

1 INTRODUCTION

Reduplication is a very widespread construction in the world's languages. Of the 368 languages in Rubino's survey of reduplication for the World Atlas of Language Structures online (<http://www.wals.info>, as of January 2013), 85% show some form of productive reduplication. Of the languages exhibiting productive reduplication, 277 (89%) exhibit both full and partial reduplication. Only 35 languages show only full reduplication, and none show only partial reduplication.

This chapter will survey reduplication with particular attention to its role in derivational morphology, drawing attention to the many important questions that remain open about the relationship between form and function in reduplication.

2 TYPES OF REDUPLICATION

Reduplication, broadly defined as the repetition of part or all of one linguistic constituent to form a new constituent with a different function, occurs at many points on a spectrum from phonologically defined partial reduplication to the repetition of syntactic phrases. The following canonical subtypes have been identified in the literature. The first three constitute the conventional spectrum of reduplication; this spectrum has been extended by Inkelas & Zoll (2005) to include the last two items as well:

- (1) a. Partial reduplication (repetition of a phonologically defined subconstituent of a word, with potential concomitant phonological modifications)

- b. Total reduplication (repetition of a root, stem or word, with minimal or no phonological modifications)
- c. Echo reduplication (reduplication of a word, with replacement of the onset or, sometimes, vocalism or internal material in one copy)
- d. Synonym reduplication (juxtaposition of two roots, stems or words which are synonymous, antonymous or closely semantically related)
- e. Syntactic doubling (in which a single word or constituent is mandated to occur twice in the same syntactic construction, often with obligatory intervening material)

Examples of partial and total reduplication are well known, surveyed and analyzed from a theoretical perspective in such works as Moravcsik 1978; Marantz 1982; McCarthy & Prince 1986, 1995; Steriade 1988; Inkelas & Zoll 2005; Stolz et al. 2011; and many others. Since the purpose of this article is to explore connections between the subtypes of reduplication in (1) and their semantic or syntactic functions across languages, we will not dwell on the phonological properties of partial reduplication, although these are the focus of most of the literature of this type of reduplication. Suffice it to say here that partial reduplication falls into two general categories: reduplication of a minimal word (or metrical foot), as in (2a), and reduplication of a smaller constituent (e.g. a heavy syllable, or a light syllable) (2b):

- (2) a. Reduplicant is a minimal word: Diyari (multiple functions; Poser 1990:132, citing Austin 1981; see also McCarthy & Prince 1996):

wiɭa	wiɭa-wiɭa	‘woman’
kanku	kanku-kanku	‘boy’
kuɭku	kuɭku-kuɭkuɲa	‘to jump’
t̪ilpa	t̪ilpa-t̪ilparku	‘bird species’
ɲanka	ɲanka-ɲankaŋɟi	‘catfish (pl)’

- b. Reduplicant is a heavy syllable: Mokilese progressive reduplication (Blevins 1996:523, Harrison 1973, 1976)

pɔdɔk	pɔd-pɔdɔk	‘plant/planting’
soorɔk	soo-soorɔk	‘tear/tearing’
diar	dii-diar	‘find/finding’
andip	and-andip	‘spit/spitting’

- c. Reduplicant is a light syllable: Tohono O’Odham pluralizing reduplication (Fitzgerald 2001:942,945)

pado	pa-pado	‘duck/ducks’
tablo	ta-tablo	‘shawl/shawls’
siminʃul	si-siminʃul (→ sisiminʃul)	‘cemetery/cemeteries’

Total reduplication, by definition, duplicates its morphological target without attention to phonological size or shape, as illustrated in (3):¹

¹ There are some exceptions; for example, Kinande verb stem reduplication is total, but requires the reduplicant to be minimally disyllabic. See discussion in section 4.2.

- (3) a. Indonesian (Cohn 1989:185): Total reduplication of nouns encodes pluralization or diversity for nouns
- | | | |
|---------------|-----------------------------|---------------------|
| búku | búku-búku | ‘book/books’ |
| minúman | minúman-minúman | ‘drink/drinks’ |
| kəmàʃarakátan | kəmàʃarakátan-kəmàʃarakátan | ‘society/societies’ |
- b. Acehnese (Western Malayo-Polynesian, Sundic; Durie 1985:39-40): reduplication expresses emphasis
- | | | |
|-------|-------------|------------------|
| tambô | tambô-tambô | ‘drum (emph.)’ |
| ma | ma-ma | ‘mother (emph.)’ |

‘Echo’-reduplication is a term often applied to total reduplication constructions in which the beginning of the second copy is replaced by a fixed substring. Familiar English examples include the ironic or pejorative Yiddish-derived pattern in which the fixed substring [ʃm] stands in as the onset of the copy, replacing any existing initial consonant(s) (see e.g. McCarthy & Prince 1986, Nevins & Vaux 2003) (4a). Kolami (Central Dravidian; Emeneau 1955) exhibits an areally common ‘et cetera’ construction in which *gi* stands in for the initial (C)V of the copy (4b):

- b. vivaah shaadi vivaah-shaadi
 ‘marriage’ [+native] ‘marriage’ [-native] ‘marriage, etc.’

Syntactic doubling is the term used here for constructions in which the same word is deployed twice in a grammatical construction, sometimes separated by linking material or other syntactic elements, with a fixed constructional meaning associated with the doubling. In Ewe, for example, Ameka (1999:75, 96-100) describes a ‘deprecatory duplication’ construction in which the two copies of a noun are separated by an adposition:

- (6) a. É-nyé **ɲútsu** **gbó** **ɲútsũ**
 3SG-be **man** **vicinity** **man:HTS**
 ‘He is not a real man’ or ‘He is an effeminate/emasculated man’
- b. **tó** **gbó** **tɔ-é** ke kúme
 father **vicinity** **father-DIM** this kind
 ‘this kind of pseudofather’

Such constructions often resemble synonym constructions in that one copy has additional modifications. In Ewe, the second noun in deprecatory constructions may exhibit a diminutive suffix (6b); in addition, the entire construction is marked, formally on the second noun, by a High tone suffix associated with nominal compounds (Ameka 1999:96-97). Its effects can be seen in both (6a) and (6b).

This concludes our extremely brief survey of the types of phenomena that are relevant to a discussion of the grammatical functions of reduplication. Outside even of this broad spectrum lie, on the phonological end, consonant gemination or vowel lengthening processes which perform morphological functions (see e.g. Anderson 1992, Spencer 1998); and, at the syntactic end, reiteration of words or syntactic phrases for stylistic purposes, which appears to be a very, very, very common pattern cross-linguistically.

3 FUNCTIONS OF REDUPLICATION

Reduplication serves a wide variety of functions cross-linguistically and within individual languages. These function range over the standard morphological functions of derivation and inflection. Reduplication can also serve as a phonological concomitant of affixation (section 4.1) and even simply as a semantically contentless structural repair (section 4.2). We will briefly look at examples of each type of function before posing the interesting question of whether specific functions of reduplication tend to be correlated with the specific forms of reduplication that we surveyed in section 2.

3.1 REDUPLICATION AS INFLECTION

Inflection is defined in textbooks and handbook articles as morphology which creates different forms of a word (see e.g. Booij 2006; Corbett 1999, 2010), vs. derivational morphology, which creates new words. The difference lies in meaning; derivation changes lexical meaning, while inflection preserves lexical meaning. Reduplication frequently occurs in both types of morphology.

Beyond pluralization, reduplication in nouns has occasionally been identified as marking other inflectional categories as well. This is less common in nouns than in verbs. Reduplication as case-marking is rare but has been documented in the closely related languages Chukchi (Dunn 1999) and Koryak (Bogoras 1969), where it marks absolutive case. Another uncommon but attested inflectional nominal function of reduplication is the encoding of possession categories. In Tarok (Benue-Congo), partial reduplication encodes third person singular possessive (Robinson 1976). In Arosi (Central-Eastern Oceanic; Lynch & Horoi 2002), partial reduplication marks 1st and 2nd person possessive constructions.

Turning to verbs, reduplication is very frequently used to encode a variety of aspectual distinctions. Clearly related to the event pluralizing functions mentioned above, the aspectual categories of frequentative, repetitive, continuation, progressive are among the most common for verb reduplication cross-linguistically. As Rubino notes in his (2004) survey, other distinctions are commonly marked with reduplication as well. In Alabama (Muskogean) reduplication encodes imperfective aspect (Hardy and Montler 1988), while in Till (Salish), reduplication marks inceptives (Reichard 1959). Perfective reduplication in Indo-European is well-studied (e.g. Niepokuj 1997). Kiyomi, in her survey of Malayo-Polynesian, cites examples of progressive and habitual reduplication, in addition to other less common aspectual distinctions.

Rubino (2004) also reports from his survey that reduplication can encode tense. Tagalog is often reported to mark the future tense via CV prefixing reduplication (see e.g. Stolz et al. 2011); however, Schachter and Otones (1972) argue that the construction is better characterized as marked contemplated aspect (see discussion in Kroeger 1993:15).

Mina employs a syntactic doubling construction to mark past tense: *lʒán i lʒán zá* ‘cross 3PL cross EE = they crossed [the river]’ (Frajzyngier et al. 2005:188).

Reduplication does not seem to be used, commonly or perhaps at all, to encode person or gender in verbal agreement, just as it is rare to find reduplication marking case or gender in nouns.

3.2 REDUPLICATION AS DERIVATION

Reduplication is used to perform a very wide array of derivational functions. A construction qualifies as derivational if it changes part of speech, or argument structure, or if it otherwise alters the meaning of a word sufficiently to result in a new lexeme.

Reduplication can convert nouns to verbs and vice versa. In Aroma, for example, total reduplication derives verbs from nouns (*mega* ‘magic’, *megamega* ‘to make magic’) and nouns from verbs (*vawao* ‘to decorate’, *vawaovawao* ‘decoration’) (Craig 1980:127). Kiyomi (1995:1162) demonstrates that a wide range of mappings from the categories of Verb and Noun to those of Verb, Noun, Adjective and Adverb are attested in reduplication in Malayo-Polynesian alone. In her survey of 30 Malayo-Polynesian languages, 22 exhibited part of speech-changing reduplication. Numbers record the number of mappings of each type in Kiyomi’s sample:

(8)

N→	V	Adj	Adv
	(5) Woleaian <i>shal</i> ‘water’ → <i>che-chal</i> ‘to water’	(5) Kiribatese <i>maunga</i> ‘mountain’ → <i>maunga-unga</i> ‘mountainous’	(9) Hiligaynon <i>túig</i> ‘year’ → <i>túig-túig</i> ‘yearly’
V→	N	Adj	Adv
	(3) Tigak <i>giak</i> ‘send’ → <i>gi-giak</i> ‘messenger’	(4) Fijian <i>garo</i> ‘lust for’ <i>garo-garo</i> ‘lustful’	(2) Indonesian <i>kira</i> ‘guess’ → <i>kira-kira</i> ‘at a guess’

Within part-of-speech category, reduplication also frequently creates new lexemes. For example, reduplication can perform valence-changing operations on verbs. Kiyomi reports cases from her survey of Malayo-Polynesian in which verb reduplication is valence-reducing (but no cases of the reverse): from Paamese, Kiyomi cites an example in which reduplication of the transitive verb *lahi-e* ‘is carrying him’ produces the intransitive *lahi-lahi* ‘is occupied’. As another example of valence-reducing reduplication, Palmer cites reduplication as a source of unergative verbs in Kokota, e.g. *manei n-e-ke dupa-nou* ‘he RL-3S-PFV punch-1SGO I = he punched me’ but *manei n-e du-dupa bla* ‘he RL-3S RD-punch 3.MT ‘he was just punching’ (p. 193).

Rubino (2004) mentions associative constructions as a possible output of noun reduplication, citing Yawelmani (Penutian) as an example: *k'ɔhis* 'buttocks' > *k'ɔ-k'ɔhis* 'one with large buttocks' (Newman 1944).

3.3 REDUPLICATION IN THE FUZZY AREA BETWEEN DERIVATION AND INFLECTION

Any survey that attempts to sort morphological constructions into the categories of derivation and inflection will inevitably contain a discussion of constructions that don't neatly fit into either category (see e.g. Bauer 1996, Blevins 2001, Booij 2006, among many others). This is true of reduplication as well. Some of the most common functions of reduplication fall into this nebulous area: diminutivization, attenuation, augmentation, intensification, quantification, and conveying a sense of distribution or lack of control. None of these features are required in agreement systems or are structurally assigned like case, thus none are canonically inflectional; and all of these processes affect meaning, as derivation does, but it is arguable whether they create new lexemes. Even pluralizing morphology can be ambiguous in this way. Number is involved in agreement systems and ought, therefore, to be a prototypical inflectional construction. However, the difference between a singular or plural actor can deeply affect event structure and interacts in that way with valence-changing morphology, itself prototypically derivational.

Below are some examples of reduplication constructions performing some of the more commonly found functions in this in-between category. Many other examples of this kind can be found in surveys of reduplication (Key 1965; Moravcsik 1968; Kiyomi 1995; Rubino 2004):

- (9) a. Diminution (Lushootseed; Urbanczyk 2006:180)

ǰsəd ‘foot’ > *ǰí-ǰsəd* ‘little foot’

báč ‘fall down’ > *bí-báč* ‘drop in from time to time’

- b. Attenuation/limitation (Alabama, from Hardy and Montler 1988; Rubino 2004:19)

kasatka ‘cold’ > *kássatka* ‘cool’

lamatki ‘straight’ > *lámmatki* ‘pretty straight’

- c. Intensification (Bikol; Mattes 2006:7,10)

gabos ‘all’ > *gabos-gabos* ‘all (more than appropriate)’

tumog ‘wet’ > *tumog-tumog* ‘soaking wet’

- d. Distributivity

Ao (Gowda 1975:39, Rubino 2004: 21)

asem ‘three’ > *asem-sem* ‘three each’

ténet ‘seven’ > *ténet-net* ‘seven each’

- e. Quantification (Manambu; Aikhenvald 2010: section 4.55)

bap ‘moon’ > *bap-a-bap* ‘month after month’

təp ‘village’ > *təp-a-təp* ‘every village’

f. Collectivity (Maltese; Stolz et al. 2010:271)

tarag 'stairs' > tarag-tarag 'flights of stairs'

g. Out-of-control (Lushootseed; Urbanczyk 2006:203)

d'áq 'fall' > d'áq-aq 'totter, stagger'

čǎǎ 'spit' > sčǎǎ-ǎǎ 'cracked to pieces'

As we will discuss in section 5, these common functions exhibit considerable iconicity, a property which has been much discussed in connection with reduplication.

4 REDUPLICATION WITHOUT SEMANTIC OR SYNTACTIC FUNCTION

No discussion of the form and function of reduplication would be complete without at least a brief mention of the fact that reduplication often occurs without making any clear semantic or syntactic contribution of its own. This takes place in at least two ways. First, reduplication often occurs as a concomitant of overt affixation (section 4.1), raising the question of whether the reduplication itself, or the affix, or the construction in which they co-occur, is the locus of meaning. Second, reduplication can sometimes occur as an apparent repair to a structural templatic problem, usually but not necessarily phonological in nature (section 4.2). In such cases there is simply no way to ascribe meaning to the reduplication process.

4.1 REDUPLICATION AS CONCOMITANT OF AFFIXATION

Both full and partial reduplication are commonly found as part of a complex morphological construction which also features ordinary affixation. Such cases are of considerable interest to morphologists, as they disrupt the idealized one-to-one mapping between meaning and form (see e.g. Anderson 1992, ch. 3). In Roviana (Oceanic), for example, the derivation of instrumental or locational nouns from verbs is marked simultaneously by total reduplication and the nominalizing suffix *-ana*; *ha^mbo* ‘sit’ ~ *ha^mbo-ha^mbotu-ana* ‘chair’, *hake* ‘perch’ ~ *hake-hake-ana* ‘chair’, *hale* ‘climb’ ~ *hale-hale-ana* ‘steps, stairs’. (Corston-Oliver 2002:469, 472). The reduplication co-occurring with *-ana* serves no distinct semantic function of its own. In Hausa (West Chadic), one class of nouns forms its plurals via CVC reduplication and suffixation of *-i*., as in *gútsúrè*: ‘small fragment’, *gútsàtsári*: (< *gútsàr-tsàr-i*:), *gárdàm* ‘dispute, argument, *gárdàndámí* (<*gárdàm-dám-i*) (Newman 2000:451).

In Ditidaht (also known as Nitinaht; Southern Wakashan), about 40 suffixes trigger reduplication on the stems they attach to (Stonham 1994). For example, the ‘resemble’ suffix triggers CV root reduplication (p. 40). Roots are underlined; reduplication-triggering suffixes are co-indexed with the reduplicant:

- (10) a. $\lambda'i_i-\lambda'ic-ak'uk_i$ 'RED_i-white-resembles_i' = 'flour'
- b. $tu:i-tu:\gamma-ubq-ak'uk_i$ 'RED_i-scare-plant-resembles_i' = 'looks like a spruce tree
(= juniper-leaved hair moss)'
- c. $pi:i-pi:la:q-k'uk_i$ 'RED_i-liver-resembles_i' = 'resembles liver (= yellow
pond lily)'

In cases like these, reduplication can potentially be viewed as a morphophonological accompaniment to affixation, much like ablaut or other morphophonemic alternations which commonly apply to bases of affixation. Alternatively, reduplication that accompanies affixation can be analyzed in terms of what Aronoff (1994) and Blevins (2003) term 'morphomic stems', i.e. semantically empty stem-forming constructions producing stems that certain affixes select for; this is the approach taken by Inkelas & Zoll (2005), who analyze reduplication in the examples above as a semantically empty morphological process whose purpose is to form stems of a particular type. In Ditidaht, for example, the 'resembles' suffix selects for stem of the type formed by CV reduplication. Supporting evidence for a stem type analysis is that, as observed by Stonham, if two co-occurring suffixes both select for a reduplicated stem type, reduplication occurs only once (Stonham 1994:49). Reduplication converts a root to a stem of the appropriate type, to which both affixes attach. This is true, however, only if the suffixes also create stems of that same morphological type. Stonham posits two morphological levels, or stem types, in Ditidaht. Reduplication can occur twice if triggered by affixes in both levels (p. 57):

- (11) ka-ka_i-kawad-ataχ_i ‘DIST_{RED}-RED_i-killer_whale-hunt_i’ = ‘hunting killer
whales here and there’

Semantically empty, concomitant reduplication accompanies derivational and aspectual affixation, or what Stonham (following Haas & Swadesh 1932) calls stem-level affixation, but independent Distributive reduplication patterns with the outer layer of word-level affixes which Stonham characterizes as inflectional (p. 57).

4.2 REDUPLICATION AS REPAIR

Sometimes reduplication is used as a repair for ill-formed phonological or templatic structures. In such cases, it is clear that no meaning or syntactic function can be ascribed to the reduplication itself.

In some cases reduplication appears to be motivated as a repair for phonological subminimality. One intriguing example comes from Kinande, in which a morphologically compelled process of reduplication can be triggered to apply an extra time, semantically vacuously, for purely phonological reason. In Kinande, verb stem reduplication is total (e.g. *-hɔma* ‘beat’ → *-hɔma+hɔma* ‘beat a little here and there’), but requires the reduplicant to be disyllabic. As a result, reduplication of a monosyllabic verb stem will result in triplication: *-swa* ‘grind’ → *swa-swa+swa* ‘grind a little here and there’ (Mutaka and Hyman 1990, Hyman 2009:184).

A second example occurs in Chukchi, which also recruits an independent morphological process of reduplication, without its semantic connotations, to serve a

phonological purpose. As mentioned above, Chukchi encodes absolutive case (in singulars) by partial, opposite-edge root reduplication (a). This same reduplication pattern is used, minus its absolutive singular connotation, in absolutive plurals, which are normally marked with the suffix *-t*. Exactly when the root is CVC in shape, the absolutive plural shows the same reduplication found throughout the absolutive singular (Krause 1980):

(12)	Root shape		
		<u>CVCV</u>	<u>CVC</u>
a. Absolutive singular	nute-nut	nute-t	‘earth’
	tala-tal	tala-t	‘pounded meat’
b. Absolutive plural	čot-čot	čot-čot-te	‘pillow’
	tam-tam	tam-tam-ət	‘growth’

Krause (1980) and Kiparsky (1986) attribute the phonologically conditioned plural reduplication in Chukchi to a prosodic minimality condition on noun roots; to be inflected (e.g. with plural *-t*), a noun stem should be larger than CVC. Some languages might epenthesize a vowel in this situation; Chukchi appeals instead to semantically null reduplication.

Peterson and Maas (2009) discuss the interesting case of Kharia (Munda), in which reduplication applies to masdars (predicates without TAM and person marking) exactly when the masdar would otherwise be disyllabic (p. 225, 227):

(13) a. Polysyllabic lexical base: masdar is homophonous with base

karay ‘done; (the act of) doing; do (ACTIVE)’

ayo ‘mother; become a mother (MIDDLE); accept (s.o.) as a mother (ACTIVE)’

b. Monosyllabic lexical base: masdar is reduplicated

ter ‘give (ACTIVE)’; *ter-ter* ‘(the act of) given; given; gift’

yo ‘see’; *yo-yo* ‘(the act of) seeing’

Peterson and Maas attribute this process to a historical requirement that predicates be disyllabic; reduplication was a semantically vacuous repair of subminimal predicates. In the modern language, they argue, the process has become restricted to masdars, applying to monosyllables even when the masdar-containing predicate as a whole contains other syllables (e.g. *aw* ‘live’ > *aw-aw-te*, in which the oblique case marker *-te* does not obviate reduplication in the masdar *aw-aw*; p. 227). Regardless of whether it applies to entire predicates (historically) or just to masdars (synchronically), however, it seems clear that reduplication is still a repair for phonological subminimality of a morphosyntactic constituent in Kharia.

An interesting case of syntactic doubling as a structural repair occurs in Chechen (Nakh-Dagestani, Nakh), motivated by the requirement that some syntactic element precede and host a rigidly second position clitic (Conathan & Good 2000; see also Peterson 2001 and Good 2006 on the closely related language Ingush). This case is

also discussed in Inkelas and Zoll (2005). As shown in (14), from Conathan & Good (2000:50), chained clauses are marked by an enclitic particle 'a (= IPA [ʔa]), which immediately precedes the inflected, phrase-final, main verb. The enclitic must be preceded by another element in the same clause. Two types of constituent may occur before the verb (and enclitic particle) in the clause: an object (14a), or a deictic proclitic or preverb (12b). If neither of these elements is present, then the obligatory pre-clitic position is filled by reduplicating the verb (14c).³

- (14) a. Cickuo, [ch 'aara = 'a gina]_{VP}, ĩ bu 'u [Chechen]
 cat.ERG [fish = & see.PP]_{VP} 3S.ABS B.eat.PRS
 'The cat, having seen a fish, eats it.'
- b. Aħmada, [kiekhat jaaz = 'a dina]_{VP}, zhejna dueshu
 Ahmad.ERG [letter write = & D.do.PP]_{VP} book D.read.PRS
 'Ahmad, having written a letter, reads a book.'
- c. Aħmad, [ʃa = 'a ʃiina]_{VP}, dʃa-vaghara
 Ahmad [stay.INF_{RED} = & stay.PP]_{VP} DX.V.go.WP
 'Ahmad stayed (for a while) and left.'

³ Note on practical orthography used here: right apostrophe = [ʔ]; 'c' = [ts]; 'ch' = [tʃ]; 'sh' = [ʃ]; 'zh' = [ʒ]; 'gh' = [ɣ], 'kh' = [χ]. 'B' and 'D' represent prefixes encoding the gender class of the absolutive argument.

The Chechen reduplicant occurs in infinitive form, while the main verb is inflected. Inflected verbs require a different form of the verb stem than that used in the infinitive; in some cases the stem allomorphy is clearly suppletive, e.g. *Dala* ‘to give’ vs. *lwo* ‘gives’, or *Dagha* ‘to go’ vs. *Duedu* ‘goes’. As Conathan & Good (2000:54) observe, the result is that Chechen can exhibit suppletive allomorphy differences between base and reduplicant (e.g. *Dagha* ‘a *Duedu*, based on ‘go’).

5 SEMANTICS OF REDUPLICATION: ICONIC OR NOT ICONIC

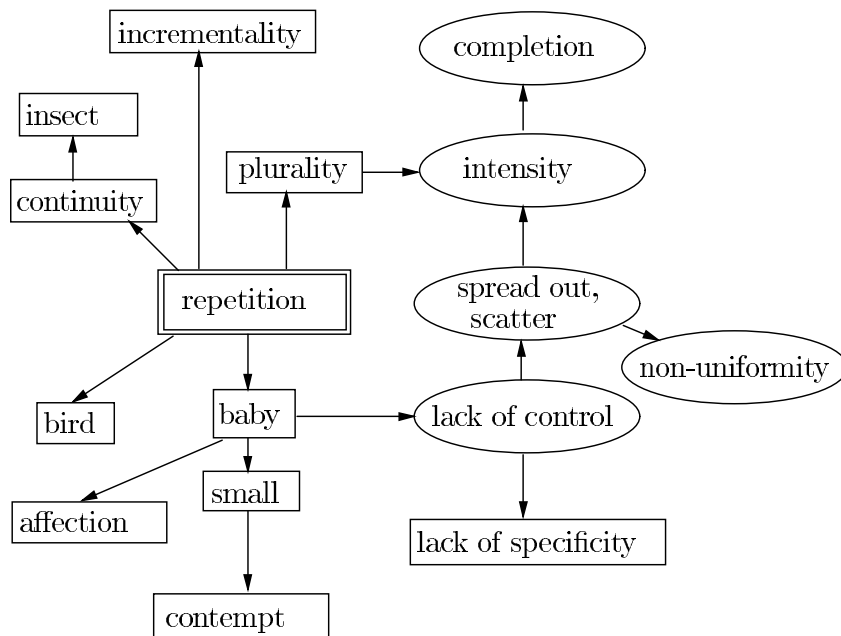
Perhaps the most common topic in discussions of reduplication is iconicity. To what degree are reduplication constructions semantically iconic, in the sense of ‘more form, more meaning’? Many surveys of reduplicative semantics have been devoted to this question.

Key (1965), based on a survey of 47 (mostly Native American) languages, emphasizes the commonality of emphasis, plurality and augmentation. The assumption that reduplication is associated with the semantic concept of “more” underlies discussions in the literature of the iconic connection between form and content (Haiman 1980, Lakoff and Johnson 1980).

Moravcsik’s (1978) 35-language sample showed variety beyond these iconic meanings. Although plurality, intensity were frequent in her corpus, she also found diminution to be frequent, and observed that reduplication covers a wide variety of meanings and that the meanings that can be associated with reduplication can also be associated with nonreduplicative morphology.

Based on a close study of the semantics of reduplication in just one language family, Malayo-Polynesian, Kiyomi (1995) concludes that “reduplication can function either iconically or noniconically” (1995:1148). Plurality is a canonically iconic meaning of noun reduplication; repetition and continuation are the canonical iconic meaning of verb reduplication. Kiyomi also identifies intensification as a canonical iconic meaning of reduplication; “in noun reduplication, some property of the noun in question is intensified in its reduplicated form, and in verb reduplication, the degree of an action is intensified.” (p. 1149). Intensification can be manifested in hypercharacterization constructions of the type discussed by Lehmann (2005), in which repetition encodes type-identity.

Regier (1994) employs a similar strategy in attempting to bring some coherence to the bewildering array of reduplicative functions identified by Moravcsik. The following figure is a proposal by Regier for relating some of the more peripheral, less obviously iconic meanings of reduplication to the ostensibly central function of repetition:



Regier makes the point that the radial category centered around repetition is not specific, in its internal structure, to the formal morphological process of reduplication. Much of the semantic structure in this figure is also found associated with nonreduplicative constructions; Regier calls particular attention to Slavic prefixes, including Russian *raz-*, whose meanings are represented by ovals in the graph above.

Some meanings of reduplication, however, venture so far afield from the semantic categories related to ostensible core iconic meanings that notions of iconicity seem to lack usefulness altogether.

In some cases, this is illusory. For example, diminution, the apparent opposite of augmentation or intensification, is a common semantic correlate of reduplication cross-linguistically. This apparent contradiction in the senses common to reduplication is a topic of some consternation (e.g. Haiman 1980) and interest (e.g. Taylor 1992, Jurafsky 1996) in the literature. As Jurafsky (1996) makes clear, the nexus between augmentation/intensification and diminution is not unique to reduplication. Numerous nonreduplicative morphological constructions also have the diachronic or even synchronic property of expressing both seemingly contradictory properties. Jurafsky cites the example of *ahorita* ('now-DIM'), in which the suffix *-ita* produces the intensifying meaning of 'immediately, right now' in Mexican Spanish but the diminutivizing meaning of 'soon, in a little while' in Dominican Spanish (p. 534). Jurafsky proposes, along lines similar to Regier (1994), a radial category analysis of diminutive semantics which predicts the diachronic development of a range of possible meanings from an original meaning related to 'child' or 'small'.

But other cases of non-iconicity seem harder to argue away. We have mentioned the examples of Tarok and Arosi, in which partial reduplication encodes possession.

Impressionistically, it appears that iconicity is most likely in total reduplication constructions, especially newer ones (as in creoles), and less likely in partial reduplication constructions. A thorough statistical survey of reduplication is needed in order to test the validity of this impression. The impression is related to another assumption commonly found in the literature, which is that total reduplication is the diachronic source of partial reduplication (see e.g. Bybee et al. 1994; 1997). If true, then the apparent iconicity cline would be a result of grammaticalization, showing semantic bleaching and drift and even reanalysis over time. However, this assumption is generally still untested by solid evidence, and some literature has expressed skepticism (Hurch and Mattes 2005, Stolz et al. 2011). In a detailed study of the natural history of verb reduplication in Bantu, a family exhibiting both total and partial reduplication, Hyman actually concludes that a likely scenario was somewhere in the middle for Bantu: an original scenario of root reduplication played out as total stem reduplication in some languages and as partial stem reduplication in others. Neither total nor partial verb stem reduplication represents the original state. See also Blust (1998) and Reid (2009) (among others) for discussion of the many pathways to CV partial reduplication in Austronesian. Unfortunately, reconstruction arguments at this level of detail are rare, and the origins of partial reduplication in the world's languages remain largely obscure.

6 AFFIX REDUPLICATION: REFLECTIONS ON ICONICITY

Affixes are frequently incidentally reduplicated as part of reduplication processes that target the stems they are part of. In some cases, however, reduplication target individual affixes explicitly, as discussed in Inkelas & Zoll 2005. According to Roberts (1987, 1991), to express iterative aspect in Amele (Trans New Guinea, Madang), “the whole stem is normally reduplicated if the verb does not have an object marker, otherwise the object marker is reduplicated either in place of or in addition to the reduplication of the verb stem” (Roberts 1991:130-31). Data are from Roberts 1987:252-254 and Roberts 1991:131:

- (15) a. qu-qu ‘hit’ (iterative)
 ji-ji ‘eat’ (iterative)
 budu-budu-eʔ ‘to thud repeatedly’
 gɓatan-gɓatan-eʔ ‘split-inf’ (iterative)
- b. hawa-du-du ‘ignore-3s-3s’ (iterative)
 gobil-du-du ‘stir-3s-3s = stir and stir it’
 guduc-du-du ‘run-3s-3s’ (iterative)
- c. bala-bala-du-d-eʔ ‘tear-3s-inf = to tear it repeatedly’

Van der Voort (2009) describes a case of person marker doubling in Kwazá, an isolate of the Brazilian Amazon, explicitly commenting that “[t]his kind of reduplication does not appear to be an iconic strategy, and it is not determined by the boundaries of phonotactic units like syllables, moras, or words but by morpheme boundaries” (p. 268).

Verbs obligatory inflect for subject person and optionally for object person. Past tense is not marked morphologically, but is expressed through the use of adverbs. However, remote past tense, in particular, is encoded by reduplicating person markers (p. 169), usually subject but in certain cases object markers. Compare (16a-b) to see the semantic effects of reduplication in (16b). A comparison of (16b-d) (pp. 270-271) shows that the reduplicant copies the person marker regardless of phonological point.

- (16) a. la'to o'ja-da-hĩ-ki ze'zĩju-di-rjĩ
 yesterday go-1S-NOM-DEC Zezinho-POS-area
 ‘Yesterday I went to Zezinho’s place.’
- b. ja o'ja-da-'dai-hĩ-ki txa'rwa oja-'he=(bwa)-da-ki
 already go-1S-1S-NOM-DEC first go-NEG=finish-1S-DEC
 ‘It has been a long time since I went there. I haven’t been there since.’
- c. aure-le-'nã-axa-axa-le-hĩ-ki
 marry-RECI-FUT-1P.EXCL-1P.EXCL-FRUST-NOM-DEC
 ‘We were going to marry (but we didn’t, long ago).’
- d. tsi'cwa-xaxa-xaxa-hĩ-'r Ba'hoso te'ja
 begin=2P-2P-NOM-INT Barroso side
 ‘Did you (plural) start (opening the trail) on the side of Barosso? (two years ago)

Van der Voort argues on the basis of reduplicant shape that the construction is affix reduplication, not syllable or foot reduplication.

In Boumaa Fijian (Oceanic), stems formed by spontaneous or adversative prefixes mark plurality by individually reduplicating both the prefix and the root, in an AB → AABB pattern (Dixon 1988:226):

- (17) ta-lo'i 'bent' ta-ta-lo'i-lo'i 'bent in many places' [Boumaa Fijian]
ca-lidi 'explode' ca-ca-lidi-lidi 'many things explode'
'a-musu 'broken' 'a-'a-musu-musu 'broken in many places'

As in Kwazá, the fact that the phonological size and shape of the Boumaa Fijian reduplicants varies with the size of the morpheme being reduplicated suggests strongly that this is morpheme doubling, not phonological copying motivated by the need to flesh out an abstract, phonologically skeletal morpheme.

In all three of these cases, the semantic content of the affix being reduplicated seems unrelated to the semantics of the reduplication construction.

(18)

	Function of (unreduplicated) affix	Function of affix reduplication
Amele	object marker	iterative aspect
Kwazá	(subject) person marker	(remote) past tense
Boumaa Fijian	spontaneous, adversative	event plurality

Although the meanings of reduplication in these three examples are all iconic to a medium or high degree (iteration and plurality being central meanings of reduplication

cross-linguistically), the semantic connection to the reduplicated affix seems quite arbitrary.

7 FORM AND FUNCTION IN REDUPLICATION

An interesting question in the study of reduplicative function, which relates tangentially to the discussion of affix reduplication, is whether form and meaning are correlated.

Reduplicants come in a variety of sizes; reduplication performs a variety of functions, some highly iconic and some less so. Are the scales related at all?

A null hypothesis might be that total reduplication is associated with the more iconic end of the function scale, whereas partial reduplication is associated with a less iconic, more semantically diverse range of meanings. For example, in his study of Bantu verb stem reduplication, Hyman (2009) observes that it is only the smallest (syllable-sized) reduplication constructions in which habitual or imperfective aspectual meanings are found. Total verb stem reduplication in Bantu tends to have more transparent, characteristic functions such as attenuation or intensification. Given that reduplication in creoles tends to be total rather than partial, and given that reduplication in creoles tends to be more iconic than reduplication in languages with longer histories, such a correlation is likely to hold up statistically cross-linguistically as well, once a suitable survey is done. Echo reduplication, which tends to be associated with a smaller range of meanings, also tends very heavily to be total.

That said, there is still a large diversity of meanings to be observed within total reduplication, as demonstrated by the recent survey by Stolz et al. (2011). It is also the case that many partial reduplication constructions have meanings near the center of

Regier's diagram of reduplicative semantics. Any conclusions will have to be statistical, not categorical.

It is also probably unwise to lump all partial reduplication together. For example, if one is pursuing the hypothesis that form and function are correlated, one might wish to distinguish between partial reduplication involving minimal words and partial reduplication involving smaller (syllable-sized) constituents. It might, for example, turn out to be the case that the grammatical function of minimal word-sized partial reduplication constructions might more closely resemble that of total reduplication, vs. the partial reduplication of smaller constituents.

Within Generalized Template Theory (GTT; e.g. McCarthy & Prince 1994a,b; Urbanczyk 2006; Downing 2006), a different distinction within partial reduplication has been hypothesized: affix vs. root reduplication. According to the precepts of GTT, reduplicants are classified either as affixes or as roots. Note that this is not correlated with what part of the base is copied; it is a property just of the reduplicative morpheme itself. Downing 2006, working in the most advanced form of GTT, proposes that reduplicants assume the canonical shape of roots or affixes within the language. Thus in a language in which all roots are minimally bimoraic, root reduplicants must also be. If affixes in a language are maximally syllable-sized, affix reduplicants will also be. Urbanczyk appeals to the root/affix distinction to characterize two types of reduplication in Lushootseed. The proposed Diminutive reduplicant is CV in shape (with a reduced vowel), while the proposed Distributive reduplicant is CVC in shape (with a full vowel):

(19) Lushootseed reduplication

a. Diminutives (reduplicant = type “Affix”)

‘foot’	ǰəsəd	→	ǰí-ǰəsəd	‘little foot’
‘animal hide’	s-k ^w əbšəd	→	s-k ^w í-k ^w əbšəd	‘small hide’

b. Distributives (reduplicant = type “Root”)

‘foot’	ǰəsəd	→	ǰəs-ǰəsəd	‘feet’
‘bear’	s-čət ^w xəd	→	s-čət-čət ^w xəd	‘bears’

Urbanczyk (2006) attributes the phonological shapes of the two types of reduplicant to their classification as Affix (constrained to be as small a syllable as possible) and Root (constrained to be minimally bimoraic).

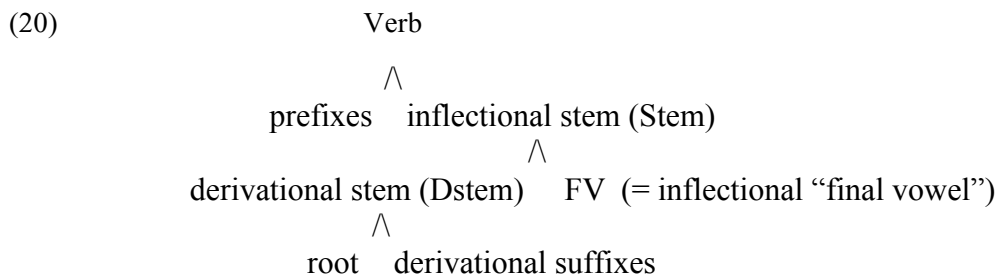
In this particular case, both diminutive and distributive meanings for reduplication are quite common, and it is hard to call either one more central. However, a profitable future research program might search for statistical tendencies in the cross-linguistic meanings associated with total, minimal word, heavy syllable, and light syllable reduplication.

8 MORPHOLOGICAL LOCATION AND SEMANTIC SCOPE OF REDUPLICATION

Another question one might ask in exploring the derivational character of reduplication is whether reduplication patterns with derivation or with inflection in its affix ordering properties: where in the word does reduplication occur?

As we have seen implicitly throughout this chapter, reduplication can target the entire word, the root, or any stem-sized morphological subconstituent in between; as we

have seen, it can even target individual affixes. An explicit illustration of this kind of variation within a language family can be found in Bantu, in which verb reduplication is widespread. The schema in (20), based on work by Downing (e.g. 1997, 1999ab, 2000, 2006), Hyman (e.g. 2009), and others, shows an internal analysis of the verb which has been motivated in many Bantu languages:



In a study of the natural history of Bantu reduplication, Hyman (2009) identifies examples of reduplication at each level. The semantics of the constructions Hyman surveys are similar, indicating a common historical source. Ciyao (P.21; Ngunga 2001) manifests full Stem reduplication, including derivational suffixes (210a) and the final inflectional suffix (21b). By contrast, Ndebele (S.44; Sibanda 2004) reduplicates only the Dstem, excluding any suffix in the FV position (21c-d). In Kinyarwanda (N.61; Kimenyi 2002), only the root is reduplicable, as shown in (21e-f). Verb stems are shown, in all examples in (21), without inflectional or infinitival prefixes, as these do not undergo reduplication:⁴

⁴ Bantu languages are cited with their Guthrie classification number, roughly reflecting geographical zone, following the practice in Hyman 2009 and other specialized works on Bantu languages.

(21) *Full stem reduplication (all suffixes)* [Ciyao]

- a. *telec-el-a* → *telec-el-a + telec-el-a*
'cook-APPL-FV' 'cook for someone frequently'
- b. *dim-ile* → *dim-ile + dim-ile*
'cultivate-PERF' 'cultivated many times'

Dstem reduplication (no inflectional suffixes) [Ndebele]

- c. *lim-el-a* → *lim-e + lim-el-a*
'cultivate-APPL-FV' 'cultivate for/at a little, here and there'
- d. *lim-e* → *lim-a + lim-e* (**lim-e + lim-e*)
'cultivate-SUBJ' 'cultivate a little, here and there (subjunctive)'

Root reduplication (no suffixes) [Kinyarwanda]

- e. *rim-w-a* → *rim-aa + rim-w-a* (**rim-w-a + rim-w-a*)
'cultivate-PASS-FV' 'be cultivated several times'
- f. *rim-ir-a* → *rim-aa + rim-ir-a* (**rim-i + rim-ir-a*)
'cultivate-APPL-FV' 'cultivate for/at, here and there'

Importantly for the question of where reduplication occurs within words, this attenuating or distributive reduplication process occurs inside of most of the productive inflection in the Bantu verb; in the case of root reduplication, it even occurs inside of all of the verbal (valence-changing) derivation. This example illustrates a problem for examining the relationship between reduplication and affix ordering: reduplication very often has wide semantic scope. In its semantics it often patterns with functions that surveys of verbal

affix ordering, such as Bybee (1985) or Rice (2000), associate with outer, not inner affixes. Yet reduplication very often targets roots or other internal constituents of words.

A more complicated type of case is presented by languages like Samala (known in the literature as Ineseño Chumash), in which a CVC prefixing reduplication construction which expresses ‘repetitive, distributive, intensive, or continuative’ (Applegate 1972:383-84) is slotted somewhere within a complex verb whose affixes are descriptively divided into the following zones:

(22) Outer prefixes – Personal prefixes – Inner prefixes – [root – suffixes]_{Stem}

Outer prefixes mark things like negative, tense, nominalization/relativization, clause subordination, and sentential adverbs. Personal prefixes are purely inflectional, marking person and number of subject. Inner prefixes are largely derivational, marking a variety of information including aspect, instrumentals, action classifiers, spatial orientation, and verbal force (see Applegate 1972:301 ff).

As is not surprising given its aspectual meaning, the meaning of reduplication generally scopes over the entire verb, and thus one might expect the CVC reduplicative prefix to occur near the beginning of the word. Instead, reduplication tends phonologically to target the root, as in examples like the following (Applegate 1976:282, Applegate 1972:387:

- (23) k-ni-č'eq '1SUBJ-TRANS-tear' > kni-č'eq-č'eq 'I'm tearing it up'
k-wi-č'eq '1SUBJ-BY_HITTING-tear' > kwi-č'eq-č'eq 'I pound it to pieces'

Aronoff (1988), Inkelas & Zoll (2005) and others have characterized this process as infixing — an 'outer' process, consistent with taking wide semantic scope and being inflectional — whose form appears inside derivational affixes because it is an infix that targets the root. Infixation to the root seems to be especially common among reduplicative affixes ('internal reduplication'). This is not, by contrast, a common pattern for segmentally fixed affixes, which, when they infix, tend to occupy positions either near the margin of a word or adjacent to a stressed syllable (see e.g. Yu 2007), not adjacent to a particular morpheme boundary.

The example below, from Tagalog, is a particularly clear illustration of the ordering flexibility that inflectional reduplication can have. This particular CVV reduplicative prefix in Tagalog encodes contemplated aspect. It can occur at virtually any location within the string of derivational prefixes, with no effect on meaning. The example below is taken from Rackowski (1999:5); the general phenomenon of variable reduplicant position in Tagalog is also discussed by Carrier (1979), Condoravdi and Kiparsky (1998) and Ryan (2010), among others:

(24) Unreduplicated ...with contemplated aspect reduplication

ma-ka-pag-pa-hintay → ma-[kaa-ka-pag-pa-hintay]

ABILITY-COMPLETE-TRANS-CAUSE-WAIT ma-ka-paa-[pag-pa-hintay]

“be able to cause someone to wait” ma-ka-pa-paa-[pag-hintay]

ma-ka-pag-pa-hii-[hintay]

One possible explanation for the distinctive order properties on the part of partial reduplication may lie in an observation made by Hyman (2009), namely that, possibly for processing reasons, reduplication tends to target root material rather than affixal material. In a number of languages, reduplication occurs on the opposite side of the root from most of the affixes that are in the scope of reduplication. In Bantu languages, verb stem morphology is exclusively suffixing, while verb stem partial reduplication is prefixing. If reduplication is an inflectional prefix in a language with a lot of prefixing derivational morphology, like Samala, the only way to target root material consistently is to be an infix.

The ‘out-of-place’ ordering of reduplication is also facilitated by its tendency to take wide semantic scope. A particularly compelling example of wide-scope reduplication of an inner constituent comes from Harley and Leyva (2009), who discuss internal root reduplication in Hiaki (aka Yaqui; Uto-Aztecan, Cahita). Habitual reduplication in Hiaki appears to reach into N-V compounds to target the head V but semantically takes scope over the entire compound. Thus the verb *kuta-siute* ‘stick-split = wood-splitting’ reduplicates as *kuta-siu-siute* ‘wood-splitting habitually’; *pan-hooa*

future research can test. One is that reduplication that has clearly derivational functions, e.g. changing part of speech, will fairly unambiguously operate on constituents that contain roots and, potentially, other derivational affixes; it will occur inside of inflection. The other is that reduplication whose function falls partially or squarely in the category of inflection is much less constrained in its ordering properties. This is clearly related to the fact that (inflectional) reduplication has wide scope over the whole word, regardless of what part of the word it copies. It is interesting to note a possible connection to morphological negation, which also typically take wide scope and whose ordering properties are similarly hard to pin down cross-linguistically. More research into these topics is sorely needed.

9 CONCLUSION

Although the study of reduplication in the literature has focused particularly on its phonological form and on the question of semantic iconicity, the place of reduplication in a morphological grammar is equally interesting. Reduplication sometimes acts as a ‘wild card’ in morphology, exhibiting combinatoric (affix ordering) behaviors which are uncharacteristic of other morphological constructions. This may be due to the way in which the characteristic iconic semantics of reduplication straddle the boundary between derivation and inflection. Like inflectional morphology, reduplication tends to have wide semantic scope. Like derivational morphology, reduplication tends to alter event-internal meaning. And like derivational morphology, reduplication has a predilection for occurring in phonological proximity to the root. These conflicting factors conspire to paint a fascinating picture.

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