Reduplication: Form, function and distribution

Carl Rubino

The systematic repetition of phonological material within a word for semantic or grammatical purposes is known as reduplication, a widely used morphological device in a substantial number of the languages spanning the globe. This paper will provide an overview of the types of reduplicative constructions found in the languages of the world and the functions they portray. Finally, a subset of the world's languages, will be categorized as to whether or not they employ reduplicative constructions productively and illustrated in a world map.

1. Form

For purposes of the accompanying typological map, two types of reduplication are distinguished based on the size of the reduplicant: full vs. partial. Full reduplication is the repetition of an entire word, word stem (root with one or more affixes), or root, e.g. Tausug (Austronesian, Philippines) full word lexical reduplication dayang ‘madam’ vs. dayangdayang ‘princess’; laway ‘saliva’ vs. laway-laway ‘land snail’, or full root reduplication, shown here with the verbalizing affixes mag- and -(h)un which do not participate in the reduplication: mag-bichara ‘speak’ vs. mag-bichara-bichara ‘spread rumors, gossip’; mag-tabid ‘twist’ vs mag-tabid-tabid ‘make cassava rope confection’; suga-hun ‘be heated by sun’ vs. suga-suga-hun ‘develop prickly heat rash’ (Hassan et al 1994).

Partial reduplication may come in a variety of forms, from simple consonant gemination or vowel lengthening to a nearly complete copy of a base. In Pangasinan (Austronesian, Philippines) various forms of reduplication are used to form plural nouns.


(Rubino 2001a)
Ilocano (Austronesian, Philippines) employs a number of types of partial reduplication with various word classes, where the reduplicated material can be a partial root, simple root, a partial stem (bimorphemic entity), or a full word:

(2.) Ilocano Reduplication

<table>
<thead>
<tr>
<th>Reduplicant Shape</th>
<th>Use</th>
<th>Examples</th>
</tr>
</thead>
</table>
| -C-               | Animate/kin plurals | laláki ‘male’ > laláki ‘males’  
babai ‘female’ > babbai ‘females’  
tubing ‘child’ > tubbing ‘children’ |
| CV-               | Plural argument; Animate plurals | na-lukmeg ‘fat’ > na-lulukmeg ‘fat, distributive’  
ka-ili-ān ‘townmate’ > kakaílān ‘townmates’ |
| CVC-              | General plurals; Imperfective aspect; Comparison | kalding ‘goat’ > kalkalding ‘goats’  
ag-bása ‘read’ > ag-basbása ‘reading’  
dakkel ‘big’ > dakdakkel ‘bigger’  
na-sam?it ‘sweet’ > na-samsam?it ‘sweeter’ |
| CVC(C)V-          | Lexical iterativity | ag-tilmón ‘swallow’ > ag-tilmotilmón ‘swallow repeatedly’ |
| CVC(C)VN-         | Mutuality | rupa ‘face’ > rupanruipa ‘face to face’ |
| Full              | Lexicalized items | bānga ‘pot’ > bangabāngā ‘skull’  
tukāk ‘frog’ > tukaktrükak ‘wart’ |

Partial Reduplication Across Morpheme Boundaries

<table>
<thead>
<tr>
<th>Reduplicant Shape</th>
<th>Affixes Involved</th>
<th>Examples</th>
</tr>
</thead>
</table>
| CV-               | Pa-causative; -inn- reciprocal | Ag-pi-p<inn>a-basol=da  
VERB-PL-CAUS<RECIP>-blame=3p ‘they are blaming each other’ |
| CVC-              | ma-potentive pa-causative | ma-turog ‘sleep’ > matmaturog ‘sleeping’  
i-pa-damag ‘inform’ > ipadpadamag ‘inform, imperfective’ |

It has been hypothesized that languages with partial reduplication also make use of full reduplication (Moravsk 1978: 328), making semantic and grammatical distinctions in the use of the two reduplicative types as seen in Nukuoro (Austronesian, Caroline Islands, Carroll 1965).
(3.) Nukuoro Total Reduplication

\[
\begin{align*}
gohu & \quad \text{dark} & \quad \text{gohugohu} & \quad \text{getting dark} \\
vai & \quad \text{water} & \quad \text{vaivai} & \quad \text{watery} \\
hano & \quad \text{go} & \quad \text{hanohano} & \quad \text{diarrhea} \\
gada & \quad \text{smile} & \quad \text{gadagada} & \quad \text{laugh} \\
ivi & \quad \text{bone} & \quad \text{iviivi} & \quad \text{skinny} \\
a\acute{h}i & \quad \text{fire} & \quad \text{ahiahi} & \quad \text{evening}
\end{align*}
\]

Nukuoro Partial Reduplication

\[
\begin{align*}
\text{seni} & \quad \text{sleep, sg. actor} & \quad \text{sseni} & \quad \text{sleep, pl. actor} \\
\text{huge} & \quad \text{open, pl. goal} & \quad \text{hhuge} & \quad \text{open, sg. goal} \\
\text{ludu} & \quad \text{pick (trees) leisurely} & \quad \text{lludu} & \quad \text{pick trees frantically} \\
\text{gai} & \quad \text{eat} & \quad \text{gagai} & \quad \text{fish are biting}
\end{align*}
\]

Languages that employ partial reduplication may do so in various ways. Reduplicated material is most often found at the beginning of a base, but occurs also in medial and final position.

(4.) Reduplicative Prefixes, Suffixes and Infixes

Hunzib initial (N. Caucasian, Russia) CV(C) reduplication

\[
\begin{align*}
\text{bat'iyab} & \quad \text{‘different’} & \quad \text{bat’bat’iyab} & \quad \text{‘very different’} \\
\text{mugāÅ} & \quad \text{‘after’} & \quad \text{mu.mugaÅ} & \quad \text{‘much later’}
\end{align*}
\]

(van den Berg 1995: 34)

Choctaw (Muskogean, USA) medial CV reduplication

\[
\begin{align*}
\text{tonoli} & \quad \text{‘to roll’} & \quad \text{tononoli} & \quad \text{‘to roll back and forth’} \\
\text{binili} & \quad \text{‘to sit’} & \quad \text{bininili} & \quad \text{‘to rise up and sit down’}
\end{align*}
\]

(Kimball 1988: 440)

Paumari (Arawakan, Brazil) final disyllabic reduplication

\[
\text{a-odora-dora-bakhia-loamani-hi}
\]

\[
\text{lpl-gather.up-REDUP-frequently-really-THEME}
\]

‘we keep gathering them’  

(Chapman and Derbyshire 1991)

The phonological nature of the reduplicated material varies from language to language and construction to construction. Reduplicative morphemes are often characterized by the number of phonemes included in the copy, C, CV, CVC, V, CVCV, etc., the number of syllables to be reduplicated, or the number of repeated morae. In Ngiyambaa (Australian), the reduplicant consists of a copy of the first syllable and a copy of a light version of the
second syllable, not including final vowel lengthening or a coda consonant (Donaldson 1980): magu-magu: ‘around one’, dhala-dhalara-ya (RED-shine-PRS) ‘to be pretty shiny’. The number of times a sequence is reduplicated is also a morphological factor in some languages, e.g. Mokilese (Austronesian, Micronesia) duplication vs. triplication: roar ‘give a shudder’ > roaring ‘be shuddering’ > roaring roar ‘continue to shudder’ (Harrison 1973). In Tigre (Semitic, Eritrea) internal reduplication of up to three internal syllables can be used. Each reduplication attenuates the meaning of the verb (Rose 2003: 114):

(5.) dəgm-a: tell, relate
dəga:gəm-a: tell stories occasionally
dəga:ga:gəm-a: tell stories very occasionally
dəga:ga:ga:gəm-a: tell stories infrequently

In some cases, the morpheme type of the reduplicant will depend on other factors. In Mangap-Mbula (Austronesian, Umboi Island, New Guinea), the reduplicant of intensive constructions occurs as a prefix with bases that have a long penultimate vowel, otherwise it is suffixed (Spaelti 1997), e.g. baá.da > bad.baá.da ‘you (sg.) be carrying’, boózo > bozboózo ‘very many,’ vs. mólo > mólolo ‘very long’, pósop > pósopsop ‘you (sg.) be finishing.’ In Kinyarwanda (Bantu, Rwanda), intensive verbal reduplication is only present with bisyllabic stems. Monosyllabic verbs (and verbal stems consisting of a monosyllabic root and a stem extension) and polysyllabic verb stems do not reduplicate (Kimenyi 2002: 265).

Reduplicative constructions can also be characterized as being simple, complex, or automatic. A simple construction is one in which the reduplicant matches the base from which it is copied without phoneme changes or additions. A complex construction involves reduplication with some different phonological material, such as a vowel or consonant change or addition, or phoneme order reversal. Mangarayi (Australian) has a pluralizing reduplicative construction in which the first consonant of the reduplicant is a copy of the onset consonant of the second syllable of the base followed by the rime of the first syllable, sometimes accompanied by the suffix -ji or -ji. The newly created syllable does not correspond to any constituent in the original word: gurjag ‘lily’ > gurjurgajji ‘having lots of lilies’; ganji ‘child of maternal grandmother’s brother’ > ganjanjiji ‘children of maternal grandmother’s brother’; jimgan ‘knowledgeable person’ > jimgingan ‘knowledgeable people’; bangal ‘egg’ > bangangalji ‘having lots
of eggs’ (Merlan 1982). Some languages copy a short string of a root with extra material of varying lengths. In Yakan (Austronesian, Philippines), a morpheme consisting of the first consonant of the base, followed by the segment ew is used with some roots to express repetition or distributed action (Behrens 2002: 71):

(6.)

<table>
<thead>
<tr>
<th>English</th>
<th>Malay</th>
</tr>
</thead>
<tbody>
<tr>
<td>labo’ fall</td>
<td>lewlabo’ keep on falling</td>
</tr>
<tr>
<td>duddag fall off</td>
<td>dewduddag repeatedly fall off</td>
</tr>
<tr>
<td>saget mix</td>
<td>sewsaget all mixed (several items)</td>
</tr>
</tbody>
</table>

Imitative reduplication in Indonesian involves the creation of a root-like form which generally does not exist independently and differs from the root by a vowel or consonant change (Macdonald and Soenjono 1967: 54).

(7.)

<table>
<thead>
<tr>
<th>English</th>
<th>Malay</th>
</tr>
</thead>
<tbody>
<tr>
<td>belat screen</td>
<td>belat-belit underhanded</td>
</tr>
<tr>
<td>ganti substitute</td>
<td>gonta-ganti reciprocal</td>
</tr>
<tr>
<td>umbang float</td>
<td>umbang-ambing drift to and fro</td>
</tr>
<tr>
<td>tjoreng scratch</td>
<td>tjoreng-moreng full of scratches</td>
</tr>
<tr>
<td>tjerai sever</td>
<td>tjerai-berai disperse</td>
</tr>
<tr>
<td>erot crooked</td>
<td>erang-erot zigzag</td>
</tr>
</tbody>
</table>

In Limos Kalinga (Austronesian, Philippines, a certain iterative construction is used consisting of the prefix maka-, a copy of the first syllable of the base, a light copy of the second (minus the final consonant, if any), and gemination of the first consonant at the affix boundary (Ferreirinho 1993: 90).

(8.)

<table>
<thead>
<tr>
<th>English</th>
</tr>
</thead>
<tbody>
<tr>
<td>maka-d-dawa-dawak keep on performing the curing ceremony</td>
</tr>
<tr>
<td>maka-ng-ngina-ngina keep on buying</td>
</tr>
<tr>
<td>maka-s-saksa-saksak keep on washing</td>
</tr>
<tr>
<td>maka-l-ligwa-ligwat keep on getting/standing</td>
</tr>
</tbody>
</table>

In Tuvan (Altaic, Siberia), diminutive ‘s’ reduplication copies the entire base, except the initial consonant which is replaced by [s] in the reduplicant, e.g. pelek ‘gift’ > pelek-selek ‘gift:DIMINUTIVE’. For bases that are vowel-initial, an onset [s] is added to the reduplicant, e.g. aar ‘heavy’ > aar-saar ‘heavy:DIMINUTIVE’; uuruk-suuruk ‘simultaneously’ (Harrison 2000). Tamil (Dravidian, India) displays a similar phenomenon where the initial CV of the reduplicated material is replaced by ki-, e.g. puli ‘tiger’ > puli-kili ‘tigers and other beasts’; maram ‘tree’ maram-kiram ‘trees and
other growing things’; *kaappi* ‘coffee’ > *kaappi kiippi* ‘coffee and other beverages’ (Schiffman 1999: 172). Patterns such as these exist in a number of languages and are collectively referred to *echo constructions*. Malak, an Australian language from Western Arnhem Land, employs a construction with certain one or two-syllable verb roots to denote a pluralizing effect. As in echo constructions, a separate consonant is employed with the reduplicated material, however, a smaller part of the base is actually copied. This reduplication involves the use of a liquid consonant [r], [ɾ] or [l] between reduplicated vowels (Birk 1976: 95–96):

<table>
<thead>
<tr>
<th>Singular Verb</th>
<th>Plural Verb</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>lam</td>
<td>laram</td>
<td>talk</td>
</tr>
<tr>
<td>t'urk</td>
<td>t'ururk</td>
<td>bury; enter</td>
</tr>
<tr>
<td>kulpat</td>
<td>kulparat</td>
<td>load into a canoe</td>
</tr>
<tr>
<td>tikal</td>
<td>tikalal</td>
<td>lie down</td>
</tr>
<tr>
<td>karkwat</td>
<td>kararkwarat</td>
<td>take out</td>
</tr>
</tbody>
</table>

Certain phonological processes may also take place that affect the form of the reduplicated constituent. Nias (Austronesian, Indonesia) disyllabic reduplication sometimes includes voicing. *a-fusi* ‘white’ *a-vuzi-vuzi* ‘whitish’ (Brown 2001). In Bissa (Niger-Congo, Burkina Faso), vowels are raised in a reduplicative prefix C<sub>1</sub>V<sub>higher</sub> to form plural verbs (Prost 1950: 53):

<table>
<thead>
<tr>
<th>Singular</th>
<th>Plural</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>naso</td>
<td>nenaso</td>
<td>catch</td>
</tr>
<tr>
<td>ta</td>
<td>tita</td>
<td>close</td>
</tr>
<tr>
<td>ba</td>
<td>biba</td>
<td>do</td>
</tr>
<tr>
<td>son</td>
<td>suson</td>
<td>insult</td>
</tr>
</tbody>
</table>

Reduplication can also be discontinuous, in which a small segment is inserted between the reduplicant and base. In Alamblak (Sepik-Ramu), *ba* joins reduplicated constituents in an intensifying construction: *hingna-marja-ba-marja-me-r* (work-RED-ba-straight-REMOTE.PAST-3SG.MASC) ‘he worked very well’ (Bruce 1984: 165). In Dholuo (Nilo-Saharan, Kenya), the vowel *a* is inserted as a prefix to a reduplicated word base to express mitigation (Omondi 1982: 87):

<p>| | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td><em>tedo</em></td>
<td><em>cook</em></td>
<td><em>tedo atédā</em></td>
</tr>
<tr>
<td><em>nyóro</em></td>
<td><em>yesterday</em></td>
<td><em>nyóro anyórā</em></td>
</tr>
<tr>
<td><em>küóyó</em></td>
<td><em>sand</em></td>
<td><em>küóyó aküóyā</em></td>
</tr>
</tbody>
</table>
Automatic reduplication is reduplication that is obligatory in combination with another affix, and which does not add meaning by itself to the overall construction; the affix and reduplicated matter together are monomorphemic, e.g. the Ilocano aginCV- prefix which expresses pretense > singpet ‘behave’ aginsi-singpet ‘to pretend to behave.’ In Nez Perce (Putenian, USA), the suffix -not/-nū:t ‘-less’ also triggers reduplication. (Aoki 1963: 43):

(12.)

<p>| | | | |</p>
<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>tōhon</td>
<td>leggings</td>
<td>titohōnot</td>
<td>without leggings</td>
</tr>
<tr>
<td>samx</td>
<td>shirt</td>
<td>sismaxñot</td>
<td>without shirt</td>
</tr>
</tbody>
</table>

Reduplicative constructions are most likely to be continuous. Reduplicative prefixes occur next to material that is copied from the initial part of a base; suffixes follow material that is copied from the end of a base. However, in Chukchi (Chukotko-Kamchatkan, Russia), some absolutive nouns are formed with a reduplicative suffix consisting of material from the beginning of the base (Dunn 1999: 108):

(13.)

<table>
<thead>
<tr>
<th>Singular, Abs.</th>
<th>Plural, Abs.</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>irw-ә-ir</td>
<td>irw-ә-t</td>
<td>edged weapon</td>
</tr>
<tr>
<td>jokwa-jow</td>
<td>jokwa-t</td>
<td>eider duck</td>
</tr>
<tr>
<td>kǝmʔ-ә-kǝm</td>
<td>kǝmʔ-ә-t</td>
<td>worm, caterpillar</td>
</tr>
<tr>
<td>weni-wen</td>
<td>weni-t</td>
<td>bell</td>
</tr>
<tr>
<td>tann-ә-tan</td>
<td>tann-ә-t</td>
<td>stranger</td>
</tr>
<tr>
<td>jilʔe-jil</td>
<td>jilʔe-t</td>
<td>Arctic ground squirrel</td>
</tr>
</tbody>
</table>

Some languages may employ more than one type of reduplicative affix in the same word. Ilocano employs a construction used with onomatopoetic roots that consists of a copy of the initial consonant, followed by a replacive vowel a with another copy of the initial consonant, and accompanied by reduplication of the final vowel: C₁aC₁- -V₇₃₅, e.g. kitöl /kitül/ ‘sound of shoes’ > kaktuöl /kaktuul/ ‘repeated clicking of heels’; bitog /bitug/ ‘thumping sound’ > babtuog /babtuug/ ‘knock down; punch’; kirèb ‘slamming sound’ > kakreek ‘slam resoundingly’ (Rubino 2001b).

Finally, in some languages there are restrictions on what can appear in the reduplicant, stemming from phonological constraints or historical factors. In Tagalog, complex onset syllables occur frequently in the language from foreign loans, e.g. trabaho ‘work’, prutas ‘fruit’. However, monophonemic onsets are preferred in reduplicants, e.g. magkatrabaho ‘will work’, magpuprutas ‘fruit vendor.’ In Malagasy, the word endings -ka, -tra, -na do
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not participate in reduplication, e.g. *pitso*ka ‘foolish’ > *mi-pitso-pitso*ka ‘a little bit stupid, foolish’, *mi-pëtrak*a ‘to sit’ > *mi-petrapëtrak*a ‘to sit about’. The deviant behavior of the stem formatives -ka, -tra, and -na reflects the fact that they are a product of a default vowel /a/ added after historically consonant-final words as part of the development towards the modern CV structure in Malagasy, e.g. *vôlana* ‘moon’ (< *bülân), sôratra* ‘writing’ (<*surat*). The stem formatives should be treated as “extended roots” which are involved in a variety of synchronic alternations (Rasoloson and Rubino, in press).

2. Function

Reduplicative morphemes can carry a number of meanings, and in some languages the same reduplicative morpheme is used to denote quite contrary meanings. For example, the Ilocano CVC- distributive prefix for nouns, when applied to numbers, specifies limitation: *sab-sábong* ‘various/several flowers’, *wal-walo* ‘only eight’.

Reduplication can be used to form new words, e.g. Tausug *dayang* ‘ma’am’ > *dayangdayang* ‘princess’; *datu* ‘male of royal lineage’ > *datu-datu* ‘doll’; Indonesian *mata* ‘eye’ > *matamata* ‘spy’; *bantal* ‘pillow’ > *bantalbantal* ‘railway tie’; Tok Pisin *wil* ‘wheel’ > *wilwil* ‘bicycle’; Ilocano *tao* ‘human’ > *taotao* ‘pupil of the eye’; *tukak* ‘frog’ *tukaktukak* ‘wart’; Inseño (Chumashan, USA) *axmuyun* ‘burn, smart with pain’ > *axmuyuxmuyun* ‘have courage’ (Applegate 1976: 272); Mapun (Austronesian, Philippines) *sapi* ‘cow’ > *sapi-sapi* ‘cowrie shell’, *bangkay* ‘corpse’ > *bangkaybangkayan* ‘period of time when relatives look over a body in state’ (Collins, Collins, and Hashim 2001).

With verbs (and adjectives), reduplication may be used to denote a number of things such as number (plurality, distribution, collectivity), distribution of an argument; tense; aspect (continued or repeated occurrence; completion; inchoativity), attenuation, intensity, transitivity (valence, object defocusing), conditionality, reciprocity, pretense, etc. For example, Alabama (Muskogean, USA) marks the temporary versus permanent distinction in verbal aspect with vowel lengthening *loca* ‘to be black (covered in soot)’ vs. *lóoca* ‘to be a black person’ as well as attenuation with gemination *kasatka* ‘cold’ > *kássatka* ‘cool’ *lámmatki* ‘straight’ *lámmatki* ‘pretty straight’ (Hardy and Montler 1988).

Reduplicative inflection can be seen in many iterative or plural formations as in Hitchiti (Muskogean) adjectival stems: *ciki* ‘thick (liquids)’ >
cikci:ti ‘thick, plural’ (Kimball 1988: 440). Luiseno (Uto-Aztecan) employs two types of reduplication quite iconically to denote various plural actions: lawi ‘to make a hole’, law-lawi ‘to make two holes, make a hole twice’, lawa-lawi ‘to make many holes, more than two’ (Kroeber and Grace 1960), as Lampung (Austronesian, Indonesia) uses different reduplicative constructions to signal varying degrees of intensity: balak-balak ‘very large’, xa-xabay ‘somewhat afraid’ (Walker 1976).

Arapesh (Torricelli, Papua New Guinea) employs reduplication to intensify or distribute the meaning of an action, often implying carelessness or lack of control on the part of the agent: su ‘touch, hold’ susu ‘touch all over, paw’; ripok ‘cut’ riripok ‘hack up’ (Dobrin 2001: 36). Comox (Salish, Canada) employs -VC reduplication to express actions which lack control: c’ekʷ-n ‘I put a light on it’ > c’ékʷ-kʷ-n ‘I put a light on it by mistake’ (Kroeber 1988: 162).

Luiseno employs initial reduplication to express an emphatic conditional emphasizing that the verbal stem action may be carried out with the will of the actor (Kroeber and Grace 1960):

(14.) nec-neci would certainly pay
         woko-woko?ax would arrive
         ya:-ya-yax would go all over to tell it to all
         sa:-sa-sa:msa would buy

Reduplication is used in a few languages to mark the inchoative, designating the start of a verbal action. Inceptive verbs in Till (Salish) are marked with double initial or final reduplication (Reichard 1959: 244):

(15.) s’i sick
         da s-li-t-b’i-l i I am beginning to sicken.
         asnux know
         n’s-i-i-as-anax w-i I begin to know.
         yahs see
         c-yi-yi-yahis-ui I begin to see.

In Alabama, actions that are imperfective in aspect (incomplete or lacking closure) appear in the language with medial reduplication, e.g. potooli ‘touch’ > pottleli ‘coming together’ (Hardy and Montler 1988: 413).

Reduplication can be used to create lexical subclasses. Ilocano employs partial reduplication to form comparative adjectives, e.g. dakkel ‘big’ > dak-dakkel ‘bigger’; na-ŋisit ‘dark’ > naŋisŋisit ‘darker’, na-іmas ‘delicious’ > na-іmіmas ‘more delicious.’ Fijian employs full reduplication to
derive an intransitive verb from a primarily transitive one, e.g. *cula* ‘sew’ > *cula-cula* ‘sew away’; *rabe* ‘kick’ > *rabe-rabe* ‘do a lot of kicking’ (Dixon 1988: 48).

With nouns, reduplicative morphemes have been known to denote concepts such as number, case (#13), distributivity, indefiniteness, reciprocity, size (diminutives or augmentatives), and associative qualities. For instance, Papago (Uto-Aztecan, USA) plurals: *gogs* ‘dog’ > *gogogs* ‘dogs’ (Zepeda 1983); Ilocano reciprocals (Austronesian): *balem-bales* (CVCN-revenge) ‘aveng[e] each other’ (Rubino 2000); Nez Perce diminutives: *xómayac* ‘mischievous child’ > *xoyamæcxómayac* ‘small mischievous child’ (Aoki 1963: 43); and Yokuts (Penutian) associatives *k’ɔhis* ‘buttocks’ > *k’ɔk’ɔhis* ‘one with large buttocks’ (Newman 1944). Reduplication is also a common method of forming indefinite pronouns, e.g. Tausug *hisiyu-siyu* ‘whoever, anybody’ from *hisiyu* ‘who’, Mapun *mmooy-mmooy* ‘whichever’ from *mmooy* ‘which’ (Collins, Collins, and Hashim 2001).

With numbers, reduplication has been found to express various categories including collectives, distributives, multiplicatives, and limitatives. For example, Santali (Austro-Asiatic, India) *ge-gel* ‘10 each, by tens’, Pangasian limitatives *tal-talora* ‘only three’; Ao Naga (Tibeto-Burman, India) final CVC reduplication distributives *asem* ‘three’ > *asemsem* ‘three each’, *ténet* ‘seven’ > *ténetnet* ‘seven each’ (Gowda 1975: 39); Javanese *sanga* ‘nine’ > *sanga-sangane* ‘all nine’ (Steinhauer 2001: 352).

Reduplication is also used derivationally to alter word class, e.g. Kayardild (Pama-Nyungan) *kandu* ‘blood’ > *kandukandu* ‘red’ (Evans 1995); Luiseno (Uto-Aztecan, USA) *lepi* ‘to tan, soften’ > *lepé-lpi-s* ‘pliable’ (Kroeber and Grace 1960); Tigak (Austronesian) *giak* ‘send’ > *gigiak* ‘messenger’ (Beaumont 1979); Nama (Khoisan) causatives *löm* ‘difficult’ > *löm!om* ‘make something difficult’ (note that the tone of the second syllable is lowered to mid tone). (Hagman 1977: 18).

Full reduplication of temporal nouns is used in several languages to derive temporal adverbials, e.g. Indonesian *pagi-pagi* ‘early in the morning’ from *pagi* ‘morning’; Tausug *du:m-du:m* ‘every night’ from *du:m* ‘night.’

Indonesian employs full reduplication of certain verbs to derive adverbials (Macdonald and Soenjono 1967: 58):

<table>
<thead>
<tr>
<th>Verb</th>
<th>Meaning</th>
</tr>
</thead>
<tbody>
<tr>
<td><em>diam</em></td>
<td>be silent</td>
</tr>
<tr>
<td><em>tiba</em></td>
<td>arrive</td>
</tr>
<tr>
<td><em>kira</em></td>
<td>guess</td>
</tr>
<tr>
<td><em>masak</em></td>
<td>mature</td>
</tr>
<tr>
<td><em>coba</em></td>
<td>try</td>
</tr>
<tr>
<td><em>diam-diam</em></td>
<td>secretly</td>
</tr>
<tr>
<td><em>tiba-tiba</em></td>
<td>suddenly</td>
</tr>
<tr>
<td><em>kira-kira</em></td>
<td>at a guess</td>
</tr>
<tr>
<td><em>masak-masak</em></td>
<td>maturely</td>
</tr>
<tr>
<td><em>coba-coba</em></td>
<td>tentatively</td>
</tr>
</tbody>
</table>
Nez Perce employs reduplication with certain nouns to lexicalize colors, e.g. máqs ‘gall’ > maqsmáqs ‘yellow’; simux ‘charcoal’ > cimúxcimux ‘black’; kūːs ‘water’ > ku.skūːs ‘blue gray’ (Aoki 1963: 43-44).

3. Distribution

Languages on the accompanying map are classified as having a productive reduplicative morpheme, only if the morpheme can be systematically generalized to a set of open class words, and/or the morpheme can still be applied in the modern form of the language. For example, Greek is classified as a language that does not meaningfully employ reduplication, although there are a few reduplicative forms present in the modern language that are remnants of a previously productive reduplicative process. In Ancient Greek, the perfect was formed by a Ce-reduplicative prefix, e.g. ἔγραφα ‘have written’; the modern equivalent is now periphrastic ἔξω γράψι (have + participial form).’ The old construction still appears, however, in some learned words, e.g. δε-δό-μενα (Ce-give-Mediopassive) ‘data’, γέ-γνω-οσ (Ce-become/happen-Perfect) ‘event.’ Greek has also borrowed from Turkish a nonproductive reduplicative prefix used with at least one affective/intensive adjective: τσίρ-τσιπλάκις ‘buck naked’ from τσιπλάκις ‘naked’ (compare Turkish به-بیگ ‘very white’ from بیگ ‘white’).

As can be seen from the map, reduplication is a much more pervasive phenomenon than one coming from a Western-European world view might imagine. Reduplication is very common throughout Austronesia (Pacific Islands, Philippines, Indonesia, Madagascar), Australia, South Asia, and many parts of Africa, the Caucasus, and Amazonia.

In the Western Hemisphere, some language families are particularly amenable to reduplication, Salishan, Pomoan, Uto-Aztecan, Algonkian, Yuman, Sahaptian, Siouan, etc, while others are not, such as Athabascan and Eskimo-Aleut.

Reduplication can be found in several areas of the world that are genetically quite diverse. One such area is the Indian subcontinent where reduplicative morphemes can be found in languages spanning several families, e.g. Indo-European, Dravidian, Austro-Asiatic and Tibeto-Burman. The Horn of Africa is yet another area where reduplication plays an important role in various languages of distinct families, e.g. Nilo-Saharan and Afro-Asiatic (Omotic, Cushitic, and Semitic) families:
(17.) Majang reciprocals (Nilo-Saharan, Ethiopia; Unseth 1991: 244)

Root 3p reciprocal, past
tim  fight ti-timiiikoŋ they fought each other
jok  wound jo-jokikoŋ they wounded each other
kon  help ko-koniikoŋ they helped each other

(18.) Somali plurals and intensives (Cushitic; Saeed 1999: 48–49)

buurán  fat buurbuurán fat, pl.
fiicàn  good, fine fiicfiicàn good, fine, pl.
macáan  sweet macmacaan sweet, pl.
riix  push riixriix push around
dhaqàaq  move dhaqdhaqàaq move back and forth

(19.) Amharic plurals (Semitic, Ethiopia; Leslau 2000: 41)

täläq  big tälätäläqë big, pl.
räggim  long räggärm long, pl.
addis  new adaddis new, pl.
gidär  calf gidädär calves
doro  hen dorardër hens
wäyzäro  lady wäyzazër ladies

Western Europe is one area where reduplication does not play a role in the morphology. However, Creoles that have developed from Western European languages are often found to employ reduplication quite productively, in many cases due to substratum influence, e.g. Nigerian Pidgin English kop ‘cup’ > kopkop ‘by the cup’, tüde ‘today’ > tude-tüde ‘this very day’, möto ‘car’ > möto-möto ‘many cars’, dem ‘them’ > demdem ‘themselves (reciprocal)’, tyar ‘torn’ > tyar-tyar ‘shredded up’, wäka ‘walk’ > wäka-wäka ‘walking’, trowe ‘overflow’ > trowe-trowe ‘overflow profusely’ mek ‘make’ > mekmek ‘scheme, plot’, ätöl ‘at all’ ätöl-ätöl ‘under no circumstances’, gbudüm ‘heavily’ > gbudüm-gbudüm ‘very heavily’ (Faraclas 1996: 253); Seselwa (Seychelles Creole French) ver ‘green’ > è rob ver-ver ‘a greenish dress’ > è ver-ver rob ‘a deep green dress’, roz ‘ripe’ > roz-roz-roz ‘as ripe as can be’ (Corne 1977: 31); Berbice Dutch Creole inga ‘thorn’ > inga-inga ‘many thorns’, mangi ‘run’ > mangi-mangi ‘keep running’ (Kouwenberg 1994).
Although reduplicative morphemes are absent for most of the western branch of the Indo-European language family, reduplication is rather common in the Indo-Iranian languages of the east.

It is hoped that this study will reveal that although in some pockets of the world’s languages, morphological reduplication is either non-existent, non-productive, or confined to marginal word classes, most areas of the world
do have languages that employ reduplication productively for quite diverse purposes and with varying degrees of iconicity.

Notes

1. Special thanks to Martin Haspelmath for producing the map from my database and allowing me to reprint it for this volume, to Brian Joseph for the Greek data and to Peter Bakker for the Fa d’Ambò examples. The database used to produce the map was originally created for the “World Atlas of Linguistic Structures” edited by Matthew Dryer, Martin Haspelmath, David Gil and Bernard Comrie.

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