

# Formation of the Present Participle in Basque <sup>(1)</sup>

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In forming the present participle of a verb in Basque (2) the suffix *-tzen* or *-ten* (3) is added to the infinitive of the verb, usually with some concomitant modifications of that infinitive. Informal statements of when to use *-tzen* rather than *-ten* or of what changes, if any, must be made to the infinitive are not difficult to make. However, there are some interesting difficulties involved in trying to formalize the necessary rules. I will first present a list of repre-

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(2) In this paper I will be dealing with the Guipuzcoan dialect of Basque.

(3) The system of obstruents is fairly unusual. The orthographic elements *p*, *t*, *k*, *b*, *d*, and *g* present no problems; the orthographic elements *s*, *z*, *x*, *ts*, *tʂ*, and *tx* are explained as follows:

- s* voiceless apico-alveolar fricative
- z* voiceless dorso-alveolar fricative
- x* voiceless dorso-alveo-palatal fricative
- ts* voiceless apico-alveolar affricate
- tʂ* voiceless dorso-alveolar affricate
- tx* voiceless dorso-alveo-palatal affricate

sentative data; following that I will state informally the operations that are involved in deriving the present participles.

	<i>Infinitive</i>	<i>Present Participle</i>	<i>Gloss</i>
1.	atera	ateratzen	take out
2.	erre	erretzen	burn
3.	igo	igotzen	go up
4.	etorri	etortzen	come
5.	estali	estaltzen	cover
6.	ibilli	ibiltzen	walk
7.	ipini	ipintzen	put
8.	erosi	erosten	buy
9.	berezi	bereitzen	separate
10.	idatzi	idazten	write
11.	txarretsi	txarresten	vituperate
12.	itxi	ixten	close
13.	ebaki	ebakitzen	cut
14.	jaurti	jaurtitzen	throw
15.	ikutu	ikutzen	touch
16.	arkitu	arkitzen	meet
17.	apaindu	apaintzen	decorate
18.	oldoztu	oldozten	think
19.	jan	jaten	eat

#### INFORMAL RULES

a) If the infinitive ends in *-i*, drop the *i* (forms 4-12) unless the *i* is preceded by a stop (forms 13, 14).

b) If the infinitive ends in *-tu* or *-du* (4), drop *-tu* or *-du* (forms 15-18).

c) If after the application of a) or b) the verb ends in a sonorant, add *-tzen* (forms 1-7, 13-17); if the verb ends in a non-sonorant, add *-ten* (forms 8-12, 18).

Exception: If the infinitive ends in *-n*, drop the *n* and add *-ten* (form 19).

(4) The suffix *-tu* is commonly added to nouns or adjectives to form verbs; this suffix is realized as *-du* if the stem ends in *l* or *n*.

apain; elegant	apaindu; to adorn
gogor; hard	gogortu; to harden
otz; cold	oztu; to make cold
urrun; distant	urrundu; to go away

d) If after the application of a) or b) the verb ends in an affricate, change that affricate to its corresponding fricative (forms 10-12).

Three forms in this set of data exhibit further characteristics which require comment but which aren't central to the discussion to follow. Forms 6 and 7 have palatal consonants in the infinitives but not in the present participles. (Orthographic *ll* and *ñ* represent palatal consonants.) The reason for this is that *l* and *n* are palatalized when they are intervocalic and preceded by *i*; this condition is satisfied in the infinitival forms of 6 and 7, but not in the present participle forms. The underlying segment in both cases is the non-palatal consonant. Form 9 manifests a glide in the present participle which is not present in the infinitive. I have no other examples of this phenomenon, so I merely point out its existence, without speculating on whether this exemplifies a sub-regularity or is simply idiosyncratic.

Let's consider first the variation between *-tzen* and *-ten*. It is reasonable to assume that these two forms derive from a common underlying source. If we assume that *-tzen* more closely reflects the underlying form, then we need a rule that converts *tz* into *t* in the appropriate environments; conversely, if we assume that *-ten* more closely reflects the underlying form, we need a rule to convert *t* into *tz* in the appropriate environment. If the statement of the environment for one version of the rule were less complicated than the statement of the other, then we would have some reason to prefer the rule with the less complicated environment. However, the environments are equally simple.

20. *-ten* → *-tzen*/[ + Sonorant] —

21. *-tzen* → *-ten*/[ — Sonorant] —

Another way to try to determine which is the underlying form is to appeal to markedness theory. A rule which changes a more highly marked form into a less highly marked one is to be preferred to a rule which does the contrary. On this reasoning we should take *-tzen* to be the underlying form, since the manner of articulation of *tz* is more marked than that of *t*.

Additional support for the position that *-tzen* is the underlying form is that we have instances of *t* following both sonorants and non-sonorants, while we never find instances of *tz* following non-sonorants.

22. *kalte*; damage
23. *eta*; and
24. *asto*; donkey
25. *izter*; thigh

If we write the rule such that it converts *t* into *tz*, then we have a rule converting a potentially acceptable form into another acceptable form —there is nothing basically wrong with having *ateraten* as the present participle of *atera*. On the other hand, if we have the rule *-tzen* → *-ten* the rule only applies when the form that would result if we didn't apply the rule would be unacceptable —the form *oldoztzen* is unacceptable as the present participle of *oldoztu* because the cluster *ztz* is not permissible in Basque. If we accept *-tzen* as the underlying form, we have an explanation for the existence of a rule converting this suffix into *-ten* in some environments —the rule is necessary if we are to avoid producing certain surface consonant clusters which are unacceptable in the language. If, on the other hand, we accept *-ten* as the underlying form, there is no apparent reason for the existence of the rule *-ten* → *-tzen*.

Due to these considerations I conclude that the underlying form of the present participle suffix is *-tzen*, and that this is converted into *-ten* when it is suffixed to a form ending in a non-sonorant, i.e., rule 21 applies.

We next turn our attention to the changes that the infinitives undergo when forming the present participle. First, concerning the suffix *-tu/-du*, rather than requiring a rule which deletes this suffix, I suggest that the present participle suffix is added directly to the stem. That is, rather than saying that *-tzen* is added to, for example, *apaindu*, with *-du* being subsequently deleted, I propose that *-tzen* is added directly to the stem *apain-*.

The same tack might be taken with verbs ending in *i*. One might claim that this *i* is itself a verb suffix, like *-tu*, and that *-tzen* is added only to the verb stem, in which case we could avoid an *i*-deletion rule. But this runs into problems with forms like *ebaki/ebakitzen*; presumably the same *i* is involved with both of these forms, but if we claim that *-tzen* is added directly to *ebak-*, then an *i* must be inserted epenthetically to break up the impermissible consonant cluster *ktz*. However, I consider this approach to be incorrect. For one thing, it is suspicious that the epenthetic vowel should happen to be the same as the vowel of the verb suffix. More significant is the fact that vowel epenthesis is uncommon in Basque. A more common way to eliminate impermissible clusters is by deletion.

Consider, for example, adverb formation; one way to form adverbs is to add the suffix *-ki* to an adjective or noun.

26. eder; beautiful    ederki; beautifully  
27. gizon; man        gizonki; manly

But if this suffix is added to a form that ends in a stop, then this stop is deleted; the cluster is not broken up by epenthesis.

28. polit; pretty    \*politki  
                          poliki; prettily  
                          \*politiki

A rule of *i*-deletion appears to be required in other cases, too. If we add the suffix *-tu* to a noun or adjective in order to form a verb, and if that noun or adjective ends in *i*, then the *i* must be deleted.

29. gosari; breakfast    gosaldu; to eat breakfast  
30. itxusi; ugly        itxustu; to make ugly

However, if the noun or adjective ends in *i* preceded by a stop, then the *i* cannot be deleted.

31. begi; eye        begitu; to look at  
32. irudi; image    iruditu; to imagine

These considerations lead me to conclude that a rule of *i*-deletion is required in the derivation of present participles, rather than a rule of *i*-epenthesis.

Let us summarize what has been decided so far before going on to consider the derivations required for the data of 1-19.

- a. The underlying form of the present participle suffix is *-tzen*.
- b. This suffix is added directly to the infinitive except when the infinitive ends in the suffix *-tu/-du*, in which case the present participle suffix is added directly to the stem, i.e., to the infinitive without *-tu/-du*.
- c. If the infinitive ends in *-i*, delete the *i*; this rule does not apply, however, if the *i* is immediately preceded by a stop. (We will return to this point later.)

Applying these rules to the forms underlying 1-19 gives us the intermediate stages shown in 1a-19a.

1a. atera + tzen	11a. txarrets + tzen
2a. erre + tzen	12a. itx + tzen
3a. igo + tzen	13a. ebaki + tzen
4a. etorr + tzen	14a. jaurti + tzen
5a. estal + tzen	15a. iku + tzen
6a. ibil + tzen	16a. arki + tzen
7a. ipin + tzen	17a. apain + tzen
8a. eros + tzen	18a. oldoz + tzen
9a. berez + tzen	19a. jan + tzen
10a. idatz + tzen	

Next we must apply rule 21; this rule only affects forms 8a-12a, 18a, producing 8b-12b, 18b.

8b. eros + ten
9b. berez + ten
10b. idatz + ten
11b. txarrets + ten
12b. itx + ten
18b. oldoz + ten

If no further operations were performed, we would end up with correct forms for all cases except 9-12 and 19. The problem concerning 9 was pointed out earlier, so I will ignore that difficulty henceforth.

10c. *idatzten
11c. *txarretsten
12c. *itxten
19c. *jantzen

10c-12c require a further rule to simplify the consonant clusters; this rule is necessitated by the fact that Basque does not allow sequences Affricate-Stop. The necessary rule simply changes each affricate into its corresponding fricative.

$$33. \left[ \begin{array}{l} -\text{Sonorant} \\ -\text{Continuant} \\ +\text{Delayed Release} \end{array} \right] \rightarrow [+ \text{Continuant}] / \text{---} \left[ \begin{array}{l} -\text{Sonorant} \\ -\text{Continuant} \\ -\text{Delayed Release} \end{array} \right]$$

As stated, this requires ordering the rule which alters the present participle suffix before the rule which alters the affricate in the stem.

However, Basque also does not allow sequences of two affricates, so we could just as well say that the two rules are unordered and that rule 33 is correctly written as 34.

$$34. \left[ \begin{array}{l} -\text{Sonorant} \\ -\text{Continuant} \\ +\text{Delayed Release} \end{array} \right] \rightarrow [+ \text{Continuant}] / \text{---} \left[ \begin{array}{l} -\text{Sonorant} \\ -\text{Continuant} \end{array} \right]$$

Since rule 34 is actually simpler than rule 33 (there is one less feature required in the statement of the environment), 34 is to be preferred. Moreover, there is no reason that I am aware of for requiring the two rules (21 and 33) to be ordered with respect to each other (5).

With the addition of rule 34 all forms except 19 (to which we will return later) are accounted for. The next thing to ask is why things work in exactly this way. More specifically, why should infinitive final *i* be deleted if and only if the segment preceding *i* is not a stop. A first approximation to an explanation is to say that if we did delete the *i* when immediately preceded by a stop, we would end up with an impermissible cluster.

$$35. \text{ ebaki} + \text{tzen} \rightarrow * \text{ebaktzen} / * \text{ebakten}$$

But this is insufficient, since deletion of *i* when immediately preceded by an affricate also produces an unacceptable cluster.

$$36. \text{ itxi} + \text{tzen} \rightarrow * \text{itxtzen} / * \text{itxten}$$

The difference is that in the latter case there is a further rule which changes the unacceptable form into an acceptable one, namely rule 34.

$$37. * \text{itxten} \rightarrow \text{ixten}$$

The next question is why we can't extend rule 34 in such a way as

(5) I have assumed till now that *ts*, *tz*, and *tx* are all unitary phonemes; however, Pam Munro has pointed out that if these are treated as biphonemic, that is, as *t+s*, *t+z*, *t+x*, a significant generalization may be possible. If we rewrite rule 34 treating these as biphonemic, we get rule i.

$$i. \text{ STOP} \rightarrow \emptyset / \text{---} \text{FRICATIVE} + \text{STOP}$$

We have also seen (cf. 28) that a sequence of two stops is reduced by deleting the first stop.

$$ii. \text{ STOP} \rightarrow \emptyset / \text{---} \text{STOP}$$

These rules can be collapsed into rule iii.

$$iii. \text{ STOP} \rightarrow \emptyset / \text{---} (\text{FRICATIVE}) \text{ STOP}$$

It is not clear to me at present whether these should be treated as mono- or biphonemic entities; I will, without justification, continue to treat them as monophonemic in the text.

to convert the unacceptable form of 35 into an acceptable form. But consider what this involves. In applying rule 34 to the *tx* in 36, only one feature is changed; the feature specifications of *tx* and *x* are identical except for the feature [Continuant] (6). However, if we change the feature [—Continuant] of *k* to [+Continuant], we end up with a segment that does not exist in Basque, namely phonetic [x̄]. (This is not to be confused with the Basque orthographic *x*, which is phonetically [ʃ].) The only segments in Basque which are [+Continuant], discounting vowels, are *s*, *z*, *x*, and *j*. But these differ from *k* in a number of features.

	k	s	z	x	j
	—	—	—	—	—
Coronal	—	+	+	+	—
Anterior	—	+	+	—	—
High	+	+	—	+	—
Back	+	—	—	—	—
Continuant	—	+	+	+	+

At minimum it would be necessary to change three features (not counting [Delayed Release]; cf. footnote 6); a fairly expensive and unnatural rule would be required.

$$38 \left[ \begin{array}{l} \text{—Sonorant} \\ \text{—Coronal} \\ \text{+Back} \\ \text{—Continuant} \end{array} \right] \rightarrow \left[ \begin{array}{l} \text{+Coronal} \\ \text{—Back} \\ \text{+Continuant} \end{array} \right] / \text{—} \left[ \begin{array}{l} \text{—Sonorant} \\ \text{—Continuant} \end{array} \right]$$

Rather than add such a rule to the grammar, the language appears to have imposed a fairly involved constraint on the rule of *i*-deletion (7):

(6) This assumes that the feature [—Delayed Release] will automatically become [+Delayed Release] whenever the feature [—Continuant] is changed to [+Continuant].

(7) The alternative to imposing this constraint on the rule of *i*-deletion is to incorporate the necessary restrictions on the rule into the environment of the rule. This can be done as follows:

$$i. i \rightarrow \emptyset / \left\{ \begin{array}{l} \text{[+Sonorant]} \\ \text{[+Delayed Release]} \end{array} \right\} \text{—} +tsen$$

This rule has the drawback of employing curly brackets; the number of cases where this type of bracket is necessary in phonology has become so small that it is doubtful that they should be countenanced at all. Whether we accept this form of the rule or the constraint depends partly upon whether or not the constraint is generalizable to other phenomena. If the constraint is only pertinent to the rule of *i*-deletion, then it is doubtful that it should be accepted.

39a. When forming the present participle from an infinitive which ends in *i*, delete the *i*,

b. but don't delete *i* if an unacceptable consonant cluster will result,

c. unless there are further rules (e.g. rules 21 and 34) which will convert such an unacceptable cluster into an acceptable cluster.

Turning finally to example 19, the rules that have been discussed up until now won't generate the proper form. The output of them is 19c, which is incorrect. There is in principle nothing wrong with 19c; the cluster *ntz* is perfectly acceptable in Basque (cf. 7). Yet 19c is wrong in two respects —the correct form of the suffix should be *-ten*, not *-tzen*, and the *n* of the infinitive should be deleted. Regardless of whether or not the *n* is deleted we would expect to get *-tzen* rather than *-ten*, and the deletion of the *n* is unexplained. We must simply note that all verbs whose infinitive ends in *n* form the present participle by dropping the *n* and applying rule 21, ignoring the environmental condition on its application. Note that this is a completely consistent sub-regularity; all infinitives which end in *n* form their present participle in this way.

- 40. jan, jaten; eat
- 41. esan, esaten; say
- 42. egon, egoten; be
- 43. entzun, entzuten; hear
- 44. irten, irteten; leave

#### SUMMARY

In order to derive the present participle of a verb in the Guipuzcoan dialect of Basque the following steps are required:

a. attach the suffix *-tzen* to the infinitive, or to the stem if the infinitive ends with the suffix *-tu/-du*.

b. delete infinitive-final *i* if present;

c. apply rule 21 to change *-tzen* to *-ten* if immediately preceded by a segment which is [—Sonorant];

d. apply rule 34 to change an affricate to a fricative if immediately followed by a segment which is  $\left[ \begin{array}{l} \text{—Sonorant} \\ \text{—Continuant} \end{array} \right]$ ;

e. impose constraint 39 upon the operation of step b.

The derivation of present participles from infinitives ending in *n* will have to be handled by a sub-process which is at variance with the normal process of present participle formation.