Reduplication without segments: verb doubling as prosodic repair*

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1. Introduction

Reduplication is common cross-linguistically, and while reduplicative morphology is often used to express specific grammatical information, including arguably iconic meanings such as plurality or iteration, it also commonly occurs as a form of prosodic repair, for example to augment words that would otherwise fall below a threshold of word minimality (McCarthy and Prince 1995; Inkelas and Zoll 2005; Yu (2005); Saba Kirchner (2010); a.o.).

In this paper I argue that certain patterns of verb doubling, where a verb is repeated in order to provide an otherwise unsupported clitic with a host, should be understand in the same terms, as reduplication for the purposes of prosodic repair. Unlike standard cases of reduplication, however, these cases of verb doubling do not arise as part of the segmental phonology, but instead at an earlier stage of linearization, prior to the point at which morphosyntactic representations are given phonological content (Vocabulary Insertion in the model of Distributed Morphology: Halle and Marantz 1993, Harley and Noyer 1999). This is motivated by segmental mismatches between the two verb copies, in some cases including suppletive realizations: these mismatches arise, I suggest, because reduplication applies to the syntactic representation of the verb root, prior to its phonological realization.

In the model I propose, both linearization and segmental phonology involve competition among candidate realizations based on the interaction of ranked and violable constraints. Unlike segmental phonology, however, linearization takes as its input an abstract hierarchical representation, and selects among candidate outputs that map this output to a linearized prosodic structure that nonetheless still lacks segmental content.

Section 2 introduces the verb doubling data on which the proposals here are based, drawing on data from Ingush (Peterson 2001) and Breton (Jouitteau 2005, 2012). Section

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3 lays out the proposed analysis in terms of constraint-driven reduplication, but at a level of representation without segmental content. Section 4 concludes with some directions for future work.

2. Prosodically motivated doubling

Ingush (Peterson 2001, Conathan and Good 2000, Nichols 2011) and Breton (Jouitteau 2005, 2012) both exhibit cases where verb doubling is motivated by the need to provide a preverbal enclitic with a host.

2.1 Ingush

In Ingush, the enclitic *ʔa* in several syntactic contexts, including the clause-chaining construction in (1)–(2). This clitic appears immediately to the left of the verb, penultimate within a constituent that appears to correspond to *v*P. It requires a host further to its left, but this host can be any *v*P-internal element, including a direct object (1a-b), an adverb, a deictic clitic (1c), or the leftmost element in a compound or light verb construction (1d).

(1) a. [Baga hwalt'am =ʔa dellaa] vaagha.
[mouth.ADV dumpling=& AGR.insert.ACV] AGR.sit.PRES
"He's sitting there with a dumpling in his mouth." (Nichols 2011, 373)

b. Muusaa [buc =ʔa hʕaq-aa] či=v-ie-r.
Musa [grass=& mow-ACV] in=AGR-go-PAST
"Musa cut the grass and went home." (Peterson 2001, 149)

c. Muusaa [gaalie-ča banaana ʕa=či =ʔa jillaa] vaxar.
Musa [bag-LOC banana down=in=& AGR.put.ACV] AGR.go.PAST
"Musa put the banana in the bag and left." (Peterson 2001, 148)

d. muusaa [k'eank ciec =ʔa veaqqaa] v-ax-ar.
Musa [boy surprise=& AGR.AUX.ACV] AGR.go.PAST
"Musa surprised the boy and left." (Peterson 2001, 152)

Doubling arises when the verb is the *only* element within the verb phrase, and thus the only potential host for *ʔa*. This can be seen in (2). The first instance of the verb appears in an independent stem form, without any inflectional suffixes, while the second appears in an inflected converb form (all examples in this section involve an *anterior converb* form). In some cases this means that the two instances of the verb stem are not segmentally identical, due to stem allomorphy, as is the case in (3).

(2) jett [**laq**=*ʔa* laq-aa] b-el-ar.
cow [go.dry=*ʔa* go.dry-ACV] AGR-die-PAST
"The cow stopped giving milk and died."

(3) Muusaa, balkha [**ga** =ʔa **gejn**] avtovusaa t'eħa-vysar
Musa work.ADV [delay=& delay.ACV] bus miss.PAST

"Musa was hung up at work and missed the bus."
(Conathan and Good 2000, 53)

Similar patterns of verb doubling induced by a clause-chaining clitic are found in the related language Chechen (Conathan and Good 2000), as well as the geographically proximate Avar and Andic languages (Nichols and Peterson 2010).

The domain in which *ʔa* must find a host is a constituent large enough to include the direct object, complex verbs, and certain locative elements, as well as low adverbs. Dative-marked objects are not eligible to host *ʔa*, however, suggesting that they are outside the relevant domain:

(4) a. muusaa k'eank-ea siirda =ʔa siird-aa, v-ax-ar.
Musa boy-DAT swear.at =& swear.at-ACV, AGR-leave-PAST
"Musa swore at the boy and left." (Peterson 2001, 149)

b. *muusaa k'eank-ea =ʔa siird-aa, v-ax-ar.
Musa boy-DAT =& swear.at-ACV, AGR-leave-PAST
"Musa swore at the boy and left." (Peterson 2001, 150)

If we assume that such applicative objects are introduced comparatively high in the argument structural domain of the clause, possibly in a position such as Spec-ApplP, then this division makes sense. For the purposes of this paper I identify the constituent to which *ʔa* attaches as *v*P. Following Nichols (2011), I analyze the "clause chaining" function of *ʔa* as related to coordination, with *ʔa* a coordinating head that tucks into the lower *v*P that is its sister.[1] In other words, I assume that the syntactic or semantic scope of clause-chaining *ʔa* includes the verb immediately to its right, and that independent requirements (that the verb be final in the chained "clause") force the clitic to appear elsewhere. Indeed, in its non-clause-chaining uses (including a concessive use, and contrastive focus) *ʔa* is enclitic to the constituent it marks (Peterson 2001, Nichols 2011).

(5) [ʕajšiet j-iilx-ača] =ʔa muusaa v-ax-anz-ar.
[Aisha AGR-cry-TCV] =& Musa AGR-go-NEG-PAST
"Even when Aisha cried, Musa didn't go." (Concessive)

(6) aaz [qa] =ʔa b-oaqq hʕuoga.
1SG.ERG [news] =& AGR-communicate 2SG.ALL
"And now I'll tell you some NEWS." (Contrastive focus)

Peterson (2001) discusses *ʔa* as an example of a typologically unusual 'type 5' clitic, in Klavans's (1985) classification, in that it is a second-from-last (the inverse of a second-

[1] The temporally sequenced interpretation of clause chaining, reflected by the "anterior" converb morphology, is typical of asymmetric VP coordination (Lakoff 1986), and asymmetric coordination more generally (Bjorkman 2013).

position clitic) enclitic.[2] Conathan and Good (2000) propose an analysis in HPSG that directly stipulates the linear position for *ʔa* and states that one of the frames in which it occurs is a co-headed VP with two copies of the same verb. But though Conathan and Good articulate the clear morphophonological trigger for doubling (the need to provide an enclitic with a host), the construction-based analysis does not ultimately encode this motivation. The analysis proposed in section 3 aims to directly motivate doubling as a prosodic repair.

2.2 Breton

A similar pattern of clitic-induced verb doubling is found in Breton, as described by (Jouitteau 2005, 2012). Breton exhibits V2 word order in main clauses; the finite verb can be preceded by a focused or topicalized phrase, as in (7) from Standard Breton.

(7) [D' ar jardin] ez an.
[P DET garden] R go.1SG.
"I am going into the garden." (Jouitteau 2012)

(8) a. [Ar vugale] o deus gwalc'het ar wetur dec'h.
[the children] R.3PL have wash.PTCP the car yesterday
"The children washed the car yesterday."
b. [Dec'h] o deus ar vugale gwalc'het ar wetur.
[yesterday] R.3PL have the children wash.PTCP the car
"Yesterday, the children washed the car."[3]
c. [Gwalc'hin ar wetur] o deus graet.
[wash.INF the car] R.3PL have do.PTCP
"They really did wash the car." (Schafer 1994, 24)

In the absence of any other fronted constituent, however, the clause-initial position is occupied by a non-finite form of the main verb, followed by a finite verb that is either a form of a verb meaning 'do' (productive for all verbs other than *bezañ* 'be' and *kaout* 'have'), or a finite double of the main verb.

(9) contrasts verb doubling in (a) with the "analytic construction" with *ober* 'do' in (b). The examples in (10) provide further examples with doubling; (10b) further illustrates that the two instances of the verb in Breton can be fully suppletive, with no overlapping segmental content.

[2] Comparing (5) and (6) with earlier examples suggests that the second-from-last position of *ʔa* in clause-chaining is epiphenomenal, rather than a genuine example of Klavans' type 5 clitic: it appears to be the verb, rather than the clitic, that forces this tucking in, since it is not found when *ʔa* attaches to constitutents of other types.

[3] Schafer (1994) gives the same free translation for (8b) as (8a), but comments that there is an information structural difference in their interpretation. I have altered the English translation for (8b) to reflect this difference.

(9) a. **Mont** [a] **yan** d' ar jardin.
go R go.1SG P DET garden
"I am going into the garden."
b. **Mont** [a] **ran** d' ar jardin.
go R do.1SG P DET garden
"I am going into the garden." (Jouitteau 2012)

(10) a. **Redek** [a] **redan** bemdez.
run.INF R run.1SG every.day
"I run every day."
b. **Dleout** [a] **zlean** ober ma gwele.
must.INF R must.1SG do my bed
"I have to make my bed." (Jouitteau 2012)

As in Ingush, the leftmost instance of the verb appears in a non-finite form, here an infinitival form. Another similarity is that in both languages the doubling is triggered by an element at the edge of some constituent, in Ingush the *v*P and in Breton the clause.

Unlike in Ingush, doubling in Breton is possible only for an idiosyncratic set of verbs; according to Jouitteau (2012), these are *ober* 'do'; *bezañ* 'be'; *rankout* and *dleout* 'must'; *gallout* 'can', *dont* 'come'; *mont* 'go', *gouzout* 'know'; *kerzhout* 'walk', *redek* 'run', and *lenn* 'read', with some differences across speakers and varieties in which verbs are acceptable.

Jouitteau attributes both *do*-support and verb doubling to a requirement of the *rannig* (R), a morpheme that occurs immediately before the finite verb—in essence, a second-position clitic. This element imposes a *linear* V2 requirement, according to Jouitteau: it cannot be clause-initial, though the element to its left can occupy a number of different structural positions. She nonetheless analyzes both doubling and *do*-support to a post-syntactic but nonetheless movement-based and language-specific repair mechanism of ex-corporation. The analysis in section 3 maintains the core of her proposal, while seeking to eliminate both filters and repair mechanisms that are truly language-specific.

3. Proposal: Reduplication in linearization

Both Ingush and Breton exhibit verb doubling triggered by the need of a clitic for a host. These patterns resemble some cases of segmental reduplication in that it appears to occur in order to repair structures that would otherwise be prosodically ill formed, but differ in that the two copies need not overlap in segmental content. In this latter respect these patterns resemble verb doubling of the type found in predicate cleft constructions, often analyzed as resulting from the realization at PF of more than one copy of a single moved verb (Nunes 2004, Kandybowicz 2008, Aboh and Dyakonova 2009). But again, analyses of multiple copy realization cannot extend to the Ingush and Breton examples above, where there is no evidence for syntactic movement that would leave copies in both positions needed for the attested doubling.[4]

[4]Jouitteau (2012) further argues that verb doubling is distinct from predicate focus in Breton.

I propose that this pattern of verb doubling is a form of reduplication, but reduplication at a level of representation in which segmental information is not yet available. Syntax produces a **non-linear** representation consisting of roots and features in a hierarchical representation. The first step of realization involves linearization and the creation of prosodic constituency; I argue that verb doubling arises at this stage of the derivation, as an optimal response to ranked and violable constraints as in Optimality Theory. Only after this stage of realization does Vocabulary Insertion (VI) apply, converting the roots and features of syntax into segments.

This is a model with multiple "levels" of phonology, but in a different sense than traditional cyclic or level-ordering models. Rather than multiple cycles of segmental phonology, the two levels of phonology proposed here operate over different types of representations: linearization and prosodification operate over syntactic atoms and hierarchy, while segmental phonology operates over segments and strings.[5]

In this type of model, doubling can arise in the course of linearization / prosodification from the interaction of the constraints in (11), ranked as in (12).

(11) a. PROSODIC SUPPORT: A clitic cannot be the first unit in a prosodic phrase. (reframed from Franks 2000)
b. CLITIC-V: Constraints governing relative position of clitic and V.
c. INTEGRITY: No element of S_1 has multiple correspondents in S_2.(Saba Kirchner 2010)

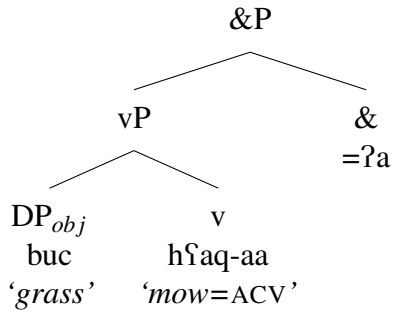
(12) PROSODIC SUPPORT, CLITIC-V ≫ INTEGRITY

In Ingush, these constraints apply to linearize structures as in (14), corresponding to the bracketed constituents in (13). Recall that we are treating clause chaining as *v*P coordination, and that Ingush is head-final. In (13) the chained *v*P is transitive, with a direct object that is able to host the chaining clitic *ʔa*, and so there is no doubling. In (14) the chained *v*P is intransitive, so the only potential host for *ʔa* is the verb itself, and the verb therefore doubles.

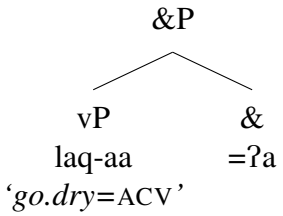
(13) a. Muusaa [buc =ʔa hʕaq-aa] čɨ=v-ie-r. (repeated from (1b))
Musa [grass=& mow-ACV] in=AGR-go-PAST
"Musa cut the grass and went home." (Peterson 2001, 149)
b. jett [**laq** =ʔa **laq**-aa] b-el-ar. (repeated from (2))
cow [go.dry=& go.dry-ACV] AGR-die-PAST
"The cow stopped giving milk and died." (Peterson 2001, 147)

[5]This proposal resembles in some ways Saba Kirchner's (2010) Minimal Reduplication model—but in that model patterns of so-called "syntactic reduplication" do require morphosyntactic movement as the trigger for multiple realization.

(14) a.



b.



As shown in (13) and (14), clitic *ʔa* takes scope over the *v*P within which it appears. When it attaches to nominals or clauses (in concessive and contrastive focus uses) *ʔa* does not show this tucking-in behaviour (Peterson 2001, Nichols 2011), suggesting that the relative position of *ʔa* and the main verb is driven by the needs of the verb rather than the clitic. Violations of CLITIC-V are thus incurred whenever the verb is not final in the prosodic constituent corresponding to the *v*P, which I assume is a prosodic phrase (ϕ-phrase).

The winning candidate in (15a) violates whatever constraint generally maps syntactic structure onto a head-final word order (by moving *ʔa* into its sister to encliticize to the direct object, in violation of something like a constraint implementation of Kayne 1994's Linear Correspondence Axiom), but wins because it does not violate any of the constraints from (14). In (16), however, a similar candidate is ruled out because linearizing the clitic to the left of the verb leaves it without a *v*P-internal host, resulting in a fatal violation of PROSODIC SUPPORT. The winning candidate is thus (16c), despite its violation of INTEGRITY.

(15) Linearization of (1b): =ʔa hosted by DP object

[&P [vP DP $\sqrt{mow}$] =&] [=(1b)]	PR.SUPP.	CLITIC-V	INTEGRITY
☞ a. (DP=& + $\sqrt{mow}$)$_\phi$			
b. (DP + $\sqrt{mow}$=&)$_\phi$		∗!	
c. (DP + $\sqrt{mow}$=& + $\sqrt{mow}$)$_\phi$			∗!

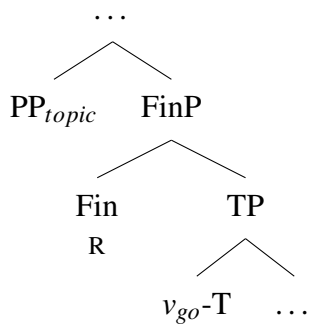
(16) Linearization of (2): no other potential host, verb doubling best option

[&P [vP $\sqrt{go.dry}$] =&] [=(2)]	PR.SUPP.	CLITIC-V	INTEGRITY
a. (=& + $\sqrt{go.dry}$)$_\phi$	∗!		
b. ($\sqrt{go.dry}$=&)$_\phi$		∗!	
☞ c. ($\sqrt{go.dry}$=& + $\sqrt{go.dry}$)$_\phi$			∗

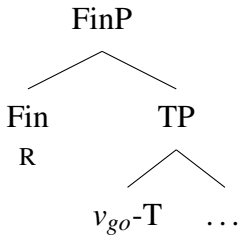
The derivation for Breton is very similar. The relevant constraints are still those in (11); they apply to the structures in (17) (= (7)) and (18) (= (9a)). In both these structures, I follow Jouitteau's (2005) proposal that the *rannig* element occurs in a finiteness (Fin) head above TP; an element to its left may be in any of several left-peripheral specifier positions.[6].

[6]Jouitteau assumes that the finite verb raises to adjoin to Fin; in the structures here I show it remaining lower in T, though nothing hinges on this

(17) [D' ar jardin] ez an.
[P DET garden] R go.1SG.
"I am going into the garden."



(18) **Mont a yan** d' ar jardin.
go R go.1SG P DET garden
"I am going into the garden."



In (17), the clause-initial topic PP (in Spec,TopP) insulates the *rannig* being initial in its prosodic phrase, so no doubling is required. In (18), by contrast, in the absence of a repair the *rannig* would be clause-initial.

Unlike in Ingush, the *rannig* is not obviously enclitic—but also not obviously proclitic to the verb. However, it is an unaccented monosyllable that realizes a functional head. Non-affixal functional heads are prosodically restricted across Celtic languages, and this is a reasonable treatment of Breton as well. I assume in the tableaus below that the *rannig* is mapped to a prosodic clitic (*K*), a constituent weaker than the prosodic word, and that PROSODIC SUPPORT is violated by this weak element occurring initially in a clause or utterance.

(19) Linearization of (18): Topic PP occupies initial position

PP [$_{FinP}$ R [v_{go}-T ... [=(7)]	PR.SUPP.	CL-V	INTEG.
☞ a. (PP)$_\phi$ + {R}$_K$ + (v_{go}-T ...			
b. (PP)$_\phi$ + (v_{go}-T {R}$_K$ ...		*!	
c. [PP]$_\phi$ + (v$_{go}$) + {R}$_K$ + (v_{go}-T ...			*!

(20) Linearization of (9a): no closer potential initial element, verb doubling the best option

[$_{FinP}$ R [v_{go}-T ... [=(9a)]	PR.SUPP	CL-V	INTEG.
a. {R}$_K$ + (v_{go}-T ...	*!		
b. (v_{go}-T {R}$_K$ ...		*!	
☞ c. (v$_{go}$) + {R}$_K$ + (v_{go}-T ...			*

Because doubling in (20) occurs prior to VI, the two instances of v_{go} will undergo realization separately, allowing each to be realized via a separate (and potentially suppletive) allomorph.[7]

[7]Morphological Doubling Theory (MDT), developed by Inkelas and Zoll (2005), is a model of reduplication that also allows non-identity between reduplicative copies. In this theory, similar in some respects to the

(21) Partial VI for v_{go}:

v_{go} 1SG↔ yan
...
elsewhere ↔ mont

Note that in (21) the doubled element is identified as a light verb v_{go}, not as a root. The idea here is that the otherwise idiosyncratic list of verbs that allow doubling are those that realize different flavours of a light verb head; on this view the alternate analytic construction with *ober* 'do' is available when instead of doubling *v* the lexical root alone is realized to the left of the *rannig*, while the light verb (*v*) remains in T and is pronounced as the default light verb 'do'.

4. Conclusions

In this paper I have argued that some patterns of verb doubling, which appear to occur as last-resort repairs in order to license a clitic, arise as a form of non-segmental reduplication. This requires in turn a modular approach to PF realization, in which the constraint-based linearization and prosodification of syntactic structure occurs derivationally prior to the insertion of phonological material in Vocabulary Insertion, and so also prior to segmental phonology.

This analysis joins a broader set of proposals that have argued both that linearization is constraint based (rather than deterministic), and that it occurs prior to VI, at a stage where syntactic terminals have not yet been given phonological content. This is a strongly modular view of PF, one in which the mechanisms of narrow syntax are no longer available after the point of spell-out, and what might appear to be prosodically-driven syntactic operations can be understood instead as optimal resolutions of competing requirements on linearization, faithfulness, and prosodic wellformedness.

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construction based analysis of doubling in (Conathan and Good 2000), reduplication arises in morphological constructions that specify two instances of a particular morphological constituent (one of which may be truncated). But MDT does require that reduplication express some meaning or grammatical function; it does not provide a means for prosodic factors to trigger the duplication frame.

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