Pragmatic baggage includes all cancelable associations.

Another possible source of the appearance of smoothness are psychological effects. These include priming and multiple activation due to phonological and semantic similarity. The reanalysis process often left homophony (or near homophony) that could cause a hearer to activate more than one lexical entry until context clears up the confusion. It is possible that this could have effects on the distribution of morpheme both syntactically and in discourse contexts of use in order to avoid ambiguity. This could look like left-overs from a previous distribution but would in reality be the results of synchronic computation for disambiguation between (near-)homophonous pairs. Since these are not part of the truth-conditional feature formalization, they cannot be seen in the

formalization of the shifts. Where evidence is obtainable (e.g. not lost to time) their influence on a pronoun's distribution should not be ignored.

A third, and very important, source of the appearance of smoothness is the existence, within one speaker, of multiple registers. A good example in this dissertation is the genesis of honorific registers brought about to handle competition due to feature reanalysis in the PL > SG cycle. For a speaker to sustain more than one register they will of necessity have different grammaticality judgements that apply to markers that are homophonous across the registers. This can give the impression of 'fuzzy' grammaticality. Register splitting due to PMRS can be caused by forces other than pronoun competition though. For example, even after someone acquiring the language reanalyzes the features of a specific person marker, they may gather evidence that older speakers do not distribute that person marker in the same way, since when they acquired it, the reanalysis had not yet occurred. Register splits within a speaker based on the age of the person they are conversing with are well established. These may also give the appearance of a more 'in-between' state for a shifted marker than it has in reality.

In conclusion, the formalization and analysis of PMRS here reported support a theory of semantic change in which reanalysis is discrete and proceeds step-wise. However, the framework of formalization chosen by this work assumes this discreteness. It is the success of the framework in explaining the constraints on PMRS that verify and justify that assumption. Even given this discrete nature to change, there remain viable sources of 'smoothness' that both anticipate change and carry-over aspects of a marker's previous identity into its new use.

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Appendix A: Arawakan Language Family Profile

Languages: > 60 known, > 40 living, 29 extinct (Aikhenvald 2017:13)

Proto-system: Payne (1991), Aikhenvald (1999), Most up-to-date: Carvalho (2016)

Table 21. Proto-Arawakan Pronouns (Carvalho 2016:5)

	SG	PL
1	*nu-	*wa
2	*pɨ-	*hi
3MASC	*lɨ-	*na
3FEM	*t^hu-	

Survey Results

Table 22. Arawakan PMR Shifts

Languages Surveyed	40	
Languages with PMRS	6	
Shifts	1PL > 1PL.INCL:	Palikúr, Mawayana, Resigaro, Ashéninka, Nomatsiguenga (Matsigenka)
	1PL.INCL > 1DUAL.INCL:	Palikúr
	1PL > 1PL.EXCL:	Tariana
	IMPERSONAL > 1PL.INCL:	Tariana

Survey Breakdown

Northern

-Caribbean ✓

-Lokono, Parauhano (Añun), Wayuu (Carvalho 2016:6) ✓

-Garífuna (Haufholm-Larsen 2016:83) ✓

-Extinct: Caquetio, Island Carib, Shebaya, Taíno

-Palikuran

- Palikúr (Launey 2003:65,68 & discussion in Aikhenvald 2017) ✓

Shifts: 1PL > 1PL.INCL, 1PL.INCL > 1DUAL.INCL

1. **wa* '1PL' > *wis* / *-w(i)* '1PL.INCL'

- New *usuh* '1PL.EXCL' (origin unknown): no object suffix

2. *wis* / *-w(i)* '1PL.INCL' > *wis* / *-w(i)* '1DUAL.INCL'

- New *wihwiy* / *-wiy* '1PL.INCL'

= (wi-s ‘1PL.INCL’) + wi- ‘1PL.INCL’ + y(i) ‘2PL’/

-Extinct: Marawá

-Wapishanan

- Mawayana (Aikhenvald 2018:34 & Aikhenvald 2017:18) ✓

Shifts: 1PL > 1PL.INCL

1. *wa-* ‘1PL’ > ‘1PL.INCL’

- Borrowed Waiwai (Carib) *amna* ‘1PL.EXCL’

- Wapixana (Dos Santos 2006:184-188)✓

- Extinct: Atorada (Atoraí)

-Upper Amazon

- Western Nawiki

- Achawa (Achagua) (Wilson 1992:23) ✓

- Cabiyari (Aikhenvald 2018:21) ✓

-Mandawaka (Ramirez 2001) ✓

- Piapoco (Carvalho 2016:5) ✓

- Resigaro (Aikhenvald 2017:19) ✓

Shifts: 1PL > 1PL.INCL

1. *fa-* ‘1PL’ > 1PL.INCL

- Borrowed Bora *muuʔa* > *muu- -ʔa* ‘1PL.EXCL’)

- Warekena (Guarequena) (Aikhenvald 2018:39) ✓

- Warekena of Xié (Aikhenvald 2018:17) ✓

Note: IMPERSONAL can be used as 1PL but no shift

- Yucuna (Carvalho 2016:5) ✓

- Extinct: Amarizana, Anauyá, Cabre, Guarú, Kawishana, Wainumá, Mariaté, Pasé, Waraikú (Araikú), Wiriná, Yabaâna, Yumana

- Eastern Nawiki

- Kurripako (Baniwa of Içana-Kurripako) (Aikhenvald 2018:10) ✓

- Tariana (Aikhenvald 2018:11) ✓

Note: *wha-* [PA **wa-*] ‘1PL’ > ‘1PL.EXCL’

pha-[PA **pa-*] ‘IMPERSONAL > 1PL.INCL

Differentiated from *pha-* ‘IMPERSONAL’ by evidentials

(Aikhenvald 2017:32)

- Central Upper Amazon
  - Baré (Aikhenvald 2018:19) ✓
    Note: IMPERSONAL can be used as 1PL but no shift
  - Baniwa of Guainia (Aikhenvald 2018:25) ✓
  - Maipure (Aikhenvald 2018:20) ✓
  - Yavitero (Baniwa of Yavita) (Aikhenvald 2018:26) ✓
  - Extinct: Guinaú
- Manao (Aikhenvald 2018:39) ✓
- Shiriana (Bahuana) (Aikhenvald 2018:28) ✓
- Extinct: Kariaí

Southern

- Western
  - Amuesha (Yaneshȧ) (Aikhenvald 2018:37) ✓ (Adelaar 2006)
  - Extinct: Chamicuru
- Central Maipurean
  - Wauja (Waura) (Aikhenvald 2018:32) ✓
  - Mehináku (Aikhenvald 2018:32) ✓
  - Yawalapití (Aikhenvald 2018:32) ✓
  - Paresi (Pareci) (Aikhenvald 2018:34) ✓
  - Extinct: Custenau, Saraveca
- -Piro
  - Apurinã (Carvalho 2016:5) ✓
  - Piro (Yine) (Hanson 2010:45-48) ✓
- (Bolivia–Parana) ✓
  - Mamoré-Guaporé (Jolkesky 2016:26)
    - Bauré ✓
    - Moxo ✓
    - Paikonéka ✓
    - Paunáka ✓
  - Terêna (Nascimento 2012:100, 104) ✓

Notes: Non-stereotypical use of *v-* '1PL' in 1SG-expected contexts for inclusion (avoiding appearance of selfishness). Also *v-* '1PL' in '2SG' contexts for politeness. Pragmatically restricts [+nasal] '1SG' to exlusive reading (Ekdahl & Butler 1979:67)[23]

- Extinct: Chané, Lapachu

-Campa

-Ashéninka (Carvalho 2016:5) ✓

Shifts: '1PL' > '1PL.INCL'

1. *a-* [PA **wa-*] '1PL' > '1PL.INCL'

- New 1PL.EXCL = *no-* '1SG' + *-ni* 'PL'

(Aikhenvald 2017:20)

- Nomatsiguenga (Matsigenka) (Aikhenvald 2018:38 & Aikhenvald 2017:20) ✓

Shifts: '1PL' > '1PL.INCL'

1. *a-* [PA **wa-*] '1PL' > 1PL.INCL (new 1PL.EXCL = *n-* '1SG' + *-íg* 'PL')

2PL = 2SG + PL & 3PL = 3SG + PL

- Alto Perené (Aikhenvald 2017:21) ✓

Notes: *naaka* '1SG', *naaka-ite* '1PL.EXCL', *aroka* '1PL.INCL'

But only in the topic pronouns. Not included.

a- [PA **wa-*] '1PL' > 'GENERIC UNIDENTIFIED HUMAN POSSESSOR'

Non-stereotypical usage but still inviting 1PL interpretation – not included

-Nanti (Aikhenvald 2017:21) ✓

Notes: *a-* [PA **wa-*] '1PL' > 'GENERIC UNIDENTIFIED HUMAN POSSESSOR'

Non-stereotypical usage but still inviting 1PL interpretation – not included

[23] "Quando se usa a primeira pessoa do plural, abrange geralmente a pessoa a quem se fala: vítuke 'nosso (nosso e seu)'. Compare-se a forma singular induke 'meu/nosso (mas não de você)'. Se a pessoa que fala não quer parecer egoísta, pode usar a primeira pessoa do plural quando se espera a primeira do singular. Às vezes quem fala usa a primeira pessoa do plural, mesmo quando ele próprio não está incluido: motóvaa vánjea tamborna ûti? 'posso tomar emprestado nosso tambor?' (que pertence ao ouvinte)."

Appendix B: Bantu Language Family Profile

Languages: ~500 extant Nurse & Philippson (2003)

Proto-Language: Meeussen (1967), Guthrie (1967-71), Polak (1986), Schadeberg (2003), Babaev (2008)

Table 23. Proto-Bantu Person Marking (based on Schadeberg 2003:150)

	SUBJECT	OBJECT
1SG	*N-	*-N-
2SG	*ʊ-	*-kʊ-
1PL	*tʊ-	*-tʊ́-
2PL	*mʊ-	*-mʊ́-

Table 24. Proto-Bantu Marking (Babaev 2008:148)

	SUBJECT	OBJECT	POSSESSIVE	INDEPENDENT
1SG	*ɲi-		*(à)me	*(ì)me
2SG	*ʊ[24]-	*-kʊ-	*(à)we	*(ì)we
1PL	*tʊ-		*(à)cue	*icue / *(bè)-cue
2PL	*mʊ-		*(à)nue	*inue / *(bè)-nue

Survey Results

Table 25. Bantu PMR Shifts

Languages Surveyed	173	
Languages with PMRS	7	
Shifts	1SG > 1 > 1PL	Koti, Makhuwa
	2SG > 2 > (2PL)	Doko (2PL), Leke, Uru-wund
	1PL > 1SG	Pove
	2PL > 2	Yao

[24] There are several different orthographies used in Bantuist literature for the seven-vowel system of Proto-Bantu. Following current convention for Bantu Lexical Reconstruction 3 (BLR3), I use *ɪ* and *ʊ* for the Proto-Bantu second degree high vowels.

Survey Breakdown (reproduced from Bates 2018)

These languages are (ordered by Guthrie number):

Lundu A10, Oroko A11e, Akoose A15, Manenguba A15, Mokpwe A22, Su A23, Duala A24, Benga A34, Basaa A43, Nen A44, Kpa A53, Bafia A53, Nugunu A62, Ewondo A72a, Bulu A74, Makaa A83, Konzime A84, Kwakum A91, Kako A93, Wori A, Mpongwee (Myene) B11a, Kota B25, Viya B301, Himba B302, Tsogo B31, Pinji B33

- Pove (Vove) B34

Punu B43, Nzebi B52, Ndumu B63, Iyaa B73c, Boma B82, Keyanzi B85, Ngondi C11

- Leke C14

Babole C20, Akwa C22, Mboshi C25, Ngiri C31b, Bobangi C32, Bolia C35b, Lingala C36, Lingombe C41

- Doko C50

Kele C55, Mongo C61, Nkengo C61, Kela C75, Bushoong C83, Lengola D12, Mituku D13, Enya (C-enya) D14, Kumu D23, Lega D25, Holoholo D28, Bila D30, Nyali D33, Nande D42, Nyanga D43, Ruri E253, Chagga E30, Gusii E42, Kuria E43, Kikuyu E51, Kamba E55, Mashami E62a, Moshi E62a, Hai E62a, Wunjo E62b, Rombo E62c, Gweno E65, Pokomo E71, Niyka E72, Giryama E72a, Duruma E72d, Digo E73, Taita (Dawida) E74a, Sagala E74b, Tongwe F11, Sukuma F21, Nyamwezi F22, Nilamba F31, Remi F32, Nyaturu (Rimi) F32, Langi F33, Gogo G11, Kaguru G12, Casu G22, Shambala G23, Bondei G24, Zigula G30, Zalamo (Zaramo) G33, Ruguru G35, Mwani (Ki-mwani) G403 (G44c), Swahili G42, Komoro G44d, Pogolu G51, Hehe (Iki-hehe) G62, Bena G63, Kinga G65, Tuba H10A, Vili H12, Kunyi H13, Manyanga H16b, Kongo H16, Laadi (Laari) H16f, Ntandu H16g, Mbundu H21, Suku H32, Hungu H33, Mbala H41, Haya J E22, Ha J D66, Rwanda J D61, Ganda J E22, Shi J D53, Cokwe K11, Luimbi K12, Lucazi K13, Luvale K14, Lwena K14, Lozi K21, Luyana K31, Kwangari

K33, Dciriku K39, Mbukushu K40, Ikuhane K42, Kwezo L13, Kete L21, Songe L23, Luba L30, Kanyok L32, Kaonde L41, Lunda L52

- Luwunda (Uru-wunda) L53

Nkoya L62, Pimbwe M11, Lungu M14, Nyika M23, Safwa M25, Ndali M301, Nyakyusa-Ngonde M31, Bemba M42, Lamba M54, Lenje M61, Ila M63, Ndendeule N101, Tumbuka N21, Nyanja N30, Manganja N31c, Sena N44, Nyungwe N, Matuumbi P13, Yao P21, Mwera P22, Makonde P23, Mabiha P25

- Makhuwa P31

- Koti P311

Umbundu R11, Ndonga R22, Herero R31, Yeyi R41, Shona S10, Venda S20, Tswana S31a, Sotho s. S33, Zulu S42, Tswa S51, Tswana S53, Tsonga S53, Copi S61, Gitonga S62.

Appendix C: Dravidian Language Family Profile\

Languages: ~60 varieties total (Krishnamurti 2003)

Proto-system: Andronov (2003), Krishnamurti (2003)

Table 26. Proto-Dravidian Pronouns (Andronov 2003)

		SG	PL.EXCL	PL.INCL
1		**yaːn (yan-)*	**yaːm (yam-)*	**naːm (nam-)*
2		**niːn (nin-)*	**niːm (nim-)*	
3	that (far)		**al/an/am/av*	
	that (near)		**ul/un/um/uv*	
	this (not far)		**el/en/em/ev*	
	this (where I am)		**il/in/im/iv*	

Table 27. Proto-Dravidian Pronouns (Krishnamurti 2003)

			SG	PL.EXCL	PL.INCL
1	NOM		**yaH-n/ *yaː-n*	**yaH-m/ *yaː-m*	**ñaːm*
	OBL		**yan-*	**yam-*	**ñam-*
2	NOM		**niːn*	**niːm*	
	OBL		**nin-*	**nim-*	
3	that (remote)			**aH / *aː*	
	that (not distant)			**uH*	
	this (proximate)			**iH / *i*	
‘4’ Reflexive	NOM		**taːn*	**taːm*	
	OBL		**tan- / *tann-*	**tam-*	

Table 28: Proto-Dravidian Person Suffixes (Krishnamurti 2003:308)

	SG	PL
1	**-V(ː)n*	**-V(ː)m*
2	**-i(ː) / -a(ː)y*	**-i(ː)m*
3MASC	**-ant̲*	**-Vr*
3FEM	**-a(ː)l̲*	
3NEUT	**-atu*	**-a(w)*

Survey Results

Table 29. Dravidian PMR Shifts

Languages Surveyed	23
Languages with PMRS	11

Survey Breakdown (reproduced from Bates 2018)

- Brahui (Andronov 2001)
    Shift: 1SG > 1 > 1PL
- (Koṇḍekor) Gadaba
- Gondi
    Shift:
        1. 1PL > 1 > 1SG
        2. 1PL.INCL > 1PL (dialectal)
        3. 2PL > (2 >) 2SG
- Kannaḍa
    Shift: 1PL.INCL > 1PL
- Koṇḍa
    Shift: 1PL.INCL > 1PL
- Koḍagu
    Shift: 1PL.INCL > 1PL
- Kota
- Kolami
- Kui
    Shift: 1PL.INCL > 1PL
- Kuṛux
- Kuvi
    Shift: 1PL.INCL > 1PL
- Malayalam (Nair 2012)
    Shift: 1PL.INCL > 1PL
- Malto
- Manḍa
- Naiki/Naikṛi
- Naiki (Chanda)
- Ollari
- Parji
- Pengo

Shift: 1PL.INCL > 1PL

- Tamil (Subbiah 1965)

Shift:

1. 1PL.INCL > 1PL
2. 1PL > 1PL.INCL

- Telugu

Shift: 1PL.INCL > 1PL

- Toda
- Tuḷu

Appendix D: Mayan Language Family Profile

Languages: ~30 languages (Bennett et al. 2016)

Proto-Language: Bricker (1977), Norman & Campbell (1978), Kaufman & Norman (1984), Robertson (1992), Kaufman (2003)

Table 30. Proto-Mayan Marking (Kaufman & Norman 1984:91)[25]

	Set A ___C	Set A ___V	Set B
1SG	nu-	w-	-iːn
2SG	aː-	aːw-	-at
3SG	u-	r-	-Ø
1PL	qa-	q-	-oʼŋ
2PL	eː-	eːr-	-iʃ/-eʃ
3PL	ki-	k-	-ebʼ

Table 31. Proto-Mayan Marking (Robertson 1992)

	Set A ___C	Set A ___V	Set B
1SG	nu-	w-	-in
2SG	a-	aw-	-at
3SG	ru-	r-	-Ø
1PL	qa-	q-	-oʼŋ
2PL	e-	er-	-eʃ
3PL	ki-	k-	-eb

Survey Results

Table 32. Mayan PMR Shifts

Languages Surveyed	31
Languages with PMRS	14

[25] The reconstructions have been semi-regularized to an IPA-like orthography to minimize inconsequential orthographic differences between the two, with [nh] = /ŋ/ and [x] = /ʃ/.

Survey Breakdown (reproduced from Bates 2018)

- Wastek (SLP- Edmonson 1988, Ver- Ochoa-Peralta 1984, SE- Kondic 2012)

- Yukatekan

    - Yukatek (Bohnemeyer et al. 2015)

        Shift: 1PL > 1PL.EXCL

    - Mopan (Danziger 1996)

        Shift: 1PL > 1PL.EXCL

    - Itzaj (Hofling 2000)

        Shift: 1PL > 1PL.EXCL

    - Lakantun (Bruce 1968, Hofling 2014)

        Shift:

            1. 1PL > 1PL.EXCL
            2. 1PL.EXCL > 1DUAL.EXCL

-Greater Tzeltalan

    - Ch'ol (Vázquez Álvarez 2011)

        Shift: 1PL > (1 >) 1SG

    - Chontal/Yokot'an (Osorio May 2005)

        Shift: 1PL > (1 >) 1SG

    - Colonial Ch'olti' (Robertson et al. 2010)

    - Ch'orti' (Lopez de Rosa 2004)

    - Tseltal (Polian 2013, Shklovsky 2005)

        Shift: 1PL > (1 >) 1SG

    - Tzotzil (Aissen 1979)

        Shift: 1PL > (1 >) 1SG

- Tojolabal (Furbee-Losee 1976)

Shift: 1PL > (1 >) 1SG

- Q'anjob'alan

- Chuj (Domingo Pascual 2007)

Shift:

1. 1PL > 1PL.INCL

2. 1PL.INCL > 1DUAL.INCL

- Q'anjobal (Comunidad Lingüística Q'anjob'al 2005)

Shift:

1. 1PL > 1PL.INCL

2. 1PL.INCL > 1DUAL.INCL

- Akatek (Zavala 1992)

Shift:

1. 1PL > 1PL.INCL

2. 1PL.INCL > 1DUAL.INCL

- Popti'/Jakaltek (Craig 1977)

- Mocho' (Palosaari 2011)

Shift:

1. 1PL > 1PL.EXCL

2. 1PL.EXCL > 1DUAL.EXCL

-Mamean

- Mam (England 1983, Perez 2000, Maldonado 2004)

Shift:

1. 1PL > 1PL.INCL

2. 3PL > 2PL

3. 3SG > 2SG

- Tektitek (Stevenson 1987)

Shift: 1PL > 1PL.INCL

- Awakatek (Comunidad Lingüística Awakatek 2001)

- Ixil (Ayres 1991)

-K'ichean

- K'iche' (Larsen 1988)

- K'aqchikel (Comunidad Lingüística Kaqchikel 2004)

- Tz'utujil (Dayley 1985)

- Sakapultek (Mó Isém 2007)

- Sipakapense (Barrett 1999)

- Uspantek (Can Pixabaj 2006)

- Poqomchi' (Brown 1979)

- Poqomam (Benito Pérez 2016)

- Q'eqchi' (Tzul & Cacao 1997)

- Achi (Lopez & Sis Iboy 1992)

Appendix E: Mongolic Language Family Profile

Languages: 13 present & past (Janhunen 2003b:xvi)

Proto-Language: Janhunen (2003b)

Table 33: Proto-Mongolic pronouns (Janhunen 2003b:18)

	NOM.	GEN.	OBL.
1SG	*bi*	*mi.n-U*	*na.ma-*
2SG	*ci*	*ci.n-U*	*ci.ma-*
3SG	*i*	*i.n-U*	*i.ma-*
1PL.EXCL	*ba*	*ma.n-U*	*ma.n-*
1PL.INCL	*bida*	*bida.n-u*	*bida.n-*
2PL	*ta*	*ta.n-u*	*ta.n-*
3PL	*a*	*a.n-u*	*a.n-*

Survey Results

Table 34. Monglic PMR Shifts

Languages Surveyed	13
Languages with PMRS	12

Survey Breakdown (reproduced from Bates 2018 in alphabetical order)

- Buryat (Skribnik 2003)

  Shift: 1PL.INCL > 1PL

- Bonan (Hugjiltu 2003)

  Shift:

  1. 1PL.INCL > 1PL
  2. 1PL > 1PL.INCL

- Dagur (Tsumagari 2003)

- Mangghuer (Slater 2003)

  Shift:

  1. 1PL > 1 > 1SG
  2. 1PL.INCL > 1PL

- Moghol (Weiers 2003)

  Shift:

1. 1PL.INCL > 1PL
2. 1PL > 1PL.INCL

- Written Mongol (Janhunen 2003c)

Shift: 2PL > 2

- Middle Mongol (Rybatzki 2003b)

Shift: 1PL.INCL > 1PL

- Khamnigan Mongol (Janhunen 2003c)

Shift: 1PL.INCL > 1PL

- Mongghul (Georg 2003a)

Shift: 1PL.INCL > 1PL

- Ordos/Ordus (Georg 2003b)

Shift: 1PL.INCL > 1PL

- Oirat (Birtalan 2003)

Shift:

1. 1PL.INCL > 1PL
2. 1PL > 1PL.INCL

- Santa (Kim 2003)

Shift: 1PL.INCL > 1PL

- Shira Yughur (Nugteren 2003)

Shift:

1. 2PL > 2
2. 1PL.INCL > 1PL

Appendix F: Paman Language Family Profile

Languages: 22 Languages

Proto-Language (Proto-Pama-Nyungan):

Table 35. Proto-Pama-Nyungan Singular Pronouns (Koch 2003)

	NOM	ERG	ACC	DAT
1SG	*ngay	*ngathu	*nganha	*ngatyu
2SG	*nyun	*nyuntu	*nyuna	*nyunu
3SG.M	*nhu	*nhulu	*nhunha	*nhungu
3SG.F	*nhan	*nhantu	*nhana	*nhanu

Table 36. Proto-Pama-Nyungan Plural Pronouns (Sutton & Koch 2008)

	DUAL	PLURAL
1	*ngali	*ngana
2	*nyumpalV	*nyurra
3	*pula	*thana

Survey Results

Table 37. Paman PMR Shifts

Languages Surveyed	22
Languages with PMRS	17

Survey Breakdown

Paman

- North
  - Adithinngithigh **X**
  - Alngitt (Hale 1976:24-25 – Al) ✓

    Shifts: 1PL > 1PL.EXCL

    1. **ngana* '1PL' > *na-* '1PL.EXCL'

       - New **ngana+*(CV?)pul* > **ngampul-* > *puy* '1PL.INCL'

       -*puy* either comes straight from **pula* '3DUAL' or **nyun-pula* '2DUAL' > *(m)pul* '2DUAL'. I will assume '2DUAL' since that is more conducive with inclusive meaning.
  - Anguthimri (Crowley 1981) ✓

Shifts: 1DUAL > 1DUAL.INCL, 1PL > 1PL.EXCL

1. **ngali* '1DUAL' > *læ-* '1DUAL.INCL'

- Innovated **ngali* + **ngay* '1SG' ??? > *nini* '1DUAL.EXCL'

2. **ngana* '1PL' > *na-* '1PL.EXCL'

- New **ngana+*pul* > **ngampul-* > *bwi/bu-* '1PL.INCL'

- Aritinngithigh (Hale 1976:24-25 – Ari) ✓

Shifts: 1PL > 1PL.EXCL

1. **ngana* '1PL' > *na-* '1PL.EXCL'

- New **ngana+*pul* > **ngampul-* > *mpul* '1PL.INCL'

- Awngthim (Hale 1976:24-25 – Awŋ) ✓

Shifts: 1PL > 1PL.EXCL

1. **ngana* '1PL' > *na-* '1PL.EXCL'

- New **ngana+*pul* > **ngampul-* > *mpuy* '1PL.INCL'

- Linngittigh (Hale 1976:24-25 – Lin) ✓

Shifts: 1PL > 1PL.EXCL

1. **ngana* '1PL' > *na-* '1PL.EXCL'

- New **ngana+*pul* > **ngampul-* > *puy* '1PL.INCL'

- Luthigh (Hale 1976:24-25 – Lu) ✓

- Mpalitjanh (Hale 1976:24-25 – Mpa) ✓

- Mbiywom (Hale 1976:24-25 – Mbi) ✓

Shifts: 1PL > 1PL.EXCL

1. **ngana* '1PL' > *na-* '1PL.EXCL'

- New **ngana+*pul* > **ngampul-* > *mbul* '1PL.INCL'

- Ndrangith / Ntra'ngitt (Hale 1976:24-25 – Ntr) ✓

Shifts: 1PL > 1PL.EXCL

1. **ngana* '1PL' > *na-* '1PL.EXCL'

- New **ngana+*pul* > **ngampul-* > *mpuy* '1PL.INCL'

- Ngkoth / Ngkott (Hale 1976:24-25 – Ngko) ✓

Shifts: 1PL > 1PL.EXCL

1. **ngana* '1PL' > *na-* '1PL.EXCL'

- New **ngana+*pul* > **ngampul-* > *pol* '1PL.INCL'

- Uradhi (Hale 1976:24-25 – Ura) (Crowley 1983:352-356) ✓

Shifts: 1PL > 1PL.INCL, 3DUAL > 3PL

1. **ngana* '1PL' > *ana-* '1PL.INCL'

- **ngana+*pul* > **ngampul* > *ampu(l-a)* '1PL.EXCL'

2. **pula* '3DUAL' > *ula-* '3PL' (outcompeted **thana* '3PL')

- Yinwum (Hale 1976:24-25 – Yin) ✓

- Northeast

- Umpila (Thompson 1988:25-28) ✓

Shifts: 1PL > 1PL.EXCL, 3DUAL > 3PL

1. **ngana* '1PL' > *ngana* '1PL.EXCL'

- **ngana+*pula* > *ngampula* '1PL.INCL'

2. **pula* '3DUAL' > *pula* '3PL'

Note: Loss of 2DUAL

- Wik

- Ayabadhu (Yintyingka) (Verstraete & Rigsby 2015) ✓

Shifts: 1PL > 1PL.EXCL, 1PL.EXCL > 1DUAL.EXCL, 1DUAL > 1DUAL.INCL

1. **ngana* '1PL' > *ngani* '1PL.EXCL'

- *ngana-pula* > *ngampu* '1PL.INCL'

2. *ngani* '1PL.EXCL' > *ngani* '1DUAL.EXCL'

- *ngana-* + *tya* [< **thana* '3PL'] > *ngantya* '1PL.EXCL'

3. *ngali* '1DUAL' > '1DUAL.INCL'

- *ngani* '1PL.EXCL' > '1DUAL.EXCL'

- Kugu-Muminh (Johnson 1991:208) ✓

Shifts: 1PL > 1PL.EXCL, 1PL.EXCL > 1DUAL.EXCL, 1DUAL > 1DUAL.INCL

1. *ngana* '1PL' > '1PL.EXCL'

- *ngana-pa* > *ngampa* '1PL.INCL'

2. *ngana* '1PL.EXCL' > '1DUAL.EXCL'

- *ngana-* + *ca* [< **thana* '3PL'] > *nganhca* '1PL.EXCL'

3. *ngali* '1DUAL' > '1DUAL.INCL'

- *ngana* '1PL.EXCL' > '1DUAL.EXCL'

- Pakanha **X**

- Wik-Me'nh **X**
- Wik-Mungknh (Wik-Mungkan) (Kilham et al. 1986) ✓

Shifts: 1PL > 1PL.EXCL, 1DUAL> 1DUAL.INCL

1. *ngana* '1PL' > *ngan* '1PL.EXCL' (including DUAL)

- *ngana-pa* > *ngampa* '1PL.INCL'

2. *ngali* '1DUAL' > *ngal* '1DUAL.INCL'

- *ngana* '1PL' > *ngan* '1PL.EXCL' (including DUAL)

- Wik-Ngathan (Sutton 1978:244) ✓

Shifts: 1PL > 1PL.EXCL, 1PL.EXCL > 1DUAL.EXCL, 1DUAL > 1DUAL.INCL

1. **ngana* '1PL' > *ngana* '1PL.EXCL'

- *ngana-pa* > *ngampa* '1PL.INCL'

2. *ngana* '1PL.EXCL' > *ngana* '1DUAL.EXCL'

- *ngana* '1PL.EXCL' + *thana* '3PL' > *nganhthana* '1PL.EXCL'

3. *ngali* '1DUAL' > *ngala* '1DUAL.INCL'

- *ngana* '1PL.EXCL' > *ngana* '1DUAL.EXCL'

- Wik-Ompoma **X**

- Lamalamic
  - Lamu-Lamu (Lama-Lama) **X (has source but can't get access)**
  - Umbuygamu (Morrobalama) (Ogilvie 1994:54-62, 74-76,80) ✓

Shifts: Obscured by additional morphology and drastic reduction.

- Yalanjic
  - Barrow Point **X**
  - Gugu Yalandyi (Kuku Yalanji) (Patz 1982) ✓

Shifts: 1PL > 1PL.INCL & 1DUAL > 1DUAL.EXCL

1. *ngana* '1PL' > '1PL.INCL'

- *ngana* + *jana* '3PL' > *nganjin* '1PL.EXCL'

2. *ngali* '1DUAL' > '1DUAL.EXCL'

- *ngali* + *nyun* '2SG' > *ngaliny* '1DUAL.INCL'

In progress: *nganjin* '1PL.EXCL' > '1PL' ousting the unmarked inclusive

  - Guugu Yimidhirr **X (has source but can't get access)**

- Southwest

- Koko-Bera **X**
- Koko Dhawa (Kok Thawa, Gugu Dhaw) **X (has source but can't get access)**
- Kunjen
- Kuuk Thaayorre (Gaby 2006:213-218) ✓

  Shifts: 1DUAL > 1DUAL.INCL

  1. **ngali* '1DUAL' > *ngal* '1DUAL.INCL'

     - New *ngal* '1DUAL' + =*ay* '1SG.NOM.CL' > *ngali* '1DUAL.EXCL'
- Kuuk Yak **X**
- Ogh-Undjan **X (has source but can't get access)**
- Yir-Yoront

- Norman
  - Kurtjar
  - Kuthant
- Thaypan
  - Alungul
  - Angkula
  - Aghu Tharrnggala
  - Ikarranggali
  - Takalak
  - Thaypan
- Southern
  - Agwamin
  - Mbara
  - Mbabaram
  - Walangama
- Other
  - Djabugay (Sutton & Koch 2008:483) ✓

    Shifts: 2PL > (2) > 2SG

    1. **nhurra* '2PL' > *nyurra* '2SG'

       - Innovated *nyurra-mba* '2PL' [*nyurra* '2' + -mba 'PL']
  - Gugadj

- Kok Narr
- Mbariman-Gudhinma
- Umbindhamu (Upithamu) (Verstraete & De Cock 2008) ✓

    Note: 2nd or 3rd same (perhaps 1DUAL & PL?)

- Yalgawarra

Appendix G: Panoan Language Family Profile

Languages: 32 languages: 18 extant, 14 extinct (Fleck 2013:11-12)

Proto-System: Tallman (2012), Shell (1975), Oliveira (2014)

Table 38. Proto-Panoan Pronouns (Girard 1971)

	SG	PL
1	*ʔɨ	*no
2	*mi	*m[ato]
3	*aa	*ato

Table 39. Proto-Panoan Pronouns (Oliveira 2014)

	SG	PL
1	*ʔɨ	*no[-]
2	*mi	*mato
3BASE	*ha[a]	*hato
3POSS	*hawɨn	

Survey Results

Table 40. Panoan PMR Shifts

Languages Surveyed	17
Languages with PMRS	5

Survey Breakdown

Mayoruna Panoan

- Matses subgroup

  - Demushbo **EX**

  - Kulina Pano (Kulina of the Curuçá River) **Not Available**

  - Matsés (Mayorúna) (Fleck 2008:286) ✓

    Shift: '3PL' > '3'

    **hato* '3PL' > '3'

Note: Shift only impacted the genitive case *ato-n* since the S, O, and A functions are null.

- Korubo (2 dialects)
  - Korubo **Not Available**
  - Chankueshbo **EX**
- Matis
  - Amazon Mayoruna **EX**
  - Jandiatuba Mayoruna **EX**
  - Matis (Ferreira 2005:184, 217) ✓

    Note: 1PL > 1SG in the possessive paradigm. Oblique plural nuki spread to possessive.

    nuku-n '1SG.POSS' vs. nuki-n '1PL.POSS'
- Other
  - Tabatinga Mayoruna **EX**

Mainline Panoan (Nawa Panoan)

- Kasharari (Sousa 2004:84-86,91-93; Beksta, 1977 in Oliveira 2014) ✓
- Bolivian
  - Chiriba **EX**
  - Chokobo (Chácobo) / Pakawara (Tallman 2018:563) ✓
  - Karipuna **EX**
- Madre de Dios **EX**
  - Arazaire **EX**
  - Atsawaka-Yamiaka **EX**

- Blanco River Remo **EX**

- Tarauacá Kashinawa **EX**

- Marubo

- Marúbo (Costa 1992:109-115) ✓

- Olivença Kulina **Not Available**

- Katukina **Not Usable**

NOTE: Aguiar (1994:129, 257, 273) plurals drastically inconsistent as can be seen below. Barros (1987) glosses kɨyuska as 'todas / all' and only gives nukɨ '1PL', does not give other plural forms for 2nd and 3rd persons.

nukɨ '1PL' (129, 257), '1PL.EXCL' (273)

matun '2PL' (257), '1PL.INCL' (273), '3PL' (129)

kuyus-ka '2PL' (129, 257), '2PL all' (273)

hatu '3PL' (257), '2PL' (273), '1PL.EXCL' (129)

- Poyanawa

- Iskonawa (Zariquiey 2015:98) ✓

Shifts: 1PL > 1PL.INCL, 1PL.INCL > 1DUAL.INCL, 1DUAL.INCL > 1PAUC.INCL

1. no '1PL' > no '1PL.INCL'

- New *eabo* '1PL.EXCL' = *ea* '1SG' + *-bo* 'PL'

2. no '1PL.INCL' > no '1DUAL.INCL'

- New *nobo* '1PL.INCL' = *no* '1PL.INCL' + *-bo* 'PL'

3. no '1DUAL.INCL' > no '1PAUC.INCL'

- New *no rabe* '1DUAL.INCL' = no '1DUAL.INCL' + *rabe* 'two'

- Jaquirana Remo **EX**

- Môa Nawa **OB - Not Available**

- Nukini **EX**

- Poyanawa (Paula 1992:88-97) ✓

- Chama

- Pano

- Sensi **EX**

- Shipibo (Shipibo-Konibo) (Valenzuela 2003:185) ✓

Shifts: '1PL.OBL' → '1SG.POSS'

noko-n '1PL.OBL' → nokon '1SG.POSS' vs. no-n '1PL.POSS'

-Kapanáwa (Loos & Loos 1998:52) ✓

- Headwaters

- Amawaka (Hyde 1980) ✓

- Môa Remo **EX**

- Ibuaçu Kashinawa

- Kaxinawá (Kashinawa, Cashinahua) (Montag 2008:7) ✓

- Yaminawa

- Yaminawa (Yaminahua) (Faust & Loos 2002:83) ✓

- Yawanawá (Paula 2004:148) ✓

- Shanenáwa (Cândido 2004:131) ✓

- Sharanáwa (Scott 2004) ✓

- Tuchinawa **EX**

- Kashibo-Kakataibo (Zariquiey 2011:221) ✓

Shifts: '1PL' > '1PL.INCL' & '1PL.INCL' > '1DU.INCL' & '2PL' > '2DU' & '3PL' > '3DU'

1. *no* '1PL' > *nu* '1PL.INCL'

   - *ʔɨ '1SG' + *kama* 'PL' > *ʔɨkama* '1PL.EXCL' :

2. *nu* '1PL.INCL' > *nu* '1DUAL.INCL'

   - *nu* '1PL' + *-kama* 'PL' > *nukama* '1PL.INCL'

3. **mi-tso* '2PL' > *mitsu* '2DUAL'

   - **mi* '2SG' + *kama* 'PL' > *mikama* '2PL'

4. **hato* '3PL' > *atu* '3DUAL'

   - **a* '3SG' + *kama* 'PL' > *akama* '3PL'

Note: *mitsu* is composed of *mi* '2SG' + **-tso*, a plural. All pronouns in A function have a suffix *-n*, O is base, and S function has *-s*.

Appendix H: Semitic Language Family Profile

Languages: ~50 living and extinct varieties

Proto-Language: Brockelmann (1908), Lipiński (1997), Weninger (2011), Huehnergard (2008)

Table 41: Proto-Semitic Person Marking (Lipiński 1997:298, 306, 360, 370)

	Independent	Prefix Conjugation	Suffix Conjugation	Bound pronoun
1SG	ʔan-a	ʔa-	-ku	-iy / -ni
2SG.MASC	ʔan-ta/ka(ʔ)	ta-	-ka / -ta	-ka
2SG.FEM	ʔan-ti/ki(ʔ)	ta- … -ī	-ki / -ti	-ki
3SG.MASC	šu-wa	ya-	-Ø	-šu
3SG.FEM	ši-ya	ta-	-at	-ša
1DU	ʔan-kā	-	-kāya/ -nāya	-nay(a)
2DU	ʔan-t/k(an)ā	ta- … -ā	-kā (?) / -tanā (?)	-k(un)ay(a)
3DU	š(u-n)ā	ya- … -ā (m) / ta- … -ā (f)	-ā (m) / -atā (f)	-š(un)ay(a)
1PL	niḫ-nu	ni-	-na	-na
2PL.MASC	ʔan-ta-nu	ti- … -ū	-kan(u) / -tanu	-kun
2PL.FEM	ʔan-ti-na	ti- … -ā	-kin(a) / -tina	-kun
3PL.MASC	šu-nu	yi- … -ū	-ū	-šun
3PL.FEM	ši-na	yi- … -ā	-ā	-šin

Table 42: Proto-Semitic Person Marking[26]

	Independent	Prefix Conjugation	Enclitic	
			NOMINATIVE	GENITIVE, ACCUSATIVE
1SG	ʔana, ʔanaːku	ʔa-	-ku(ː)	-ya/-iː (gen) / -niː (acc)
2SG.MASC	ʔanta	ta-	-ta(ː)	-kaː
2SG.FEM	ʔanti	ta- … -iː	-ti(ː)	-kiː
3SG.MASC	šuːʔa	yi-	-a	-šuː
3SG.FEM	šiːʔa	ta-	-at	-šaː
1PL	niħnu(ː)	ni-	-nu(ː)	-naː
2PL.MASC	ʔantumu	ta- … -uː	-tum	-kumuː
2PL.FEM	ʔantinna	ta- … -aː	-tin	-kinnaː
3PL.MASC	šumu	yi- … -uː	-uː	-šum
3PL.FEM	šinna	yi- … -aː	-aː	-šin

[26] This table is based on that in Huehnergard (2008:237-238), edited based on the discussion in Weninger (2011:160, 167, 168,)

Survey Results

Table 43. Semitic PMR Shifts

Languages Surveyed	54
Languages with PMRS	7

Survey Breakdown

East Semitic

- Akkadian: Huehnergard (2006; 2011), Huehnergard & Woods (2008)
- Eblaite: Huehnergard & Woods (2008)

West Semitic

-Central

- NorthWest
  - Old Aramaic: Creason (2008)
  - Modern Aramaic: Hoberman (1988) [All], Coghill (1999) [NENA], Khan (2007) [NENA], Jastrow (1990) [Ṭūrōyo]
  - Ugaritic: Pardee (2008b), Sivan (2001), Schniedewind & Hunt (2007)
  - Phoenician: Krahmalkov (2001), Hackett (2008)
  - Hebrew: Rendsburg (2007), Hendel (2010), McCarter (2008)
  - Amorite & Epigraphic Northwest Semitic: Hoftijzer & Jongeling (1995), Pardee (2008a)
- Arabic (30 main varieties): Janet (2011), Isaksson (1998), Isaksson (1999)
  - Algerian Saharan Arabic

    Shift: 1PL > 1SG
  - Tajiki Arabic
  - Baharna Arabic
  - Mesopotamian Arabic
  - Ta'izzi-Adeni Arabic
  - Hijazi Arabic
  - Omani Arabic
  - Cypriot Arabic
  - Dhofari Arabic

Shift: 1PL > 1SG

- Tunisian Arabic

Shift: 1PL > 1SG

- Saidi Arabic
- Gulf Arabic
- South Levantine Arabic
- North Levantine Arabic
- Sudanese Arabic
- Standard Arabic
- Algerian Arabic
- Najdi Arabic
- Moroccan Arabic

Shift: 1PL > 1SG

- Egyptian Arabic
- Eastern Egyptian Bedawi Arabic
- NW Egyptian Bedouin Arabic

Shift: 1PL > 1SG

- Hadrami Arabic
- Libyan Arabic

Shift: 1PL > 1SG

- Sanaani Arabic
- North Mesopotamian Arabic
- Babalia Creole Arabic
- Sudanese Creole Arabic
- Chadian Arabic

Shift: 1PL > 1SG

- Shihhi Arabic.
- Uzbeki Arabic

- Ancient North Arabian: MacDonald (2008)
- Ancient South Arabian: Nebes & Stein (2008)

- Modern South Arabian [MSA] (6 main varities): Bathari, Harsusi, Hobyót, Mehri, Shehri, Soqotri: Simeone-Senelle (1997)

-Ethiopian

-Northern

- Ge'ez: Gragg (2008), Bezold (1907), Weninger (2011)
- Tigre: Morin (2011), Elias (2014), Idris (2015)
- Tigrinya: Voigt (2011)

-Southern

- Amharic: Teferra & Hudson (2007), Meyer (2011a)
- Harari: Wagner (2011)
- Gurage: Meyer (2011b)

Appendix I: Southern Pama-Nyungan Language Family Profile

Languages: 27 Languages

Proto-Language (Proto-Pama-Nyungan):

Table 44. Proto-Pama-Nyungan Singular Pronouns (Koch 2003)

	NOM	ERG	ACC	DAT
1SG	*ngay	*ngathu	*nganha	*ngatyu
2SG	*nyun	*nyuntu	*nyuna	*nyunu
3SG.M	*nhu	*nhulu	*nhunha	*nhungu
3SG.F	*nhan	*nhantu	*nhana	*nhanu

Table 45. Proto-Pama-Nyungan Plural Pronouns (Sutton & Koch 2008)

	DUAL	PLURAL
1	*ngali	*ngana
2	*nyumpalV	*nyurra
3	*pula	*thana

Survey Results

Table 46. Southern Pama-Nyungan PMR Shifts

Languages Surveyed	21
Languages with PMRS	18

Survey Breakdown

Southern Pama–Nyungan

- Madhi-Madhi (Blake & Reid 1998:20-28) ✓

  Shifts: 1DUAL > 1DUAL.INCL & 1PL > 1PL.EXCL

  1. New ??? '1DUAL.EXCL': *ngali* '1DUAL' > '1DUAL.INCL'

  2. **ngana* '1PL' > *(ng)an-* '1PL.EXCL'

     - **ngay* + **nyurra* '2PL' > *ya-ngurr* '1PL.INCL'

- Ledji-Ledji (Blake & Reid 1998:20-28) **X** (not enough data)

- Wadi-Wadi (Blake & Reid 1998:20-28) **X** (not enough data)

- Wemba-Wemba (Blake & Reid 1998:20-28) ✓

  Shifts: 1DUAL > 1DUAL.INCL & 1PL > 1PL.EXCL & 1PL.INCL > 1PL

  1. **ngali* '1DUAL' > *ngal* '1DUAL.INCL'

- *ngalu-ng* [**ngay* '1SG'] > *ngalung* '1DUAL.EXCL':

- Inclusivity then reinforced on *ngala* with *-in* [**nyun* '2SG' > *-(ng)in*] > *ngalein*

2. **ngana* '1PL' > *ngan-* '1PL.EXCL'

- **ngay* or **ngana* > *ya-ngurre* [**nyurra* '2PL'] '1PL.INCL'

3. *yangurra* '1PL.INCL' > '1PL' INDEPENDENT outcompeting *ngan-*

- Clusivity re-established by adding suffixes

- *yangurre-in* [*-(ng)in* '2SG'] '1PL.INCL' & *yangurra-ng* [*-ngek* '1SG'] '1PL.EXCL'

- cf. *ngudein* '2PL' < *ngurr-da-in* [**nyurra-thana-nyun*]

- Burraba (Blake & Reid 1998:20-28) ✓

Shifts: 1DUAL > 1DUAL.INCL

1. **ngali* '1DUAL' > *ngal* '1DUAL.INCL'

- *ngalu-ng* [-ng < **ngay* '1SG'] > *ngalung* '1DUAL.EXCL':

2. **ngana* '1PL' > *ngan-* '1PL.EXCL' ??? Assumed.

- **ngay* or **ngana* + **nyurra* '2PL'> *ya-nguR* '1PL.INCL'

Exclusivity reinforced by *-da* < *dana* '3PL' [**thana*] > yanda '1PL.EXCL'

Note: Hard to tell if **ngana* '1PL' > *ngan-* '1PL.EXCL' occurred or if *yanda* '1PL.EXCL' innovated simultaneously with *ya-nguR* '1PL.INCL'. Based on Wemba-Wemba, the intermediate step is assumed.

- Wimmera (Blake & Reid 1998:20-28) ✓

Shifts: 1DUAL > 1DUAL.INCL

1. **ngali* '1DUAL' > *-(ng)al* '1DUAL.INCL'

- *ngala-ng* [**ngay* '1SG'] > *ngalang* '1DUAL.EXCL':

**ngana* '1PL' > *ngan-* '1PL.EXCL' ???

- **ngay* or **ngana* > *(ng)e-* + *nguR* [< **nyurra* '2PL'] > *(ng)enguR* '1PL.INCL'

Exclusivity reinforced by *-da* < *dana* '3PL' [**thana*] + *ng/ak* '1SG' > *-(ng)an-da-ng/ak*

Notes: *yuRw-* base

- Tjapwurrung (Blake & Reid 1998:20-28) ✓

Shifts: 1DUAL > 1DUAL.INCL

1. **ngali* '1DUAL' > *-(ng)al* '1DUAL.INCL'

- *ngala-ek* [*(ng)ek* '1SG'] > *-ngal(ak)* '1DUAL.EXCL'

**ngana* '1PL' > *ngan-* '1PL.EXCL'

- **ngay* or**ngana* > *a-* + *nguRa* [< **nyurra* '2PL'] > *a-nguRa* '1PL.INCL'

Then *anguRa* '1PL.INCL' > '1PL' INDEPENDENT outcompeting *ngan-(da)*

Clusivity re-established by adding suffixes

-anguRa-ek [*-(ng)ek* '1SG'] > *-anguRak* '1PL.EXCL'

Notes: *win-* base

- Djadjawurrung (Blake & Reid 1998:20-28) ✓

Shifts: 1DUAL > 1DUAL.INCL

1. **ngali* '1DUAL' > *-(ng)al* '1DUAL.INCL'

- *ngala-ng/ek* [*ngek* '1SG'] > *-ngal(ang/ak)* '1DUAL.EXCL'

**ngana* '1PL' > *ngan-* '1PL.EXCL' ???

- **ngay* or**ngana* > *(ng)a-* + *nguR* [< **nyurra* '2PL'] > *(ng)anguR* '1PL.INCL':

Exclusivity reinforced by *-da* < *dana* '3PL' [**thana*] + *ng/ak* '1SG' > *-(ng)an-da-ng/ak*

Notes: *wa-* base

- Bungandidj (Blake & Reid 1998:20-28) ✓

Shifts: 1DUAL > 1DUAL.INCL & 1PL > 1PL.INCL

1. **ngali* '1DUAL' > *-(ng)al* '1DUAL' > '1DUAL.INCL'

- **ngali* > *-(ng)al* + *-il-* [infix] '1DUAL.EXCL':

2. **ngana* '1PL' > *-(ng)e* '1PL' > '1PL.INCL'

- **ngana* > *-(ng)e* + *-il-* [infix] '1PL.EXCL'

- Kuurn Kopan Noot (Warrnambool) (Blake & Reid 1998:20-28) ✓

Shifts: 1DUAL > 1DUAL.INCL & 1PL > 1PL.INCL

1. **ngali* '1DUAL' > *ngal* '1DUAL' > '1DUAL.INCL'

- **ngali* > *ngal-in/ang* '1DUAL.EXCL'

2. **ngana* '1PL' > *ngan* '1PL.INCL'

- **ngana* > *ngan-in* '1PL.EXCL'

- Kolakngat (Colac) (Blake & Reid 1998:20-28) **X (not enough data)**
- Wathaurong (Wathawurrung) (Blake, Clark, & Krishna-Pillay 1998) ✓

Shifts: 1DUAL > 1DUAL.INCL [& 3DUAL > 2DUAL?]

1. **ngali* '1DUAL' *-(ng)al* '1DUAL.INCL'

- *ngala-ek* [*-ek* '1SG'] > *-(ng)alak* '1DUAL.EXCL'

**bula* '3DUAL' > '2DUAL' but see bound *-wula* '2DUAL' vs. *-bulang* '3DUAL'

- Woiwurrung (Blake & Reid 1998:20-28) ✓

Shifts: ['3DUAL' > '2DUAL'?]

**bula* '3DUAL' > '2DUAL' Independent shift

- Bunurong ✓
- Daungwurrung ✓

- Yotayotic
  - Yota-Yota (Blake & Reid 1998:20-28) ✓

Shifts: 1DUAL > 1DUAL.EXCL & 1PL > 1PL.EXCL [& 3DUAL > 2DUAL?]

1. *ngali* '1DUAL' > '1DUAL.EXCL'

- **ngali* + *ngin* '2SG' > *ngalngin* '1DUAL.INCL':

2. **ngana* > Yab *nyana* [?] '1PL' > '1PL.EXCL'

- New *nyuwanda* '1PL.INCL':

3. **bula* '3DUAL' > '2DUAL' Independent shift

  - Yabula-Yabula (Blake & Reid 1998:20-28) ✓

Shifts: 1PL > 1PL.EXCL [& 3DUAL > 2DUAL?]

1. **ngana* > Yot *ngina* '1PL' > '1PL.EXCL'

- New *nunhu* '1PL.INCL':

2. **bula* '3DUAL' > '2DUAL' Independent shift

- Dhudhuroa (Blake & Reid 1998:20-28) ✓

Shifts: 1DUAL > 1DUAL.INCL & 3DUAL > 2DUAL

1. **ngali* > *ngala* '1DUAL' > '1DUAL.INCL'

- New **ngana* + dhana '3PL' > ngan-d(h)a '1DUAL.EXCL':

2. **bula* '3DUAL' > '2DUAL' Independent shift

-Gippsland (Blake & Reid 1998:20-28) ✓

Shifts: 1DUAL > 1DUAL.INCL

**ngali* > *ngalu* '1DUAL' > '1DUAL.INCL'

- New **ngana* + ??? > ngana-ngu '1DUAL.EXCL'

- Lower Murray
  - Keramin (Horgen 2004:131) **X (not enough data)**
  - Ngayawang (Horgen 2004:128) ✓

    Shifts: 2PL > 2SG

    1. *nyurra '2PL' > ngur- '2SG'
  - Yaraldi (Horgen 2004:125) ✓

    Note: Probable 1PL > 1PL.EXCL

    1. *ngana '1PL' > ngan- '1PL'

       -*nyurra '2PL' + -nV '???' > ngurn '1PL'
  - Yitha-Yitha (Horgen 2004:131) ✓

    Shifts: 1DUAL > 1DUAL.INCL & 2PL > 2SG

    1. *ngali '1DUAL' > ngil- '1DUAL.INCL'

       -New nyin- / ngin- '1DUAL.EXCL'

    Note: Perhaps a clusivity shift in 1st plural but obscured in sources used by Horgen.

    2. *nyurra '2PL' > ngur- '2SG'
  - Yuyu (Horgen 2004:129) **X (not enough data)**
- Thura-Yura
  - Adnyamathanha
  - Barngarla (Schurmann 1844:11-12, Clendon 2015) ✓

    Shifts: 2PL > 2SG

    1. *nyurra '2PL' > nhurru
  - Kuyani
  - Nauo (Hercus & Simpson 2001) **X (not enough data)**
  - Miṛu subgroup (Hercus 1992) **X (not enough data)**
    - Kaurna
    - Narungga
    - Ngadjuri

- Nukunu (Hercus 1992) **X (not enough data)**

- Wirangu (Hercus 1999) ✓

Shifts: 3PL > 2SG.HON

1. *thana '3PL' > dyana '2SG' (Hercus 1999:79-80)

- Mirniny – Not yet surveyed
  - Mirning
  - Ngadjunmaya
- Nyungic – Not yet surveyed
  - Galaagu
  - Kalaamaya
  - Natingero
  - Nyungar

Appendix J: Uto-Aztecan Language Family Profile

Languages: 35 extant

Proto-Language: Langacker (1977b). Stubbs (2011)

Table 47. PUA Independent Pronoun (Langacker 1977b:124)

	SG	PL
1	*(i-)nɨ	*(i-)ta(-mɨ)
2	*ɨ(-mɨ)	*ɨ-mɨ
3	*pɨ	*pɨ-mɨ
3nh	*a	*a-mɨ

Table 48. PUA Pronoun-(PostPositions) (Langacker 1977b:95)

	SG	PL
1	*nɨ-	*(i-)ta(-mɨ)-
2	*ɨ(-mɨ)-	*ɨ-mɨ-
3	*pɨ-	*wa-
3nh	*a-	*a-mɨ-

Table 49. PUA 2nd Position Subject Clitics (Langacker 1977b:126)

	SG	PL
1	*=nɨ	*=ta
2	*='ɨ	*='ɨ-mɨ
3	(*=pɨ)	*=(pɨ-)mɨ

Table 50. PUA Possessives (Langacker 1977b:86)

	SG	PL
1	*i-nɨ-	*i-ta(-mɨ)-
2	*ɨ(-mɨ)-	*ɨ-mɨ-
3	*-ya	*pɨ-mɨ-

Survey Results

Table 51. UA PMR Shifts

Languages Surveyed	35
Languages with PMRS	23

Survey Breakdown

NUA

-Numic

-Central Numic

-Comanche (Robinson & Armagost 1990:302-304) ✓

Shifts: 1PL > 1PL.INCL ?

Note: Got duals but not through shifting.

- Timbisha (Panamint, Koso) (Dayley 1989:130) ✓

Shifts: 1PL > 1PL.INCL

1. tammü '1PL' [*ta '1PL' + *-mɨ 'PL'] > '1PL.INCL', tammi '1PL.INCL.OBJ'

-innovation of nümmü '1PL.EXCL' [*nɨ '1SG' + *-mɨ 'PL']

Note: Got duals but not through shifting.

-Shoshoni (Shoshone, Shoshoni-Gosiute)

-Eastern Shoshone (Shaul 2012:51) ✓

Shifts: 1PL > 1PL.INCL

1. dame '1PL' [*ta '1PL' + *-mɨ 'PL'] > '1PL.INCL', tami '1PL.INCL.OBJ'

-innovation of neme '1PL.EXCL' [*nɨ '1SG' + *-mɨ 'PL']

Note: Got duals but not through shifting.

-Southern Numic

-Kawaiisu (Zigmond et a. 1990:45-46) ✓

Shifts: 1PL > 1PL.INCL, 1PL.INCL >1DUAL.INCL

1. tami '1PL' [ta '1PL' + -mi 'PL'] > tami '1PL.INCL', =rami '1PL.INCL'

-innovation of nɨmi '1PL.EXCL' [nɨ '1SG' + mi 'PL']

2. tami '1PL.INCL' > tami '1DUAL.INCL', =rami '1DUAL.INCL'

-innovation of tawa '1PL.INCL' [ta '1PL' + -wV '2PL.SUBJ.BOUND']

-Ute (Southern Paiute, Chemehuevi, Colorado River Numic)

(Press 1979:44,46,77) ✓

Shifts: 1PL > 1PL.INCL, 1PL.INCL >1DUAL.INCL

1. tami '1PL' [ta '1PL' + -mi 'PL'] > tami '1PL.INCL',

-rami '1PL.INCL.BOUND'

-innovation of nɨmi '1PL.EXCL' [nɨ '1SG' + mi 'PL']

2. tami ‘1PL.INCL’ > tami ‘1DUAL.INCL’, -rami ‘1DUAL.INCL.BOUND’

-innovation of tawɨ ‘1PL.INCL’ [ta ‘1PL’ + -wV ‘2PL.SUBJ.BOUND’]

-Western Numic

-Mono (Lamb 1958:174,184,330) ✓

Shifts: 1PL > 1PL.INCL, 1PL.INCL > 1DUAL.INCL

1. *ta ‘1PL’ > ta ‘1PL.INCL’

-innovation of nɨni ‘1PL.EXCL’ [nɨ ‘1SG’ + -ni ‘personal PL’]

2. ta ‘1PL.INCL’ > ta ‘1DUAL.INCL’

-innovation of tani ‘1PL.EXCL’ [ta ‘1PL.INCL’ + -ni ‘personal PL’]

Note: Lamb (1958:184) – ta ‘1DUAL.INCL’ is only ‘generally’ dual. It can be used for ‘1PL’.

-Northern Paiute (Snapp, Anderson & Anderson 1982:61) ✓

Shifts: 1PL > 1DUAL, 3PL > 2/3PL

1. *ta ‘1PL’ > ta ‘1DUAL’

-Innovated new inclusive and exclusive.

- tammi ‘1PL.INCL’ [ta ‘1PL’ + m(ɨ) + -ni ‘personal PL’] (see Mono)

- nɨmmi ‘1PL.EXCL’ [nɨ ‘1SG’ + m(ɨ) + -ni ‘personal PL’] (se Mono)

2. umɨ ‘3PL’ [u ‘3SG.NONCOREF’ + -mɨ ‘PL’] > umɨ ‘2/3PL’

-Tubatulabal **EX** (Voegelin 1935) ✓

-Hopi (Jeanne 1978:76) ✓

-Takic (Proto-Takic: Langacker 1977a:99) ✓

Shifts: 1PL > 1PL/2SG, 1PL/2SG > 2SG

1. *=ta ‘1PL’ >Proto-Takic *-ta ‘2SG’ (only in the bound markers) **x 5**

-Serrano-Garbielino **EX**

-Serrano **EX** (Hill 1967:198-200) ✓

Note: portmanteau and suppletive transitive markers.

-Kitanemuk **EX** (Anderton 1988:106-110, 166) ✓

-Tongva (Gabrielino-Fernandeño) **EX- not available**

-Cupan

-Cahuilla (Ivilyuat) – (Seiler 1977) ✓

-Cupeño **EX** – (Hill 2005:233) ✓

-Luiseño-Juaneño (Grune 1997:4,) ✓

SUA

-Tepiman (Pimic + Tepehuan)

-Pimic

-O'odham (Pima, Papago) (Saxton 1982:212) ✓

Shifts: 3SG > 2SG, 3PL > 2PL (SUBJ; not in OBJ/POSS)

*p̵i '3SG.HUM' > a-a-pi-'i '2SG.INDEP' ~ -p '2SG.SUBJ' (but m= '2SG.OBJ/POSS')

*p̵i-m̵i '3PL.HUM' > a-a-pi-m '2PL.INDEP'

-Lower Pima (Pima Bajo) (Estrada Fernández 1998:

Shifts: 3SG > 2SG, 3PL > 2PL (SUBJ; not in OBJ/POSS)

*p̵i '3SG.HUM' > aap '2SG.INDEP'

*p̵i-m̵i '3PL.HUM' > aapim '2PL.INDEP'

-Tepehuan

-Northern Tepehuan (Bascom 1982) ✓

Shifts: 3SG > 2SG & 3PL > 2PL

*p̵i '3SG.HUM' > p̵i= '2SG.DEP', =pi '2SG.SUBJ', aápi '2SG.INDEP'

(but m= '2SG.OBJ/POSS')

*p̵i-m̵i '3PL.HUM' > m̵i= '2PL/3PL.DEP', aapím̵i '2PL.INDEP'

-Southern Tepehuan (Willett 1991:190,192) ✓

Shifts: 3SG > 2SG & 3PL > 2PL

*p̵i '3SG.HUM' > =p '2SG.SUBJ', ap '2SG.INDEP'

(but m= '2SG.OBJ/POSS')

*p̵i-m̵i '3PL.HUM' > =pim '2PL.SUBJ', ápi'm '2PL.INDEP'

-Tarahumaran

Tarahumaran:

-Central Tarahumara (Estrada Fernández & Villapando-Quiñónez 2005:3) ✓

-Western Tarahumara (Burgess 1984) ✓

Note: ramué '1PL' [ta '1PL' + muhé '2SG']

- Urique Rarómuri (Western Tarahumara) (Valdez Jara 2013:66) ✓

- Choguia Rarámuri (Eastern: Caballero 2008:165) ✓

-Huarijío (only River: Félix Armendáriz 2005:57,82) ✓

-Cahita

-Yaqui (Estrada Fernández 2004:397) ✓

- Mayo (only politically divided from Yaqui) ✓

-Carachol

-Cora (Casad 1984:181,232,297) ✓

-Huichol (Bierge 2017:52-53) ✓

-Aztecan

Proto-Aztecan Shift: *ta- 1PL > *t- 1PL/2SG in subject clitics only.

-Nahuatl

-Classical Nahuatl (Andrews 2003) ✓

Shifts: 1PL > 2SG (only in dependent subject)

Note: The 1PL and 2SG subject prefix marking share a marker ti- related to PUA *ta '1PL'. They are differentiated by the use of a plural suffix, which in the present tense is -h.

-Tetelcingo Náhuatl (Aztecan; Tuggy 1979:81) ✓

Shifts: 1PL > 1PL/2SG (only in dependent subject)

Note: Independent pronouns have preserved an honorific separation: tehwa '1PL' and taha '2SG' vs. tehwa(-ci) '2SG.HON'. In the possessor prefixes, the original PUA consonantal difference is preserved.

Subject prefixes

	SG	PL
1	nl-/ni-	**tl-/t-**
2	**tl-/t-**	ne(e)-
2Hon	tl-…mo-	ne(e)-…mo-
3	Ø-	Ø-
3Hon	Ø-…mo-	Ø-…mo-

Possessive Prefixes

	SG	PL
1	no-	to-
2	mo-	nemo-
2Hon	mo-…-ci	nemo-…-ci
3	i-	in-
3Hon	tie-	tien-

-North Puebla Nahuatl (Brockway 1979:158,170) ✓

Shifts: 1PL > 1PL/2SG (only in dependent subject)

Note: The independent pronouns have innovated a way to keep 1PL and 2SG separate through suffixes -tl 'SG' and -n 'PL'. So te'wa-n '1PL' vs. te'wa-tl '2SG'. In the object prefixes, the original PUA consonantal difference is preserved: teč- '1PL' vs. mic- '2SG'.

- ti- '1PL/2SG.SUBJ.DEP'

-Huasteca Nahuatl (Beller & Beller 1979:240,269,279) ✓

Shifts: 1PL > 1PL/2SG (only in subject prefixes)

Note: Added suffixes plus sound change have made the independent 1PL and 2SG pronouns separable, even in the honorific. The dependent object prefixes and the possessive prefixes maintain the original PUA consonantal differences.

- ti- '1PL/2SG.SUBJ'

-Michoacán Nahual (Sischo 1979:340,351) ✓

Shifts: 1PL > 1PL/2SG (only in subject prefixes)

Note: Suffixes, -l 'SG' and -n-te 'PL', serve to distingish the independent pronouns between tewante '1PL' and tewal '2SG'. The possessor and object prefixes maintain the original PUA consonantal differences. In addition, Michoacán uses a plural suffix on verbal predicates even with the homophonous subject marker ti- to mark the subject as '1PL' rather than singular '2SG'.

- ti- '1PL/2SG.SUBJ'

-Isthmus Nahuatl (Mecayapan – nhx) (Wolgemuth 2007) ✓

Shifts: 1PL > 1PL/2SG (only in subject prefixes), 1PL > 1PL.INCL

1. ti-, tehwa '1PL' > ti- '1PL/2SG'

2. ti- '1PL/2SG' > ti- '2SG'

-New ti-, teh(wa) '1PL/2SG' + PL > ti-…-h, teh-ameːn '1PL'

3. t-…-h, tehameːn '1PL' > t-…-h, tehameːn '1PL.INCL'

-New ni-, neh(wa) + PL > ni-…-h, neh-ameːn '1PL.EXCL'

-Pipil (King 2004) ✓

Shifts: 1PL > 1PL/2SG (only in subject prefixes)

Note: Like other Nahuatl varieties, the object and possessive prefixes maintain the original PUA consonantal differences. Like Michoacán, a plural suffix, here -t, is used on verbal predicates with the homophonous subject marker ti- to mark the subject as '1PL' rather than singular '2SG'.

- ti- '1PL/2SG.SUBJ'

-Pochutec

-Pochutec **EX** (Boas 1917:17) ✓

Shifts: 1PL > 1PL/2SG (only in subject prefixes)

Note: Like Nahuatl, Pochutec preserves the original PUA consonantal differences in the object (i.e. *mitz* '2SG.OBJ') and possessive (i.e. *mo-* '2SG.POSS').

- t- '1PL/2SG'