Obliteration vs. Impoverishment in the Basque g-/z- Constraint

Karlos Arregi and Andrew Nevins*

1 Overview

This paper examines the **you-us* and **we-you* agreement restriction (grouped together here under the label *g-/z- constraint* here, due to its morphological exponents), a Person-Case effect that is found throughout Bizkaian Basque. We motivate the g-/z- constraint as a dissimilation rule involving adjacent [+Participant] features, and consider the role of morphological markedness as a trigger of postsyntactic feature deletion rules. The g-/z restriction shows a great deal of microvariation in the repair it triggers; we examine six dialects. Understanding these phenomena requires a distinction between two postsyntactic and pre-spellout operations: *impoverishment*, which deletes the features at a node (e.g. deletes [+Participant] on an ergative agreement morpheme), and *obliteration*, which deletes an entire morpheme (e.g. deletes ergative agreement), with concomitant effects on the allomorphy of other terminals.

To begin, we may distinguish various answers to the question of what governs restrictions on person agreement between two different morphemes, for example the **me-lui* constraint (Kayne, 1975; Bonet, 1991), which disallows *3rd dative >> 1st accusative in a clitic cluster. Within linguistic theory, answers to the question of where such restrictions come from fall into roughly three groups.

The first line of explanation is *usage-based*, and rules out combinations such as **me-lui* as a grammaticalization of tendencies inherent in the frequencies of usage. The idea for this particular case would be that, within discourses, 3rd persons make rare agents/goals, and 1st persons make rare objects (e.g. Haspelmath (2004)), and hence, that the hard constraint **me-lui* arises out of a grammaticalization of an existing usage-based tendency.

The second line of explanation is one of *functionalist alignment*, and rules

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out combinations such as **me lui* by appeal to a scale of argumental prominence $1 > 2 > 3$, hierarchy of grammatical roles SUBJ > INDIR OBJ > DIR OBJ, and a constraint that the two scales must be must be well-aligned (e.g. Rosen (1990)). Under this type of model, **me-lui* is ruled out because it does not align these two scales well, positioning the highest element on one scale with a lower element on the other scale.

The third line of explanation, and the one we will pursue in detail in this paper, is that person restrictions are the consequence of rules and constraints that operate directly on person features, and in which a crucial trigger for these operations is the formal notion of morphological markedness.

The Basque g-/z- constraint is a person-case restriction like the **me-lui* constraint, but one that bans the cooccurence of a 2nd person and a 1st person plural agreement morpheme within the same verbal complex. The ban on agreement with these two persons within a single auxiliary gives rise to a number of distinct realizations of the constraint as manifested by various distributions of 2nd person and 1st plural within argument roles. The following combinations are banned within the indicated varieties of Bizkaian Basque.

(1) a. 2 ergative, 1Pl dative (**you-us*; Alboniga, Ondarru, Butroi)
b. 2 ergative, 1Pl absolutive (**you-us*; Alboniga, Maruri, Ondarru)
c. 1Pl ergative, 2 dative (**we-you*; Zamudio)
d. 1Pl ergative, 2 absolutive (**we-you*; Alboniga, Gallartu, Zamudio)

The right model of the Basque g-/z- constraint cannot be understood in terms of grammaticalization of usage tendencies, as both 1st and 2nd person are frequent agents in discourses. Nor can the Basque g-/z- constraint be understood in terms of alignment of persons with particular argument roles, as both 1Pl Erg-2 Abs and 2 Erg-1Pl Abs may be triggering contexts (cf. Alboniga in (1), which bans both combinations, for example). Our proposal is thus that the Basque g-/z- constraint may trigger the postsyntactic operation of either impoverishment or obliteration rules (Bonet (1991); Noyer (1992) et. seq. on impoverishment.) Importantly, we claim that *morphosyntactic markedness* and *dissimilation of adjacent identical features* are two factors that govern the distribution of impoverishment.

2 Markedness and Dissimilation Trigger Impoverishment

Within Distributed Morphology, two sources of syncretism are distinguished: underspecified Vocabulary Items, and impoverishment, defined as in (2).

(2) *Impoverishment*: feature deletion prior to morphosyntactic realization.

Let us take as an example the fact that 1st person pronouns do not bear gender distinctions in many languages, e.g. Brazilian Portuguese:[1]

(3) Eu estou bêbada
1S.N be.stage-level.1S drunk-F.S.
"I am drunk." (feminine)

We know that the feature [+Feminine] must be present on the subject pronoun, in order to trigger concord on the adjective. However, this feature does not appear on pronoun or agreeing verb. This systematic neutralization of gender in the presence of first person can be stated as *[+Feminine] does not appear when [+Author] is present.* This is due to a systematic rule of impoverishment that applies to the output of syntax:

(4) Delete [Feminine] on all terminal nodes that bear [+Author].

Such a rule systematically enforces neutralization of gender in the environment of a [+Author] person feature, in the same way that a rule of final devoicing in German systematically enforces neutralization of a voicing contrast in the environment of a syllable coda. In DM, this type of neutralization can be seen as triggered by morphological markedness. (4) is the result of markedness of [+Author] as a person feature. A partial list of marked environments, in which impoverishment is likely to occur, are first person, plural number, feminine gender, oblique case, non-present tense, and so forth. Many of these marked environments host systematic syncretisms, as observed by Greenberg (1963). Thus, the first trigger for impoverishment rules that we may consider is contextual markedness; see Nevins (2006) for a general discussion of morphosyntactic markedness as a conditioning factor in impoverishment rules in DM.

A second trigger for impoverishment rules is dissimilation of adjacent identical features. In clitic/agreement clusters, impoverishment is due to dissimilation. Under this view, Impoverishment is OCP-like. Nevins (2005) analyzes the spurious *se* rule in Spanish (Perlmutter, 1971; Bonet, 1991) as the result of dissimilation of adjacent clitics bearing the feature [−Participant].

[1]We use the following abbreviations in the examples: A: absolutive; COLL: colloquial; D: dative; E: ergative; F: feminine; FOR: formal; FUT: future; G: genitive; IMP: imperfective; IN: inessive; INT: intransitive auxiliary; N: nominative; NF: non-finite inflection; P: plural; PRF: perfective; S: singular; TR: transitive auxiliary.

(5) a. *Structural description*:
Dative [−Participant] — Accusative [−Participant]
b. *Structural change*:
Delete [−Participant] on the dative clitic.

Deletion of [−Participant] leads to insertion of least-specified clitic *se*, instead of expected *le*. In this paper, we present a case which is formally identical to the dissimilation-based impoverishment in (5), but which involves a different value of the feature: the Basque g-/z- constraint is the result of dissimilation of adjacent [+Participant] features.

3 Formal Foundations

In this section we will introduce some of the formal operations and representations necessary in our analysis of the Basque g-/z- constraint. The first important distinction is between impoverishment and what we dub *obliteration*.

The general model of grammatical computation assumed here is one in which syntactic operations put together phrases and heads, and in which agreement involves copying of abstract morphosyntactic features with no phonological content. After syntactic operations are complete, terminal-by-terminal, phonological content is inserted for morphosyntactic features at PF.

Importantly, in between the conclusion of syntactic operations and the commencement of phonological realization, certain rules may delete (but not add) structure, triggered in either a context-free or context-sensitive structural description. We list two types of rules in (6).

(6) a. *Impoverishment*: For a given syntactic terminal S, *delete a feature on S.*
b. *Obliteration*: For a given syntactic terminal S, *delete S entirely*.

Obliteration is best detected when the presence of S conditions allomorphy elsewhere. As we will see, obliteration (not impoverishment) of an ergative agreement morpheme renders an auxiliary root form identical with an intransitive variant, *even when the overt pronoun corresponding to the ergative argument remains*.

The basic currency of agreement relations and impoverishment and obliteration operations are abstract morphosyntactic features. We provide the inventory of features and their definitions that are relevant for this paper below.

(7) [+F] = ¬[−F]

(8) *Person* (Noyer (1992); Halle (1997); Nevins (2005))
   a. [+Author] true iff the reference set contains the speaker.
   b. [+Participant] true iff the reference set contains one of the discourse participants.

(9)
   a. [+Author, +Participant] = 1st person
   b. [−Author, +Participant] = 2nd person
   c. [−Author, −Participant] = 3rd person
   d. [+Author, −Participant] = logically impossible

(10)
   a. Marked value of [± Participant] = +
   b. Marked value of [± Author] = +

(11) *Case* (Calabrese (2006))
   a. [+Motion, −Peripheral] = ergative
   b. [+Motion, +Peripheral] = dative
   c. [−Motion, −Peripheral] = absolutive

(12) *Number* (Harbour (2003a)): [+Singular] true iff |N| = 1

4 The Basque Auxiliary-Agreement Complex

The locus of the Basque g-/z- constraint is the auxiliary, which is composed of three distinct types of elements: agreement for the arguments ergative, dative, and absolutive; tense, and auxiliary root (either *have* or *be*). The auxiliary is generally sentence final in canonical word order; some representative sentential contexts are provided below, along with a general schematic template for the auxiliary. The following are some relevant examples from Zamudio, a representative variety of Bizkaian Basque:

(13) Bakotx-a bere etze-an bixi d- a.
each-S.A his house-S.IN live 3S.A- INT
"Each person lives in their house."

(14) Su-k ni-k baño giau-∅ ekar-∅ d- o- su.
1S.E 1S.E than more-A bring-PRF 3S.A- TR- 2S.E
"You have brought more than me."

(15) Bat-an bat-eri emo-ngo d- o- tze- t.
one-G one-D give-FUT 3S.A- TR- 3S.D- 1S.E
"I'll give it to someone or other."

(16) Auxiliary template: [Abs Agr – Root – Dative Agr – Erg Agr]

Dative Agr		Absolutive Agr		Ergative Agr	
1S	-st/t	1S	n-	1S	-t
1P	**-sku/ku**	**1P**	**g-**	**1P**	**-u**
2S.M.COLL	-k	2S.COLL	∅-	2S.M.COLL	-k
2S.F.COLL	-na	2S.FORM	s-	2S.F.COLL	-na
2S.FORM	-tzu	2P	s-	**2S.FORM**	**-su**
2P	-tzue	3S	d-	**2P**	**-sue**
3S	-tz/ko	3P	d-	**3S**	**-∅/-o**
3P	-tzie/kie			3P	-e

Table 1: Agreement morphemes in Zamudio Basque

4.1 Agreement

We provide a list of the agreement affixes in Zamudio in table 1 (the items in bold will be important in our exposition of the g-/z- constraint in later sections.)[2]

In (17), we present representative Vocabulary Items (which pair phonological content with morphosyntactic features that they realize) for the ergative agreement node.

(17) /-u/ ↔ [+Author, +Participant, −Singular]
/-t/ ↔ [+Author, +Participant]
/-k/ ↔ [Colloquial, −Feminine]
/-na/ ↔ [Colloquial, +Feminine]
/-su/ ↔ [+Participant]
/-e/ ↔ [−Singular]
/-o/ ↔ [−Participant] / [−Participant, +Singular, +Motion] __
∅ ↔ Elsewhere

A more complete analysis of the morphology of the auxiliary complex in Zamudio Basque is provided in an online appendix to this paper (Arregi and Nevins 2006.)

4.2 *Have* and *Be*

In this subsection, we examine the allomorphy conditions determining the form of the auxiliary root, where *have* is "transitive" and *be* is "intransitive".

[2]The alternation in dative agreement in table 1 depends on the presence/absence of ergative agreement.

Arregi (2004) presents thorough argumentation that the *have/be* alternation in Basque is based on *the presence/absence of ergative agreement*, and not on the ergative DP argument. That this is the case can be best detected when ergative agreement and ergative arguments part ways.

The first demonstration comes from the fact that some psych-verbs usually take *be*, since they have no ergative argument. This is exemplified for Ondarru:

(18) Ni-ri ber-a gusta-ten g- a- sta.
1S.D 3S.A like-IMP 3S.A- INT- 1S.D
"I like him."

As the **me-lui* constraint bans 1 Dat – 2 Abs, the particular repair employed is that *absolutive agreement in Ondarru is realized instead by ergative morphology*. Importantly, this use of ergative morphology triggers the presence of *have* (20), even though there is no ergative DP argument.

(19) *Ni-ri su-∅ gusta-ten s- a- sta.
1S.D 2S.A like-IMP 2S.A- INT- 1S.D
"I like you."

(20) Ni-ri **su**-∅ gusta-ten d- **o**- sta- **su**.
1S.D **2S.A** like-IMP 3S.A- **TR**- 1S.D- **2S.E**
"I like you."

Thus, (20) shows that ergative agreement, and *not* an ergative argument, triggers the presence of the transitive auxiliary *have*.

Additional evidence comes from possessive *have* in Standard Basque:

(21) Jon-ek liburu bat-∅ d- **u**- ∅
Jon-E book one-A 3S.A- **have**- 3S.E
"Jon has a book."

Non-finite verbal forms in Basque do not contain agreement morphology. In a non-finite possessive clause, *be* surfaces instead of *have*, *even in the presence of an ergative subject*:

(22) Jon-ek [**ni-k** liburu bat-∅ **iza**-tea] nahi d- u- ∅.
Jon-E [**1S.E** book one-A **be**-NF] want 3S.A- TR- 3S.E
"Jon wants me to have a book."

Despite licensing an ergative argument, non-finite verbal forms have no ergative agreement, so the root of the verb must be *be*, not *have*.

Thus, as *be* can occur with an ergative DP subject, and *have* can occur

without an ergative subject, the interim summary is that the *have/be* alternation in Basque is determined by the presence of *ergative agreement*, and is thus is a postsyntactic determination of allomorphy, which will become important in our analysis of the g-/z- constraint, as will be seen below.

Finally, we must mention that there are additional allomorphy conditions governing root selection. For reasons of space, we have included these in an online appendix (Arregi and Nevins 2006.)

5 The g-/z- Constraint in Six Bizkaian Dialects

In this section, we present our analysis of the g-/z- constraint. The basic idea is that it is a dissimilation rule triggered by adjacent [+Participant] features. As we will see, there is significant dialectal variation in the application of this rule; the next section illustrates this with six different Bizkaian varieties.

We provide a unified analysis for all varieties involved by separating the structural description (triggering context) of the dissimilation rule from the structural change (repair) it effects. Dialectal variation can be witnessed in both parts of the rule. We begin with the structural description, of which there are two types: (i) 2 ergative and 1Pl dative/absolutive (**you-us*), and (ii) 1Pl ergative and 2 dative/absolutive (**we-you*). In terms of the features involved, this can be schematized as follows:

(23)

	Erg	Dat/Abs
	[+Participant]	[+Participant]
and either		
	[−Author]	[+Author, −Singular]
or		
	[+Author, −Singular]	[−Author]

What is common to all dialects is that the structural description contains two adjacent [+Participant] features, which is what triggers dissimilatory repair.

The structural change triggered by this structural description is also of two different kinds. It can be either impoverishment or obliteration:

(24) The *repair* to the g-/z- constraint involves *deleting* either:

a. [+Participant] *feature* on one of these terminals (impoverishment),

b. *or* one of these *terminals* entirely (obliteration).

Which specific terminal is affected by it is also subject to dialectal variation.

For instance, the context 2 Erg – 1Pl Abs (**you-us*) triggers impoverishment of 2 Erg in Maruri, but impoverishment of 1Pl Abs in Ondarru:

(25) *(Suk gu ikusi)* g- aittu- **su** → g- aittu- **∅**.
(You us seen) 1P.A- TR- **2S.E** → 1P.A- TR- **3S.E**
"You saw us." (Maruri, de Yrizar (1992, vol.1: 651))

(26) *(Suk gu ikusi)* **g-** aitxu- su → **d-** o- su.
(You us saw) **1P.A-** TR- 2S.E → **3S.A-** TR- 2S.E
"You saw us." (Ondarru)

This dialectal variation is discussed in the following two sections, where we present the different implementations of the dissimilation rule. Section 6 concentrates on **you-us*, and section 7, on **we-you*.

6 Resolving **you-us*: Three Repairs

Across all Bizkaian dialects, we have found three different implementations of of **you-us*, which applies whenever the auxiliary contains a 1Pl Dat/Abs and a 2 Erg terminal: obliteration of 1Pl Dat, impoverishment of 1Pl Abs, and impoverishment of 2 Erg in the context of 1Pl Abs. We discuss each of these in three separate subsections.

6.1 Obliteration of 1Pl Dat when there is 2 Erg

This specific g-/z- rule applies in the varieties of Alboniga, Butroi and Ondarru.[3] In all these dialects the exponent of 1Pl Dat *sku* is absent in the presence of 2 Erg:

(27) *(Hik guri emon)* d- o- **sku-** na → d- o- na.
(You us gave) 3S.A- TR- **1P.D-** 2S.F.E → 3S.A- TR- 2S.F.E
"You (f.sg) gave it to us." (Alboniga, de Yrizar (1992, vol.1: 467))

(28) *(Hik guri emon)* d- o- **sku-** k → d- o- k.
(You us gave) 3S.A- TR- **1P.D-** 2S.M.E → 3S.A- TR- 2S.M.E
"You (m.sg) gave it to us." (Alboniga, de Yrizar (1992, vol.1: 467))

(29) *(Suk guri emon)* d- o- **sku-** su → d- o- su.
(You us gave) 3S.A- TR- **1P.D-** 2S.E → 3S.A- TR- 2S.E
"You gave it to us." (Ondarru; Butroi, de Yrizar (1992, vol.1: 637))

[3] All the data from Alboniga were gathered by Martín Olazar in 1980–1982 and all the Butroi data are from Gaminde 1982. Our direct source for both is de Yrizar 1992.

(30) *(Suek guri emon)* d- o- **sku-** sue → d- o- sue.
(Y'all us gave) 3S.A- TR- **1P.D-** 2P.E → 3S.A- TR- 2P.E
"Y'all gave it to us." (Ondarru; Butroi, de Yrizar (1992, vol.1: 637))

The repair that is need to account for this case is the following:

(31) Obliterate the Dat node containing [+Author, −Singular].

It is important to note that this is not a case of impoverishment. Impoverishment would trigger the insertion of the elsewhere 3Sg vocabulary item *tz* (see section 4 and Arregi and Nevins 2006). The only way to account for the absence of an overt exponent for dative agreement in these forms is to obliterate the entire terminal node.

6.2 Impoverishment of 1Pl Abs When There is 2 Erg

In Ondarru, 1Pl Abs is impoverished in the presence of 2 Erg:

(32) *(Suk gu ikusi)* **g-** **aitxu-** su → **d-** **o-** su.
(You us saw) **1P.A- TR-** 2S.E → **3S.A- TR-** 2S.E
"You saw us." (Ondarru)

(33) *(Suek gu ikusi)* **g-** **aitxu-** sue → **d-** **o-** sue.
(Y'all us saw) **1P.A- TR-** 2P.E → **3S.A- TR-** 2P.E
"Y'all saw us." (Ondarru)

(34) Impoverish the Abs node containing [+Author, −Singular].

A direct result of this rule is that the elsewhere absolutive prefix *d-* is inserted (see section 4). Furthermore, the auxiliary goes from the expected *-aitxu-*, allomorphically conditioned by a [+Participant] absolutive, to *-o-*, the elsewhere transitive auxiliary. (See Arregi and Nevins 2006 for details of the Vocabulary Items involved.)

6.3 Impoverishment of 2 Erg When There Is 1Pl Abs

In Maruri and Alboniga, the same structural description as in the previous subsection triggers impoverishment of 2 Erg:

(35) *(Suk gu ikusi)* g- aittu- **su** → g- aittu- **∅**.
(You us seen) 1P.A- TR- **2S.E** → 1P.A- TR- **3S.E**
"You saw us." (Maruri, de Yrizar (1992, vol.1: 651))

(36) *(Suk gu ikusi)* g- aitxu- **sue**- s → g- aitxu- **∅**- s.
(You us seen) 1P.A- TR- **2P.E**- P.A → 1P.A- TR- **3S.E**- P.A
"Y'all saw us." (Alboniga, de Yrizar (1992, vol.1: 466))

(37) Impoverish the Erg node containing [+Participant, −Author].

Elsewhere insertion for the ergative node triggers the ∅ suffix (see section 4 and Arregi and Nevins 2006.)[4] Note that this cannot be analyzed in terms of obliteration. The disappearance of the ergative terminal would also trigger the insertion of an intransitive form of the auxiliary, rather than transitive *aitxu*. This important distinction between impoverishment and obliteration of an ergative node will become clearer in the following section, where we discuss two cases of obliteration of an ergative terminal.

7 Resolving *we-you: Three Repairs

The constraint **we-you* (1Pl Erg with 2 Abs/Dat) triggers two different types of repair across Bizkaian dialects: in the context of 2 Abs, 1Pl Erg is impoverished or obliterated, and in the context of 2 Dat, 1Pl Erg is obliterated.

7.1 Impoverishment of 1Pl Erg when there is 2 Abs

In Alboniga, 2 Abs triggers impoverishment of 1Pl Erg:

(38) *(Guk suek ikusi)* s- aitxu- sie- **gu** → s- aitxu- sie- **∅**.
We y'all seen 2P.A- TR- P.A- **1P.E** → 2P.A- TR- P.A- **3S.E**
"We saw y'all." (Alboniga, de Yrizar (1992, vol.1: 466)

(39) Impoverish the Erg node containing [+Author, −Singular].

In this case, the 1Pl Erg exponent *gu* is replaced by the default (3Sg) suffix ∅.[5] Note that nothing else changes in the auxiliary. In particular, the auxiliary root retains the transitive form *aitxu*, which, as will be seen in the next subsection, is an indication that the ergative node is still present.

[4] [−Singular] is impoverished in addition to [+Participant]. Otherwise, we would expect the insertion of the ergative suffix *e*.

[5] As in the previous case, [−Singular] is deleted in addition to [+Participant].

7.2 Obliteration of 1Pl Erg When There Is 2 Abs

In precisely the same context as the previous subsection, 1Pl Erg is obliterated in Gallartu[6] and Zamudio:[7]

(40) *(Guk suek ikusi)* s- **aittu-** e- **gu** → s- **ara-** e.
(We you saw) 2P.A- **TR-** P.A- **1P.E** → 2P.A- **INT-** P.A
"We saw y'all." (Gallartu, de Yrizar (1992, vol.2: 127))

(41) *(Guk su ikusi)* s- **aitu- u** → s- **ara**.
(We you seen) 2S.A- **TR-** **1P.E** → 2S.A- **INT**
"We saw you." (Zamudio, Gaminde (2000:373))

(42) Obliterate the Erg node containing [+Author, −Singular].

Even though the triggering context and the terminal affected are the same as in the previous case, the changes in the auxiliary are clearly more radical. In particular, the auxiliary root changes from the expected transitive *aitu* to intransitive *ara*. This shows that the ergative terminal is completely deleted, since a transitive form of the auxiliary is only possible if this terminal is present. In other words, the ergative terminal is obliterated, not simply impoverished. In the case of impoverishment, as we saw in the previous subsection, the ergative terminal is still present (even though it is realized as ∅), which triggers the insertion of the transitive auxiliary form.

7.3 Obliteration of 1Pl Erg when there is 2 Dat

In Zamudio, 1Pl Erg is also obliterated in the context of 2Dat:

(43) *(Guk hiri emon)* d- **o-** tzu- **u** → d- **a-** tzu.
(We you gave) 3S.A- **TR-** 2S.D- **1P.E** → 3S.A- **INT-** 2S.D
"We gave it to you." (Zamudio, Gaminde (2000))

(44) *(Guk hiri emon)* d- **o-** tzue- **u** → d- **a-** tzue.
(We y'all gave) 3S.A- **TR-** 2P.D- **1P.E** → 3S.A- **INT-** 2P.D
"We gave it to y'all." (Zamudio, Gaminde (2000))

(45) Obliterate the Erg node containing [+Author, −Singular].

As in the previous case, the main cue that the ergative terminal is completely gone is the change in the auxiliary root, which takes the intransitive form *a*

[6]The Gallartu data are from Gaminde 1983, as reported in de Yrizar 1992.

[7]The form *s-ara-e* in Gallartu surfaces as *sarie* due to readjustment rules (see Arregi and Nevins 2006.)

instead of the expected transitive form *o* (see Arregi and Nevins 2006.) If the absence of an overt exponent for 1Pl Erg where analyzed as impoverishment followed by insertion of elsewhere $\emptyset$, we would not be able to explain the change in the form of the auxiliary.

8 Why Obliteration Never Happens to 2nd Person

In considering the range of repairs to the g-/z- constraint across dialects in the previous sections, an important generalization emerges. Impoverishment can affect either a 1st plural or 2nd person node, by deleting the marked feature [+Participant], and possibly other features on the node, but retaining the node nonetheless. However, the more radical operation of obliteration, which deletes the entire "offending" node (thus removing the presence of ergative agreement in certain cases, and hence changing the form of the auxiliary root allomorph from *have* to *be*), only affects 1st plural nodes, and never 2nd person nodes. While this could be considered an accidental fact about the typology of repairs, in this section we attempt to derive the fact that an obliteration operation only affects 1st plural nodes based on the logic of the person features we have adopted throughout.

To begin, we must note that although we have used the term 'impoverishment' to refer to feature deletion, there are in fact two distinct types of impoverishment operations that have been proposed in the literature. The first, in (46-a), is more commonly assumed (e.g. Bonet 1991; Halle and Marantz 1993): a deleted feature simply means that nothing is left. The second (46-b), however, has been shown to be empirically necessary by Noyer (1998) and Harbour (2003b): deleting a particular feature leads to insertion of the opposite value of that same feature.

(46) Two types of impoverishment:
   a. Feature *deletion*: $[\alpha \text{F}] \rightarrow \emptyset$
   b. Feature *reversal*: deletion followed by insertion: $[\alpha \text{F}] \rightarrow \emptyset \rightarrow [-\alpha \text{F}]$

Importantly, in the Basque g-/z- repairs we have been considering, since the Vocabulary Item realizing 3 Erg is the zero morpheme /-$\emptyset$/, impoverishment in these cases is often *ambiguous* between feature deletion and feature reversal, as shown in (47), assuming the Vocabulary Items in (48) (from section 4.)

(47) *(Suek gu ikusi)* g- aittu- su → g- aittu- $\emptyset$
(Y'all us seen) 1P.A- TR- 2S.E → 1P.A- TR- 3S.E

(48) /-gu/ ↔[+Participant, +Author, −Singular]
/-su/ ↔[+Participant, −Author]
/-∅/ ↔elsewhere

Impoverishment of 2 Erg (47) could be analyzed as:

(49) *Deletion*: [+Participant, −Author] → [−Author], *or*
reversal: [+Participant, −Author] → [−Participant, −Author]

In either case, the elsewhere /-∅/ is inserted, due to the Subset Principle of Vocabulary Insertion (see, e.g. Halle (1997)): if deletion of [+Participant] occurs, then /-su/ cannot be inserted, because it realizes a superset of the features on the terminal node, and if reversal occurs, then /-su/ cannot be inserted, because its features do not match those of the resulting terminal node.

Since impoverishment of 2nd person through either feature deletion or feature reversal yields an indistinguishable result, and since both have been argued to be necessary in the literature, let us consider the consequences of each for impoverishment in 1Pl, which can also be implemented both ways. Due to the logic of the person features we have adopted here, the difference between feature deletion and feature reversal is relevant to the outcome of impoverishment of 1Pl as a repair to the g-/z- constraint:

(50) *Deletion:* [+Participant, +Author] → [+Author]
(leading to insertion of elsewhere item), *or*
reversal: [+Participant, +Author] → [−Participant, +Author]
= *logically impossible*

Notice that while feature deletion will simply yield a terminal node that, by the Subset principle, may only be realized by the elsewhere vocabulary item /-∅/, feature reversal yields a feature combination that is logically impossible (as a referent cannot be simultaneously an author but not a discourse participant, by definition.) Suppose that a grammatical principle ensures that contradictory specifications on a terminal node must be eliminated before transfer to Vocabulary Insertion:

(51) *Eradicate contradictory nodes*: Whenever a terminal T bears features [αF, βG] that are logically incompatible, eliminate the node T.

The effect of (51) is to yield complete obliteration of a 1Pl node targeted by impoverishment with feature reversal:

(52) *'Obliteration'* = Feature reversal + Eradicate contradictory nodes

In summary, while the repair to the g-/z- constraint always involves impoverishment of the targeted feature [+Participant], the choice between feature deletion and feature reversal will yield either ambiguous effects or distinct effects depending on the value of the cooccuring feature [± Author]. Deletion or reversal in 2nd person yield insertion of default ∅. However, while feature deletion in 1Pl yields insertion of the elsewhere form, feature reversal in 1Pl leads to logical incompatibility, which is resolved by eradication of the entire node.

This ambiguity between feature deletion (traditional impoverishment) and feature reversal (which may be followed by (52), yielding obliteration) is probably rampant throughout many proposed cases of impoverishment in the literature, and has thus far not merited a great deal of attention towards the latter. Bizkaian Basque provides a unique diagnostic for when obliteration is occurring due to the "voice-sensitive" allomorphy of the root auxiliary node discussed in section 4: when a contradictory [−Participant, +Author] ergative node is entirely deleted via obliteration, not only is the Vocabulary Item in question affected, but a corresponding change from *have* to *be* on a separate node ensues as well.

9 Implications

From this study of morphological markedness and its repairs in Basque auxiliary complexes, three larger points emerge. The first important conclusion is that 1st and 2nd person share a marked feature value, [+Participant]. The second point is that Obliteration and Impoverishment are formally distinct operations. Finally, in inspecting the various repairs in the six dialects we have studied here, a more general point that emerges is that a key source of morphological microvariation is due to different structural changes that target the same structural description.

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4080 Foreign Languages Building
707 S Mathews Ave
Champaign, IL 61801
karlos@uiuc.edu

Department of Linguistics
317 Boylston Hall, Harvard University
Cambridge, MA 02139
nevins@fas.harvard.edu