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1. Introduction

A language is a means whereby meanings can be expressed and understood. It follows, therefore, that a language has to provide for the differential expression of different meanings: at least some of the meaning distinctions have to be matched by distinctions in the form of utterances. Given the class of natural human languages, and given in particular the special medium of expression employed in such systems, which is orally and nasally produced sounds, there are two logically possible elementary ways in which linguistic forms can differ from each other: quantitatively and qualitatively. Qualitative differences may stem either from differences in sound properties or from differences in the temporal relations of sound properties. Thus, for example, the two sound strings pa and ba differ from each other in some of the sound properties that are involved in their pronunciations; the two sound strings pa and ap, however, do not differ in this manner, since all sound properties involved in the pronunciation of one of them are also involved in the pronunciation of the other; they are nonetheless distinct by token of the differential temporal precedence relation that the simultaneous property clusters p and a bear to each other. Quantitative differences, on the other hand, pertain to the duration of the production and perception of a sound property. Thus, the two sound forms ab and abb differ neither in their sound properties nor in the temporal relations of their sound properties: their distinctness stems from the fact that the bb of abb has a duration that extends over a larger number of time units than the duration of the b of ab, whether due to prolonged articulation or to repeated articulation.[1]

This paper is a study of the ways natural human languages utilize one of these two basic types of sound differences that are available for the differentiation of different meanings in language: quantity. Its more specific purpose is to contribute to the eventual explanation of the role of quantitative sound differences in linguistic expression by contributing to the definition of those two sets whose

[1] There is one particular kind of distinctness of sounds whose classification within the present scheme is unclear to me. This is the kind resulting from differential intensities of articulation, such as "tenseness" or "stress." Depending on the actual physical correlates of such intensity differences, they may involve either quality only, or quantity only, or both quality and quantity; but it will certainly not be the case that they involve neither and thus fall outside the present scheme.

particular inclusion relation is the basic explanandum. These two sets are the set of ways in which quantitative form differentiation could in principle be used in natural human languages in the expression of meanings; and the set of ways in which quantitative form differentiation is so used.[2] A more precise delimitation of the subject matter of the paper is possible by the following definition of those utterance sets that will be investigated:

Utterance 1: ...A... = ...X...
Utterance 2: ...B... = ...Y...,

where A and B are non-null interpretable semantic representations that have some elements in common, X and Y are non-null syntactic, phonological, or phonetic representations, the equation sign stands for symbolic equivalence; and where Y either properly or improperly includes all of X, and a proper or improper part of X repeated n times, but B does not include a matching reduplication of A. The only additional a priori restriction that will be assumed is that such utterance pairs will fall within the scope of this study only if a particular meaning distinction thus paired off with a quantitative form difference in one utterance pair is also paired off with the same quantitative form difference in another utterance pair of the same language. I take this schema to semi-formally define the familiar linguistic concept of reduplication, with a reduplicative construction being what is represented above as Utterance 2.[3]

Reduplicative constructions thus delimited may be exemplified by any of the following (where the sound form of the reduplicative construction is underlined):

[2] For a parallel discussion of that subclass of qualitative sound differences that consists in the differential temporal relations of identical sound properties, see Moravcsik, forthcoming. For a survey of the possible qualitative sound differences in language stemming from different articulatory movements, see Catford 1968.

[3] The terms "reduplication" and "reduplicative construction" are of course infelicitous, since they make vague reference to there being only two copies of the same thing in the construction in question. A more properly suggestive term would be "reiteration," or "repetitive construction." Since, however, the term "reduplication" is widely used and the other two are not, I will continue to use the former.

a. ENGLISH: He is very very bright.

b. MOKILESE: ...roarroarroar...
'to continue to shudder' (Harrison 1973: 426)

c. SAMOAN: mamate 'They die.' (Pratt 1862)

d. SUNDANESE: ...sakalikali...
'not even once' (Robins 1959: 363)

In the ENGLISH example, emphasis is paired off with the simple repetition of a modifier; compare the form and meaning difference between a. and He is very bright. That the sound-meaning correspondence is recurrent in the language is shown by additional examples such as He is an old old man versus He is an old man. In the MOKILESE example, continued action is expressed by the triplication of the verb; compare roar 'to shudder.' The intralingual recurrence of the sound-meaning correspondence is indicated by the existence of additional examples, such as rikrikrik sakai 'to continue to gather stones' versus rik sakai 'to gather stones.' In the SAMOAN example, repetition of the penultimate syllable of the verb is correlated with the plurality of the subject; compare mate 'he dies.' Another example is taooto 'they lie,' versus taoto 'he lies.' In the SUNDANESE example, the meaning 'not even one X' is associated with the repetition of X and the prefixation of sa to X, which is kali 'time' here; compare also sahɤlayhɤlay 'not even one mat' versus hɤlay 'mat.' Some examples of what may at first appear to be reduplicative constructions but that are excluded by our definition from this class of linguistic objects are words such as papa 'father' and ásás 'digging' in HUNGARIAN. Papa 'father' is not a reduplicative construction since there is no meaningful form pa in the language; and ásás is not a reduplicative construction since — even though there is a form ás in the language to mean, among others, 'dig$_V$' — nominalization is not recurrently paired off with the reduplication of the verb; compare, for instance, áll 'stand$_V$,' állás 'standing,' *álláll 'standing.'[4]

[4] Two other classes of constructions characterized here as non-reduplicative by our definition may be pointed out. One is the class of onomatopoeic expressions — i.e. expressions that describe sustained sounds that are not linguistically interpretable — which in many languages do include repetitions of sound sequences; compare

Given now a precise definition of the utterance sets that we will be concerned with, and given the general rationale of the study of such utterance sets, I will turn to the consideration of the specific questions that have to be asked and answered about reduplicative constructions. All such questions appear to me to pertain either to the particular form properties of reduplicative constructions, to the particular meaning properties of such constructions, and to the conditions that determine the distribution of such constructions within and across languages. More specifically, we want to know the following:

1. Given the total set of utterance pairs in natural human languages that fit the schema above, which of the various form-related sub-patterns that are within the bounds of the definition actually occur and which do not? In other words, exactly what occurs reduplicated; how many times; how are the reduplicated copies ordered; and is the meaning difference correlated with reduplication by itself or is there also some additional form difference?

2. Given, again, the total set of utterance pairs in natural human languages that fit our definition, what are the particular semantic properties of reduplicative constructions? In other words, are there any generalizations to be made about the particular meaning distinctions that are conveyed by quantitative form differences and

(ftnt. 4 cont.)
ANCIENT GREEK barbaros 'foreign-speaking,' HUNGARIAN kakukk '(sound of the cockoo,' TZELTAL cinucinucin '(sound of guitar being strummed)' (Berlin 1963: 215f); see cross-linguistic data in Emeneau 1969 and relevant data for ENGLISH in Thun 1963. Such constructions do not qualify as reduplicative unless the unreduplicated form is meaningless, which is not the case for the great majority of its instances. The other class involves repeated mention of the same referent either as having different functions with respect to the same action (such as in John hit himself), or as having the same or different functions with respect to distinct events (such as in John came home and he had dinner). These are excluded as reduplicative constructions by the criterion that form-repetitions not be matched by meaning repetition in the interpretable meaning representation of the utterance. Whereas this present study is concerned with which (non-repetitive) meaning structures have repetitive forms in language and what kinds, the study of these constructions pertains to the question of how the repetitiveness of meaning is preserved, or not preserved, in the corresponding linguistic form. All studies of identity deletion belong here.

by its particular subtypes, as opposed to those that are never conveyed by quantitative differences or never by some particular subtype of them?

3. Given now that we have determined the particular form patterns and meaning patterns that cross-linguistically characterize reduplicative constructions, what does it depend on whether a particular utterance includes a reduplicative construction? In other words, given that a language has reduplicative constructions, when exactly are these used, and which are the languages that have reduplicative constructions and particular subtypes of them in the first place?

With respect to each of these questions, the purpose is to precisely define both the total range of logically possible answers and also the total range of actually true ones; since it is the particular difference between these two sets of answers that we ultimately want to explain.

In the main part of the paper which now follows, I will take up these three questions in turn, attempt to outline the total range of logical possibilities in each case, and try to make generalizations about the actually occurring subsets of these. In the closing part, I will summarize the explananda that thus will have emerged and will briefly consider avenues of explanations for some of them.

2. Reduplicative Constructions

2.1 Form properties

Although the definition of reduplicative constructions adopted above does exclude a large number of linguistic constructions from this class, it nonetheless admits of considerable form variation within it. The number of reduplicative construction types that is defined is in fact infinite. The range of form variation permitted can be conveniently characterized in terms of four major parameters: the properties of the constituent that is reduplicated; the number of times it is reduplicated; the presence or absence of additional non-repetitive form differentiation; and the temporal relations that the copy or copies assume in relation to each other and the rest of the utterance. The logical possibilities available for each of these four parameters can be informally surveyed as follows.

A. Properties of the reduplicated object Constituents to be reduplicated may in principle be definable either monomodally or

bimodally. Thus, they may be definable either by their meaning properties only, or by their sound properties only, or in reference to both. They may, in other words, be either semantic-syntactic constituents, such as one or more semantic-syntactic features, or morphemes, or words, or phrases, or sentences, or discourses; or they may be phonetic-phonological terms, such as one or more phonetic-phonological features, or segments, or syllables; or they may be morphemes of a particular phonetic shape, or sentences of a particular number of phonetic segments; etc. The quantitative form differences associated with a particular meaning distinction may involve repetition of one semantic-syntactic constituent, or that of more than one semantic-syntactic constituent that may stand in various grouping relations to each other, and it may involve repetition of one single phonetic-phonological constituent or that of more than one string. Reiteration may be either total or partial: it is total if it involves the repetition of the whole semantic-syntactic or of the whole phonetic-phonological string whose meaning is correspondingly changed; and it is partial if it involves the reiteration of only part of the semantic-syntactic or phonetic-phonological constituent whose meaning is accordingly modified. Partial reduplicative constructions fall into further logically possible subtypes, depending on how the particular subpart to be reduplicated is defined. Thus, given that it is a semantic-syntactic part, it may be a head, or a non-head, or the first constituent, or the last, or always an adjective; etc. If it is a phonetic-phonological part, it may be the first or the second or the third or the middle or the penultimate or the last part of the string, if it is defined by absolute linear position at all; or it may be distinguished by phonetic properties such as, for example, it being the vowel(s) of the string, or the stressed syllable of the string, or the first or only voiceless labial plosive contained in the string.

B. How many times is the object in question reduplicated There is nothing in the concept of language tacitly assumed here that would put a bound on the number of times a constituent could be reduplicated. The possibilities are thus: one repetition, two repetitions, three repetitions, 60 repetitions, 134 repetitions — up to infinity.

C. Additional non-iterative form differentiation A particular meaning difference may be signalled either by total or partial repetition only, or by the modification of (i.e. (non-repetitive) addition to, or deletion of, or substitution of) some other part of the utterance as well.

D. Temporal relations of the copies to each other and to the rest of the utterance Given any one copy and its temporal relation to other copies and to the rest of the utterance, all the logically possible temporal relations that any event can bear to any other are logically available, such as simultaneity, immediate precedence, non-immediate precedence, overlap, inclusion, and interlocking.

Consideration of actual instances of reduplicative constructions in various languages suggests that there may indeed be limits on the actually manifested form variability of reduplicative constructions in natural human languages. In what follows, I will propose some statements stipulating such constraints that I see as consistent with all facts known to me, and I will exemplify each.

A'. Properties of the reduplicated object Of the six basic logically possible types defined by the mode of the constituent and by the extent of reduplication, two occur in my sample and four do not. The two that are manifested are the two bimodal types; none of the four monomodal ones are. What is excluded, therefore, is a reduplicative construction which involves the reduplication of a syntactic constituent regardless of its form (i.e. total or partial syntactic reduplication), or which involves the reduplication of a phonetic string regardless of its meaning (i.e. total or partial phonological reduplication). What is claimed is that in reduplication reference is always made both to the meaning and to the sound form of the constituent to be reduplicated. It is also true, however, that bimodal reference is always of a very restricted kind; in particular, the constituent whose meaning is to be altered by the process of reduplication always has to be characterized in terms of specific semantic-syntactic constants, and possible reference to phonetic-phonological properties is restricted to lexical identity, syllable number and/or properties of consonantality and vowelhood. In what follows, I will exemplify the two occurring types and demonstrate the constraints on bimodal reference just mentioned.

Total bimodal reduplication is exemplifiable from EWE, or LATIN, or MANDARIN.

EWE: asíasíi 'hand by hand' (así 'hand') (Ansre 1963)
LATIN: quisquis 'whoever' (quis 'who?') (Coyaud & Hamou 1971)
MANDARIN: jangjang 'every sheet' (jang 'sheet') (Chao 1968: 202)

What makes the EWE and LATIN examples bimodal is that repetition must involve not only a morpheme of the same meaning but also one of the same lexical form; if EWE also had another morpheme meaning 'hand' which has a form distinct from así, that, I infer, could not serve as the reduplicated counterpart of así in the double sequence; and if LATIN had a hetermorphous synonym

for quis, that similarly could not form a reduplicative construction with quis. Reference to phonetic form is present, therefore, but it is restricted to stipulation of phonological identity of lexical forms. The same lexical identity constraint also holds in MANDARIN but there additional and more specific reference is also made to phonological form: according to Chao (1968: 203), total reduplication of measure terms is restricted to those measure terms that satisfy the phonological condition of monosyllabicity. The form jialuen 'gallon,' for instance, cannot be reduplicated since it is not monosyllabic; the concept 'every gallon' is expressed as meei-jialuen. I noted similar syllable number constraints (always involving a differentiation between mono- versus multisyllabic constituents) in ROTUMAN (Churchward 1940: 103), and, possibly, in WASHO (Winter 1970: 196).

There are some cases where what appears to be a distinction between total and partial reduplication is actually a distinction between forms of different length whose reduplication, however, is governed by the same principle. Thus, in MARSHALLESE (cp. Bender 1969: 38, 1971: 453), the principle according to which the last CVC sequence of a stem is reduplicated generates both instances of partial reduplication for bisyllabic words (e.g. takin 'socks,' takinkin 'wear socks;' kagir 'belt,' kagirgir 'wear a belt') and instances of total reduplication for monosyllabic words (e.g. wah 'canoe,' wahwah 'go by canoe;' wit 'flower,' witwit 'wear a flower').

Partial bimodal reduplication involves the repetition of a syntactic constituent or phonetic string which is only part of the constituent whose meaning is accordingly modified; such that the specification of the process requires reference both to semantic-syntactic and to phonetic-phonological properties. One subtype of this pattern involves reduplicating a constituent that is specified in terms of specific semantic-syntactic constants and by variable reference to phonological form necessitated by the above-mentioned lexical identity condition. This interesting pattern can be exemplified by the following:

HUNGARIAN:
(verb prefix reduplicated for modification of verb meaning)
elelmegy "away-away-goes" 'He occasionally goes there.'
(elmegy "away-goes" 'He goes there.')
belebelenéz "into-into-looks" 'He occasionally looks into it.'
(belenéz "into-looks" 'He looks into it.') (cp. Tauli 1966: 182)

YORUBA:
(adjective reduplicated to unambiguously pluralized noun phrase)
àṣà burúkú burúkú "custom bad bad" 'bad customs'
(àṣà burúkú "custom bad" 'a bad custom / bad customs')
(Bamgboṣe 1966: 113)

TZELTAL:
(numeral reduplicated for distributive noun phrase meaning)
?oš?oš pešu "three-three peso" 'pesos, three after three after three'
(?oš pešu "three pesos" 'three pesos' (?))
lahlahuneb' pešu "ten-ten-eb' peso" 'pesos, ten after ten after ten'
(Berlin 1963: 213f)

DYIRBAL:
(either constituent of a compound noun phrase reduplicated for pluralizing the compound noun phrase itself)
midibadunbadun "small-very-very" } 'lots of very small ones'
midimidibadun "small-small-very" }
(midibadun "small-very" 'very small one' (?))
yanagabungabun "man-another-another" } 'lots of other men/
yanayanagabun "man-man-another" } strangers'
(yanagabun "man-other" 'other man (?))
(Dixon 1972: 242)

Compare also ROTUMAN (Churchward 1940: 103).

Another subtype of partial bimodal reduplication involves reduplicating a phonetic string that is a proper part of the phonetic string whose meaning is effected by the reduplication, such that reference is made to the particular meaning and the process is subject to the lexical identity condition. There are various further subtypes of this pattern depending on how the phonetic string to be reduplicated is defined. As mentioned above, my data permit a very restrictive generalization in this respect. In particular, whereas the relevant string could in principle be defined by any phonetic property (segmental or suprasegmental) or in terms of absolute linear position, or in terms of simply the number of adjacent segments involved; and it could also be left undefined (i.e. "reduplicate any one or more segments in the total string"), reduplicated phonetic strings I found invariably defined in reference to consonant-vowel sequences and absolute linear position. In other words, all such specifications are of the type: "reduplicate the first C and V of the word" or "reduplicate the middle C" and never of the type: "reduplicate the first two segments (regardless of

whether they are consonants or vowels" or "reduplicate the second voiced fricative." I will now exemplify this subtype and its varieties.

1. Initial reduplication

a. C-: MARSHALLESE:
ƒƒiw 'angry' (ƒiw 'scold') (Bender 1971: 452; cp. also Harrison 1973: 443ff for this type in other MICRONESIAN languages)

b. V-: QUILEUTE:
á'á't'cit 'chiefs' (á't'cit 'chief')
é'ela·'xali 'I leave him often' (éla·'xali 'I left him')
(Andrade 1933: 187)

SHILH:
ggen 'to be sleeping' (gen 'to sleep') (Sapir 1949: 78)

c. CV-: PAPAGO:
kuukuna 'husbands' (kuna 'husband')
paapaga 'holes' (paga 'hole') (Langacker 1972: 266f)

QUILEUTE:
cici·p·hókwat' 'negroes' (ci·phókwat' 'negro' (?))
qaqa·χ 'bones' (qa·χ 'bone') (Andrade 1933: 189)

d. CVC-: TURKISH:
dopdolu 'quite full' (dolu 'full')
bembeyaz 'quite white' (beyaz 'white') (Godel 1945: 6)

AZTEC:
womwoman 'he is barking at' (woman 'bark at') (Key 1965)

e. CVCV-: FOX:
wa:pawa:pamɛ:wa 'he keeps looking at him'
(wa:pamɛ:wa 'he looks at him') (Bloomfield 1933: 218)

DYIRBAL:
banibaniɲu "come-come-unmarked: tense"
'come more than appropriate'
(baniɲu "come-unmarked: tense" 'come')
miyamiyandaɲu "laugh-laugh-unmarked:tense"
'laugh more than is appropriate'
(miyandaɲu "laugh-unmarked:tense" 'laugh')
(Dixon 1972: 251)

2. Final reduplication

a. -C: CHINANTECO:
hmmm?$^{2-4}$ 'your$_{pl}$ blood' (hm?m^{4} 'your$_{s}$ blood')
(Key 1965: 94)

b. -CV: HOPI:
?ewíwita 'flickering flames occur' (?ewi 'a flame occurs')
(Key 1965: 91)

HAUSA:
sunanaki 'names' (suna 'name') (Sapir 1949: 78)

c. -VC: TZELTAL:
-nititan 'push it rapidly in a curvy, crooked path'
(-nit 'push it') (Berlin 1963)

d. -CVC: MOKILESE:
pwirejrej 'be dirty' (pwirej 'dirt/soil') (Harrison 1973: 417)

MARSHALLESE:
jiwijwij 'wear shoes' (jiwij 'shoes') (Bender 1971)

e. -CVCV: SIRIONO:
erasirasi 'he continues being sick' (erasi 'he is sick')
(Key 1965: 91)

3. Internal reduplication

a. -C-: SYRIAN ARABIC:
ra??as 'make someone dance' (ra?as 'dance$_{v}$')
?arra 'have someone read' (?ara 'read')
(Cowell 1964: 240ff, 253ff)
(On internal consonant reduplication in various AFRO-ASIATIC languages, cp. Greenberg 1952, 1955.)

b. -V-: QUILEUTE:
bí'i'b·a'à· 'blind men' (bi'b·a'à· 'blind man')

COEUR D'ALENE:
lu?up 'it became dry' (lup 'dry')
na?as 'it became wet' (nas 'wet') (Reichard 1959: 243)

(Also, possibly, in NUER; cp. Crazzolara 1933: 9.)

c. -CV-: SAMOAN:
alolofa 'they love' (alofa 'he loves') (Pratt 1862)

(Also, possibly, in QUILEUTE (Andrade 1933) and in AZTEC (Key 1965: 94).)

The most obvious gaps here are: initial VC reduplication, internal VC, CVC and CVCV reduplication, any reduplication pattern that involves more than one adjacent consonant or vowel in the unreduplicated form,[5] and any reduplicated partial string that involves more than two vowels.

There are also examples of partial reduplication where the phonetic strings to be reduplicated are discontinuous. Compare the following examples from MARSHALLESE (Bender 1971: 453):

ka-rriwwew	'distribute by two-s' (riwew 'two')
ka-jjiĺĺiw	'distribute by three-s' (jiĺiw 'three')
yeḵḵilablab leyen	"he-club:distributive man-that" 'He's always at the club.' (kilab 'club/go drink at a club')
kkarjińjiń	'kerosene:distributive' (karjiń 'kerosene')

The question arises, of course, whether substrings to be reduplixated must be defined in terms of sequences of consonants and vowels. Two alternatives come to mind: substrings may be definable in terms of number of segments regardless of their consonantality and vowelhood; and substrings may be defined in terms of number of syllables, rather than number of segments. The number-of-segments hypothesis is easily refutable. It if were true, this would mean that in a language where the first CV of consonant-initial stems is reduplicated, in vowel-initial stems the first VC should be reduplicated. I have seen no language of this kind; I found it uniformly true, on the other hand, that if the first CV of consonant-initial stems is reduplicated, then in vowel-initial stems the initial vowel by itself will be. Compare, for instance, AZTEC:

se	'one'	sehse	'ones / one by one'
makwil	'five'	mahmakwil	'fives / five by five'
ome	'two'	ohome	'twos / two by two'
eyi	'three'	eheyi	'threes / three by three'

(Elson and Pickett 1965: 46)

[5] Cluster simplification occurs, for instance, in EWE: compare zɔ 'walk,' zɔzɔ 'walking;' gbla 'exert himself,' gbagbla 'exerting himself' (where gb is one segment); bía 'ask,' babía 'asking' (Ansre 1963).

Similarly, in AGTA the first CVC of consonant-initial stems is reduplicated; but in vowel-initial stems it is not the first VCV that is reduplicated, as we would expect if the rule were defined by the number of segments, but the first VC only:

takki	'leg'	taktakki	'legs'	
uffu	'thigh'	ufuffu	'thighs'	(Healey 1960: 6ff)

Also, in MOKILESE the CVC- of CVCV stems but the CV (and not CVV) of CVV(C) stems is reduplicated (Harrison 1973: 416, 423).

The other alternative, of defining the string to be reduplicated in terms of the number of syllables, arises as a possibility in all instances where the string to be reduplicated involves at least one vowel. In instances where a single C is reduplicated, this alternative does not arise, which already shows that all partial reduplications could not be properly defined in terms of number of syllables anyway. Now, as far as those cases are concerned where the string to be reduplicated involves at least one vowel, I have evidence to indicate that some such strings in some languages cannot be defined as syllables anywhere. Thus, in QUILEUTE, as explicitly pointed out by Andrade (1933: 189), the initial CV to be reduplicated is often a proper part of the first syllable. In the above-given examples, for instance, this is the case; since in ci·phókwat' 'negro' ci· is reduplicated, although the first syllable of the word is ci·p; and in qa·x 'bone' qa is reduplicated, although the whole word is one single syllable. Whereas these facts conclusively indicate the non-sufficiency of a syllabic definition of the reduplicated string in QUILEUTE, similar evidence is not available to me to indicate the necessity of such a definition in any language. Thus, in PAPAGO, for instance, all the data given by Langacker involve words that are of the CVCV type in their unreduplicated form; thus, the initial CV which is what is reduplicated can in all cases be sufficiently defined either as the first CV or as the first syllable. Evidence that would indicate the necessity of a syllabic definition would be a language where in VC-, CVCV-, and CVCCV-initial words the V, CV and CVC sequences are reduplicated, respectively; since in this case the syllable would provide the only uniform definition of the three otherwise disparate strings.[6]

[6] Key (1965: 91) suggests that in SIRIONO "the final two moras of the stem" are reduplicated and gives the examples erasi 'he is sick' — erasirasi 'he continues being sick;' ečisia 'he cuts' — ečisiasia 'he continues to cut.' Since in the first example the final CVCV, and in the second, the final CVV have been reduplicated,

I therefore take all facts cited here to be consistent with the hypothesis that the only phonetic properties that partial reduplication rules may refer to are consonantality and vowelhood; and that all partial reduplication rules where the part to be reduplicated is not syntactically defined do in fact make such reference.

B'. How many times is the object in question reduplicated According to our definition, for a construction to be reduplicative one, it has to include at least two instances of the same form; the question is whether there are examples of this construction type that include more than two instances of the same form. As the examples cited have already shown, there are indeed instances of multiple reduplication in many languages and possibly in all. Examples fall into these three types: a) both one-time and multiple reduplication possible with respect to the same form, with an additional meaning accruement of the same type in each case; b) both one-time and multiple reduplication possible with respect to the same form, the additional meaning change being of different kinds; c) only multiple reduplication possible with respect to a form. I will now illustrate and discuss each of these.

a) There are at least two kinds of meanings that may be reinforced by additional reduplication. One is emphasis: it is perhaps true in all languages that an emphatic modifier (such as very) can be open-endedly reduplicated for additional degrees of emphasis. The other is continuity: both in MOKILESE and in SHIPIBO, increased temporal extent of an action can be suggested by additional reduplication. Compare MOKILESE: roar 'give a shudder,' roar-roar 'to be shuddering,' roarroarroar 'to continue to shudder;' soang 'tight,' soangsoang 'being tight,' soangsoangsoang 'still tight' (Harrison 1973: 426); SHIPIBO: ʔa 'do,' ʔaa 'doing,' ʔaaˈʔaa 'keep on doing' (Key 1965: 91). (In MOKILESE, CVC reduplication is involved, whereas in SHIPIBO, total reduplication; hence three copies in MOKILESE and four in SHIPIBO.) (Compare also ROTUMAN (Churchward 1940: 105).)

(ftnt. 6 cont.)
this indeed appears to be a case of reduplication where the string is defined in terms of syllables rather than consonants and vowels. Given, however, that the e- appears to be a separate lexeme (the third person singular subject marker), it is also possible that this is a case of total, rather than partial, reduplication. Pending further information, I do not thus take SIRIONO to provide conclusive evidence in favor of syllable-based reduplication.

b) An example of stages of multiple reduplication corresponding to distinct, i.e. not only quantitatively differing, meanings come from TWI. As the following examples show, the predicative form of the verb is simple, the adjectival form is once-reduplicated, and the adverbial form includes either three or four copies:

duá ti yè fe	'This tree is fine.'
mfonínì fèfe	'a fine picture'
wógòru {fefefe / fefe(f)efe}	'They play very nicely.' (Christaller 1875: 47)

c) Examples of simple forms that may be multiply but not only once reduplicated are TELUGU śrī 'prosperous' and some verbs of MOKILESE such as doau 'climb.' According to Krishnamurti (p.c.), on medieval TELUGU inscriptions the adjective śrī 'prosperous' occurs triplicated but not duplicated; e.g. in śrī śrī śrī ganapalīdēva mahārājulum gāru 'O, three-times-prosperous King Ganapalideva....' In MOKILESE, whereas some verbs express "progressivity of action" by one-time-reduplication and "continuity of action" by triplication, as was seen above, some verbs have this semantic contrast neutralized and are both expressed by the triplicative form; e.g. doau 'climb,' doaudoaudoau 'be/continue climbing,' *doaudoau (Harrison 1973: 427).

At least in some languages multiply reduplicated forms are resisted or, if used, degrees of multiple reduplication are not correlated with distinct meanings. Thus, in KANURI language names are derived ordinarily from tribe names by total reduplication; e.g. Kanəmbú '(tribe name),' kanəmbukanəmbú '(corresponding language name);' but this is not possible if the tribe name already has a reduplicative form; e.g. from the tribe name Karekare, the corresponding language name is mánà Karekarevè and not *Karekarekarekaré (Lukas 1937: 8). In MOKILESE the distinction between the progressive and continuative verbal aspect, unambiguously expressible by the distinction between one-time and two-time reduplication, is often neutralized and is expressed either by the duplicated or by the triplicated form, depending on the verb; e.g. doau 'climb,' doaudoaudoau 'be/continue climbing,' *doaudoau; pakad 'to defecate on,' pakpakad 'be/continue defecating on,' *pakpakpakad (Harrison 1973: 427).

C'. Additional non-iterative form differentiation Our definition of reduplicative constructions allows for reduplication not being the only carrier of a meaning difference between two forms; the question

is whether it ever occurs, indeed, that in addition to a purely quantitative form change there is also an additional kind, such as something else added to the reduplicated form or deleted from it, or some part of it replaced. Whereas I found no example where substitution would take place, and only one clear example where something is deleted in the reduplicated form as compared with the simple form, there are many examples of not-purely-quantitative additions accompanying reduplication. My single clear example involving deletion comes from MOKILESE where reduplication and the deletion of a phonetic string from the end of a transitive verb render them intransitive; compare koso 'cut$_{tr}$,' koskos 'cut$_{intr}$;' sipis 'tie$_{tr}$,' sipsip 'tie$_{intr}$' (Harrison 1973: 415). Form-addition occurs both in conjunction with total and in conjunction with partial reduplication; and the added string may take place between the "copy" and the "original," or it may occur on the periphery of the word. The additional string is between the "copy" and the "original," for instance, in AZTEC and in AGTA. In AZTEC it is an h (e.g. se 'one,' sehse 'ones / one by one;' eyi 'three,' eheyi 'threes / three by three' (Elson and Pickett 1965: 46)), in AGTA it is ala (e.g. wer 'creek,' walawer 'small creek;' kwák 'my thing,' kwalakwák 'my small thing' (Healey 1960: 6)). An instance of total reduplication cooccurring with a suffix comes from MANDARIN, and an instance of total reduplication cooccurring with a prefix comes from SUNDANESE. MANDARIN: huang.jang 'flustered,' huang.huang.jang.jang 'flustered (vivid form)' (Chao 1968: 206); SUNDANESE: udag 'to pursue,' paudagudag 'to chase each other;' iriŋ 'to follow,' pairiŋiriŋ 'to walk in groups' (Robins 1959: 363). Partial reduplication with an added affix on the same periphery of the stem occurs in TZELTAL, for instance; the affix is added on the opposite periphery in SUNDANESE. TZELTAL: -nit 'to push it,' -nititan 'to push it rapidly in a curvy, crooked path;' -net' 'to press it down,' -net' et' an 'to press it down, twisting rapidly the ball of the hand' (Berlin 1963: 214); SUNDANESE: kolot 'be old,' kokolotən 'look old,' budak 'child,' bubudakən 'behave like a child' (Robins 1959: 361).

D'. Temporal relations of the copies to each other and to the rest of the utterance Of the various pertinent questions, I will only consider one here which is that of the adjacency relation of copies. As the examples already cited in this paper show, in instances of partial reduplication copies are often but not always adjacent to each other. If they are not adjacent, they may be separated from each other a) either by part of the stem, b) or by all of the stem, c) or by an additional string not in the original stem. Part of the stem intervenes in QUILEUTE, for instance: the first consonant is reduplicated here and inserted after the first syllable: tsi'ko 'he put it on,' tsítsko 'he put it on (frequentative);' tukô·yo' 'snow,'

tutkô·yo' 'snow here and there' (Andrade 1933: 187). The whole stem intervenes in TILLAMOOK, for instance: tq 'break,' q-tə́q-ən 'they tried to break it;' t·ɬ 'tell,' s-ɬ-tuɬ-ən 'they went and told him' (Reichard 1959: 243). A string not belonging to the stem is interposed in AZTEC and in AGTA as examples under C' illustrated.[7]

All the facts explicitly discussed or otherwise drawn upon above appear to me to be consistent with the following universal hypotheses about the form properties of reduplicative constructions:

1. There is no reduplication pattern where the constituent to be reduplicated may be freely chosen from among the included subconstituents.

2. There is no reduplication pattern where the number of repetitions is freely chosen from the set of all numbers.

3. There is no reduplication pattern which would not involve reference to lexical identity.[8]

4. There is no reduplication pattern that would involve reference to phonological properties other than syllable number, consonantality-vowelhood, and absolute linear position.[9]

[7] An interesting question is whether temporal precedence relations have to be defined for the "copy" in relation to the "original." For some consideration of this question in THAI, compare Haas 1942; for the criterion of affix synonymy as deciding this question, see Wilbur 1973: 11.

[8] For a related claim, according to which all rule-applicational exceptions related to reduplicative construction can be explained by the requirement of the phonetic identity of the original and the copies, see Wilbur 1973. Lexical identity is not always required, as in the above examples; in some instances of reduplication it is excluded. For such synonym reduplications, see Noss (1964: 59) on THAI, and Politzer 1961 and Malkiel 1959 in other languages. My claim is that in no instance of reduplication is it immaterial if (all of part of) the same lexical item is involved in the repetition or (all or part of) a lexical item that has the same meaning but a different form.

[9] It is possible that stress is significant in some languages in determining which part of the stem be reduplicated. This is particularly likely in instances of internal reduplication, such as in SAMOAN. I have, however, not investigated this question any further.

2.2 Meaning properties

There is no a priori reason why reduplication, or any other form device of language, should serve as the expression of some meanings rather than as that of others. Nonetheless, as pointed out by a number of linguists, the particularly meanings associated with reduplication strikingly recur across languages.[10]

Before considering what these particular cross-linguistically recurrent meanings are, two general observations are in order. First, the relation between the meaning of a reduplicative construction and its unreduplicated counterpart is almost always that of proper inclusion, with the former properly including the latter. In other words, reduplicative constructions almost always entail everything that their unreduplicated counterparts do and, in addition, also some thing(s) that their unreduplicated counterparts do not. Specifically, I have found no clear example of an unreduplicated constructions' meaning properly including the meaning of the corresponding reduplicated one, or of the two overlapping; although there are some possible examples of the fourth logically possible semantic relation.[11]

[10] Cross-linguistic discussions of reduplicative constructions that I am familiar with fall into two classes. Some of them include in their scope only languages of some genetic group or of some areally defined one; e.g. Gonda 1949 (on INDONESIAN languages), Harrison 1973 (on MICRONESIAN languages), Haeberlin 1918 and Reichard 1959 (on SALISH languages), and Godel 1945 (on TURKISH and ARMENIAN); compare also Watson 1966 which discusses PACOH data only, but gives a useful bibliography on reduplication in other, mostly SOUTH-ASIAN, languages as well. Others include languages of varying genetic and areal affiliation; compare, for instance, Bloomfield 1914: 156-157, Sapir 1949: 76-78, Dressler 1968, Key 1965, and Wilbur 1973. For further references to such cross-linguistic discussions, see also Thun 1963. Pott's work on reduplication (August Friedrich Pott 1862, Doppelung (Reduplikation, Gemination) als eines der wichtigsten Bildungsmittel der Sprache, beleuchtet aus Sprachen aller Welttheile, Lemgo und Detmold) whose title promises a large inventory of interesting data has unfortunately not been available to me. Most of these works discuss reduplication data according to the meaning categories expressed; for a work of exclusive concern for the form of these constructions, see Wilbur 1973.

[11] The mutual exclusion of the two meanings was excluded by our definition of reduplicative constructions. Scattered examples of an

The other striking fact is that within the small set of meanings that most reduplications convey in various languages there are some meanings that appear to be opposites. Such are, for instance, augmentation and diminution; and endearment and contempt. In some cases, some reduplicative construction is used to express such opposite concepts even within the same language.

As far as particular meaning properties are concerned, the most outstanding single concept that reduplicative constructions recurrently express in various languages is the concept of increased quantity. There are two basic subtypes of this meaning: quantity of referents and amount of emphasis.

I will first discuss various subtypes of quantity of referents. Referents may be participants of event or events themselves; the former I have found expressed by noun reduplication or by verb reduplication and the latter, by verb reduplication only. In both cases, the set of referents whose plurality is conveyed by reduplication may either be one whose members are understood not to occur at the same place or time, but to be spatially or temporally scattered; or it may be a set where no such specification is understood. I will now consider noun reduplication and verb reduplication in turn.

Simple (unmarked) plurality of the participants of an event as expressed by noun reduplication is exemplifiable by SAMOAN and PAPAGO constructions. SAMOAN: tuafāfine 'brother's sisters' (tuafafine 'brother's sister') (Pratt 1862: 7; he describes this process as "lengthening (properly doubling) a vowel in the word.") PAPAGO: baabana 'coyotes' (bana 'coyote'), tiitini 'mouths' (tini 'mouth') (Langacker 1972: 267). (For AMHARIC, TIGRINA and

(ftnt. 11 cont.)
unreduplicated and a corresponding reduplicated construction being synonymous come from SUNDANESE, MANDARIN and SYRIAN ARABIC. For instance, Robins glosses both tamu and tatamu in SUNDANESE as 'guest' (Robins 1959: 354); Chao says of MANDARIN that "the simple verb... heng and its reduplicate heng.heng 'grunts, groans, hums (a tune)' do not differ much even in connotation" (Chao 1968: 204); and according to Cowell, in SYRIAN ARABIC "many augmentatives which are theoretically intensives are in actual usage virtually synonymous with their underlying simple verb: raʕab and raʕʕab 'to scare, startle,' fareḥ and farfaḥ 'to rejoice,' etc." (Cowell 1964: 253). Some instances of synonymy between duplicative and triplicative forms occur in MOKILESE; see Harrison 1973, cp. my Sec. 2.1 under B'.

TIGRE, compare Leslau 1945:166.) Of the more specific plural meanings, 'every X' and 'all X' are expressed by reduplication in PACOH; 'every X' in YORUBA, TAGALOG and MANDARIN; and 'very many X' in TZELTAL:

PACOH: damo damo 'everyone' (damo 'whichever one')
tamo tamo 'from everywhere' (tamo 'from wherever')
kakom 'all the black' (kom 'black')
babar 'all two' (bar 'two') (Watson 1966: 83, 99)

YORUBA: ọ̀sọ̀ọ̀sẹ̀ 'every week' (ọ̀sẹ̀ 'week')
alaalẹ́ 'every enemy' (alẹ́ 'enemy') (Bamgboṣe 1966: 151)

TAGALOG: araw ᶜáraw 'every day' (araw 'day') (Blake 1917: 425ff)

MANDARIN: renren 'everybody' (ren 'man') (Chao 1968: 202)

TZELTAL: hi?hi?tik 'very much sand' (hi? 'sand')
nanatik 'very many houses' (na 'house') (Berlin 1963: 212)

Languages where the reduplicated plural is restricted to plurality of individuals that are either of different kinds or scattered in location are MALAY and QUILEUTE. In written classical MALAY, according to Gonda (1949), the reduplicative plural is used "mainly to express diversity;" e.g. anak means 'child' and anakanak means 'various children.' In QUILEUTE, according to Andrade (1933: 190), reduplication denotes "the existence or occurrence of conceptually identical objects or actions in different situations or occasions;" although he also points out that the younger generation of speakers uses reduplication to denote ENGLISH-type (unmarked) plurals as well. Various versions of distributive plurals crop up in a number of other languages as well, some of which are exemplified here:

TURKISH: čors čors kalel 'to march four by four' (čors 'four') (Godel 1945: 12)

SIERRA AZTEC: sehse 'ones; one by one' (se 'one') (Elson and Pickett 1965: 46)

TWI: dú dú 'ten each' (dú 'ten') (Christaller 1875: 53)

YORUBA: mẹ́.ta mẹ́.ta 'three each' (mẹ́.ta 'three') (Bamgboṣe 1966: 151)

MITLA ZAPOTEC: šse.šse?-ni 'each its own place' (šse? 'place') (Briggs 1961: 74)

Reduplication is also used when not all members of a class of objects are referred to, but when any one or some one member of it is. As discussed by Coyaud and Hamou (1971), indefinite pronouns are formed by the reduplication of interrogative pronouns or of some other morpheme in a great many different languages; such as ILA, ELE, LATIN, JAVANESE, MALAY, VIETNAMESE and NGBANDI. Some examples from languages not mentioned in their study:

SUNDANESE: sahasaha 'whoever' (saha 'who?')
manamana 'wherever' (mana 'where?') (Robins 1959: 355)

KHASI: ka?eyka?ey 'someone' (ka?ey 'who?/what?')
kumnukumnu 'somehow' (kumnu 'how?') (Rabel 1961: 110ff)

Reduplication of verbs, as aptly pointed out by Andrade in connection with QUILEUTE, may express either repeated or continued occurrence of an event with the same participant(s) performing in it at different times or places; or it may express the repeated occurrence of an event (possibly at different times and places) performed by different participants. I will first discuss and exemplify repeated or continued occurrence with an event involving the same participants. Some examples of this are the following:

TZELTAL: -pikpik 'touch it lightly repeatedly' (-pik 'touch it lightly')
-suhsuh 'continue to urge that it be done' (-suh 'urge it done') (Berlin 1963: 214)

THAI: khãw dəən, dəən: paj naan 'He walked and walked for a long time.' (dəən 'walk') (Noss 1964: 69)

QUILEUTE: é·ela·'xali 'I leave him often' (éla·'xali 'I left him')
ó··o·'xwal 'he carries water often' (ó·xwal 'he carries water') (Andrade 1933: 187)

SUNDANESE: guguyon 'to jest repeatedly' (guyon 'to jest')
gogodəg 'to keep shaking the head' (godəg 'to shake the head') (Robins 1959: 354)

TWI: tẽetẽem· 'to cry out (repeatedly)' (tẽem· 'to cry out (once)') (Christaller 1875: 64)

EWE: zɔzɔ 'be walking' (zɔ 'walk')

EWE (cont.): babía 'be asking' (ba 'ask') (Ansre 1963)

ROTUMAN: leleume 'to come repeatedly, frequently, or habitually' (leume 'to come') (Churchward 1940)

(MOKILESE examples were given in Sec. 2.1, compare Harrison 1973: 426f; for examples from KONDA see Krishnamurti 1969: 312; for examples from many other languages see Dressler 1968: 62-65.) As the last ROTUMAN example indicates, habituality is sometimes also understood; cp. AZTEC zazazanilia 'to have the habit of narrating' (zanilia 'to narrate') (Dressler 1968: 74).

Sometimes reduplication expresses the repeated occurrence of the same event involving the same participants, but with participant roles reversed:

YAMI: mipalupalu 'strike each other' (palu 'strike') (Gonda 1949: 182)

TZELTAL: -mahmah 'fight' (-mah hit it') (Berlin 1963: 214)

PACOH: târhŏm hŏm 'to bathe each other' (hŏm 'to bathe')
târchom chom 'to know each other' (chom 'to know') (Watson 1966: 96)

DYIRBAL: ɖurgayɖurgaybariɲu 'spear each other' (ɖurgay 'spear$_V$')
ɲundalɲundalbariɲu 'kiss each other' (ɲundal 'kiss$_V$' (Dixon 1972: 92f)

Examples of reduplication expressing repeated action with different participant(s) and possibly even at the same time are these:

TWI: wuwu 'die (in numbers)' (wu 'die (of one or several persons)'
bubu 'bend/break a thing in many places / break many things (e.g. sticks)' (bu 'bend/break') (Christaller 1875: 64)

SAMOAN: mamate 'they die' (mate 'he dies')
alolofa 'they love' (alofa 'he loves') (Pratt 1862)

QUILEUTE: kwe·'k^{u}tsa 'several people are hungry' (kwe·'tsa' 'he is hungry') (Andrade 1933: 187)

SOMALI: fenfen 'gnaw at on all sides' (fen 'gnaw at') (Sapir 1949: 77)

TSIMSHIAN: am?am 'several are good' (am 'good') (Sapir 1949: 77)
əl?alɬix 'speak of several people' (alɬix 'speak') (Bloomfield 1915: 157)

SYRIAN ARABIC: kassar 'break (into many pieces)' (kasar 'break (e.g. into two)')
?aṭṭaf 'pick (e.g. many flowers)' (?aṭaf 'pick (e.g. a flower)' (Cowell 1964: 253)

Intuitively speaking, intensity appears related to quantity in that it involves quantity of energy investment or size of effect. If an action is performed with greater intensity, this does not mean that somebody necessarily performs it repeatedly or continuing it over some length of time, nor does it mean necessarily that the active and passive participants involved are a multitude; what it means is that it is performed more thoroughly and/or with greater than ordinary effect. That intensity is felt to be related to quantity is indicated by expressions such as Many thanks! or Thanks a million! in ENGLISH and corresponding ones in other languages; as well as by the fact that increased intensiveness is often expressed in various languages by reduplication; e.g.

TURKISH: dopdolu 'quite full' (dolu 'full')
bembeyaz 'quite white' (beyaz 'white') (Godel 1941: 6)

SUNDANESE: hayaŋhayaŋ 'want very much' (hayaŋ 'want')
ramerame 'be very jolly' (rame 'jolly') (Robins 1959: 355)

AGTA: dádána 'very old' (dána 'old')
magbíbilag 'run hard and far' (magbílag 'run') (Healey 1960)

TELUGU: śri śri śri gaṇapalídēva mahārājulum gāru 'O, very prosperous King Ganapalideva!' (śri 'prosperous') (Krishnamurti, p.c.)

THAI: díidii 'to be extremely good' (dii 'to be good')
wáanwăan 'to be extremely sweet') (wăan 'to be sweet') (Haas 1946: 128)

EWE: gégblɛ̃ 'be very much spoiled' (gblɛ̃ 'be spoiled') (Ansre 1963)

TAGALOG: magkabasagbasag 'get thoroughly broken' (mabasag 'get broken')
magkasirasira 'get thoroughly damaged' (masira 'be damaged') (Schachter and Otanes 1972: 339)

In some cases intensive constructions have the added connotation of "more than appropriate;" such as in DYIRBAL: miyamiyandaɲu 'laugh more than is appropriate' (miyadaɲu 'laugh$_V$'), balgabalgan 'hit too much' (balgan 'hit') (Dixon 1972: 251).

As already pointed out, side by side with the meaning of increased quantity and intensity, there is also the meaning of diminution and attenuation: these, too, are senses conveyed by reduplication in various languages.[12] Examples are these:

a. for diminution (often associated with endearment):

AGTA: walawer 'small creek' (wer 'creek')
kwalakwák 'my small thing' (kwák 'my thing') (Healey 1960: 6)

NEZ PERCE: temultéʻmul 'sleet' (téʻmul 'hail')
xoyamacxóyamac 'small child' (xóyamac 'child') (Aoki 1963)

THOMPSON: ṣō'ṣpaʼ 'little tail' (ṣō'paʼ 'tail')
sqa'qxaʼ 'little dog/horse' (sqa'xaʼ 'dog/horse') (Haeberlin 1918: 156)

[12] The intralingual cooccurrence of reduplication patterns expressing opposing meanings can be exemplified from AGTA and TZELTAL. In AGTA reduplication may express either intensity or attenuation: e.g. dána 'old,' dádána 'very old,' but magbílag 'run,' bilabilagan 'run gently' (Healey 1960: 6ff). In TZELTAL reduplication in color terms may express either increased or reduced intensity of color: e.g. ʔihkʼ 'black,' ʔihkʼbʼohbʼoh 'very black (as mouth),' ʔihkʼʔihkʼtik 'blackish;' kʼan 'yellow,' kʼanteltel 'very yellow (as bunch of bananas),' kʼankʼantik 'yellowish' (Berlin 1963: 216f). In both instances, however, the particular reduplicative pattern differs depending on which meaning it expresses.

b. for attenuation:

QUILEUTE: kwaya'.tiʼ 'he tried a little' (kwátiʼ 'he tried')
t'ɬeyéx 'rather stiff' (t'lè·x 'stiff') (Andrade 1933: 188)

SWAHILI: maji-maji 'somewhat wet' (maji 'wet' (?)) (Ashton 1952: 316)

THAI: kàw-kàw 'oldish' (kàw 'old (of things)')
kɛ̀ɛ-kɛ̀ɛ 'elderly' (kɛ̀ɛ 'old (of people)') (Noss 1964: 68)

MANDARIN: tauoh.tauoh(l) 'sits a while' (tauoh 'sit')
pao.pao 'runs a little' (pao 'run') (Chao 1968: 205; cp. also Thompson 1973: 362)

TAGALOG: mahiyahiya 'be a little ashamed' (mahiya 'ashamed')
magwaliswalis 'sweep a little' (magwalis 'sweep') (Schachter and Otanes 1972: 340)

The meaning 'similar to X' appears to be close to the meaning of attenuation; and the meaning 'pretend to X' is again close to 'similar to X':

MALAY: lamitlamit 'cloth canope / palate of the mouth' (lamit 'sky') (Gonda 1949: 172, 190f)

THAI: ŋən ŋən 'money and that sort of thing' (ŋən 'silver/money')
mɔ̂ɔ mɔ̂ə 'pots and pans' (mɔ̂ɔ 'pot') (Noss 1964: 52f)

TURKISH: havlú mavlú 'towels and the like' (havlú 'towel'(?))
kitáp mitáp 'books and such' (kitáp 'book') (Swift 1963; cp. also Lewis 1967: 235ff)

PACOH: táq qâmbíq bíq 'pretend to sleep' (bíq 'sleep$_V$')
táq qaqay qay 'act sick' (qaqay 'sick') (Watson 1966: 95)

SUNDANESE: wawanian 'to pretend to be brave' (wani 'to dare')
pipintəran 'to feign wisdom' (pintər 'to be wise') (Robins 1959: 360)

Reduplicative constructions may have other derogatory connotations as well, in addition to implied falsehood just exemplified.

Of some EWE reduplicative constructions, Ansre writes (1962): "Often, they are alleged sayings, giving notions that need be corrected and one can infer that they are quotations on which prohibitive or exhortative pronouncement is based." Allegedness may be implied by reduplication in HUNGARIAN as well; compare:

Speaker A: Holnap megcsinálom.
"tomorrow I-will-do-it"
'Tomorrow I will do it.'

Speaker B: Holnap, holnap ... mindig azt mondod!
"tomorrow tomorrow always that you-say-it"
'Tomorrow... — you always say that!'

For general derogatory connotation, compare also YIDDISH reduplications of the type book-shmook.

Apart from the meanings of increased quantity, intensity, diminution and attenuation which are concepts capable of pulling together many superficially disparate uses of reduplicative constructions, such constructions also serve to differentiate members of one grammatical category from another. Some of these derivational uses of reduplication do appear to be relatable to one or another of the above-mentioned broad meaning categories in that in some cases the difference in meaning between the reduplicated construction and its unreduplicated counterpart is both a difference in basic grammatical category and also a difference of one of the above types; in other cases, however, no such relation is apparent. Some examples where categorial distinction is also paralleled by additional meaning differences relatable to the above types are these:

a. Reduplication correlated with denominal verb derivation and distributive meaning:
PACOH: bâmbar 'to divide by two' (bar 'two')
pâmpe 'to divide by three' (pe 'three')
(Watson 1966: 99)

b. Reduplication correlated with denominal adjectivalization and connotation of fullness of something:
MOKILESE: dikolkol 'lumpy' (dikol 'lump')
koalohlo 'full of roots' (koalo 'root')
(Harrison 1973: 424)
TWI: aboabó 'stony' (abó 'stones')
nsoensóe 'thorny' (nsóe 'thorns')
(Christaller 1875: 46)

c. Reduplication correlated with denominal or deverbal agent nominalization with implied connotation of habitualness:
TAGALOG: ta:ta:wa 'one who will laugh' (ta:wa 'a laugh')
qa:qa:wit 'one who will use' (qa:wit 'thing of use')
(Bloomfield 1933: 218, 221f)
EWE: sisílá 'escaper' (sí 'escape$_V$')
nyanyralá 'raver' (nyra 'rave$_V$') (Ansre 1963)

d. Reduplication correlated with deverbal action nominalization with implied connotation of continuity:
EWE: fofo 'beating' (fo 'beat$_V$')
kpɔkplɔ 'leading' (kplɔ 'lead$_V$') (Ansre 1963)

There is, however, an equally large and indeed disparate set of examples of derivational meanings that cannot be seen related to any of the non-derivational meaning categories surveyed above. Thus, for instance, reduplication can serve to derive adverbs from verbs or adjectives as in THAI (e.g. wɛɛw-waaw 'brilliantly' (wɛɛw 'brilliant'); krasíb-krasâab 'in whispers' (krasíb 'to whisper') (Noss 1964: 53)), or to derive intransitive verbs from transitive verbs as in MOKILESE or TWI (MOKILESE: koskos 'cut$_{intr}$' (koso 'cut$_{tr}$'); kidkid 'wrap$_{intr}$' (kidim 'wrap$_{tr}$') (Harrison 1973: 415); TWI: didi 'eat$_{intr}$' (di 'eat$_{tr}$') (Christaller 1875: 64)), or to derive transitive verbs from intransitive ones such as in SUNDANESE (ŋarɣrɤwas 'to frighten' (rɤwas 'to be afraid'); mapanas/mamanas 'to anger' (panas 'to be angry') (Robins 1959: 354)). There are, in addition, many non-derivational uses of reduplication which also do not fit the above broad meaning categories; such as expressing perfectivity, as in SANSKRIT, GREEK, LATIN and GOTHIC (cp., for instance, Karstien 1921 on such reduplication in GERMANIC languages), or meaning 'come to do something' as in CŒUR D'ALENE (Reichard 1959: 244); etc.

Given that reduplication is neither the exclusive expression of any one meaning category in languages, nor are the meanings that it is an expression of all subsumable under general classes, no explanatory or predictive generalization about the meanings of reduplicative constructions can be proposed. All we may note is that such constructions often express meanings related to increased quantity, intensity, diminutiveness and attenuation.

2.3 Distribution

So far we have considered subtypes of reduplicative constructions as defined by their form properties and their meaning properties. The remaining question to ask is what are the conditions under which

reduplicative constructions occur at all. How, in other words, can the subset of all human utterances be characterized that include reduplicative constructions as opposed to its complement set whose members do not? How can we predict that a sentence will include a reduplicative construction?

Logically possible bases for such predictions are the following. First of all, it is possible in principle that the occurrence of a reduplicative construction or even that of some particular subtype of it is predictable just from the meaning that the sentence conveys. This would be the case if reduplicative constructions or some subtype of them did not have synonyms, but would serve as the sole conveyors of some meanings in all languages that do provide for the expression of that meaning. If, however, reduplicative constructions do turn out to have synonyms, then meaning by itself cannot be used as a criterion for predicting if a sentence will include a reduplicative construction or not. The question that arises, then, is this: given the range of forms that can all equally serve as alternative expressions of those meanings that reduplication can also express, how can we predict that a particular sentence whose meaning includes one of those meanings will use reduplication as its expression or one of the other alternative forms? Possible conditions determining the answer may be of three kinds. First, it may be that all those sentences that utilize reduplication (or some particular subtype of it) for the expression of that meaning are characterized by some structural — meaning-related or form-related — property that is unique to them, and from which the occurrence of reduplication (or a particular subtype of it) can be predicted. Second, it is possible that there is something about the structure of the other sentences of the same language in terms of which the occurrence of reduplication as the conveyor of particular meanings can be predicted. Thirdly, it is possible that there is something about the spatial and temporal distribution of the language in question, or about the particular function of the style or register in question, that is predictive of the occurrence of reduplication (or a particular subtype of it) as the chosen expression of some meaning. In sum: the occurrence of reduplication or some subtype of it in a sentence may in principle be predicted a) from meaning only, b) from meaning and intrasentential structural properties, c) from meaning and intralingual (but not intrasentential) structural properties, d) from meaning and non-structural properties of the language or style in question, e) from any combination of b), c) and d).

As against these logically available bases of prediction, the actual facts appear to me to admit of no generalizations of the types

a), b) and e), but they are consistent with some generalizations of the types c) and d). First of all, no generalization of the type a) is possible in that reduplicative constructions or any form-related subtypes of them are not the sole conveyors of any meaning. All meanings that can be expressed by reduplication can also be expressed in some other way, either in another language or often within the very same language as well; and all meanings that can be expressed by some particular form-related subtype of reduplication can also be expressed by some other particular form-related subtype of it, either in another language or in the same one. An example of intralingual synonymy between reduplicative and non-reduplicative constructions may come from KANURI: as pointed out above, the name of a tribe's language is formed in some cases by reduplication and in other cases periphrastically; e.g. yaravayaravá 'the language of the Yarava tribe;' but mánà Boleave 'the language of the Bolea tribe' (Lukas 1937: 8). An example of interlingual synonymy of reduplicative and non-reduplicative constructions may come from the expression of plurality in SUNDANESE and ENGLISH: the plural of paturunan 'descendant' in SUNDANESE is paturunanpaturunan (Robins 1959: 367), but the plural of descendant in ENGLISH is descendants. An example of the intralingual synonymy of two reduplicative constructions of different subtypes may come from MALAY, where, according to Gonda 1949: 171, both puyu-puyu and pĕpuyu mean 'climbing perch' and both labulabu and lĕlabu mean 'pipkin.' Finally, an example of interlingual synonymy relations between reduplicative constructions of various subtypes may come from TURKISH and HUNGARIAN. In TURKISH 'very full' is expressed by partial reduplication: dop-dolu (dolu 'full') (Godel 1945: 6), and it is expressed by total reduplication in HUNGARIAN: telisteli (teli 'full'). Such evidence indicates that the occurrence of reduplication in a sentence or the occurrence of some particular subtype of it cannot be predicted from the meaning alone that the construction is to convey.

Secondly, search for a condition of type b) also fails: I simply have not found any distinctive semantic or form-related property present in just those sentences that include reduplication in various languages.

I know of two hypotheses of the type c)-hypotheses, that is, in terms of which reduplication patterns are predicted from structural properties of other intralingually cooccurring sentences — for which my limited investigation revealed no counterexamples. Both are of the subtype predicting the occurrence of one kind of reduplicative pattern from another kind (rather than predicting the occurrence of any kind or one kind of reduplication from the existence of some

other non-reduplicative structural properties of the language). One of them was proposed by Wilbur (1973:11f; cp. also Moravcsik 1977: Sec. 2.2). She suggests, in effect, that whether word-internal reduplication is initial, final, or medial may be predictable from the ordering of synonymous non-reduplicative segmental affixes in the language: if a prefix has a reduplicative synonym in the language, it will be initial reduplication; if a suffix has a reduplicative synonym in the language, it will be final reduplication; and if an infix has a reduplicative synonym in the language, it will be internal reduplication. Types of languages that this hypothesis excludes from the set of possible natural human languages are, for instance, one where nominal plurality is expressed by a suffix in some nouns and by the reduplication of initial CV sequence in others; or one where diminution is expressed either by a prefix or by a medial vowel duplication; etc. The other hypothesis serves to predict the existence of total reduplication in languages by proposing that all languages that have partial reduplication also have total reduplication. This hypothesis thus asserts that there is no language with partial reduplication only; although there may be both languages that have total reduplication only, and languages that have both total and partial reduplication, and also languages that have neither.[13]

Whereas I know of no possible statement in terms of which the occurrence of reduplication patterns in language could be predicted from the spatial and/or temporal properties of the language (statements, that is, about the historical origin or downfall of reduplication patterns), there are many remarks in the literature on reduplication about the correlation of such patterns and the particular use of the styles and registers in which they occur. Frequent occurrence of reduplication is pointed out in pidgins and creoles (Hall 1966: 65), and in baby talk (i.e. the register used by adults when talking to little

13 Whereas I have indeed found many examples of languages that have both partial and total reduplication (such as SUNDANESE or TURKISH) and also some that do have total reduplication but may not have partial (such as KANURI or MITLA ZAPOTEC), I am uncertain if there are any languages at all without any kind of reduplication. The meaning category that is most like to be universally expressible by reduplication is continued action, such as in ENGLISH He walked and walked and walked. Should this or some other meaning category be universally expressible through total reduplication, then the proposed typological statement about the dependence of partial reduplication on total reduplication in a language should be replaced by an unrestricted universal statement asserting the universal occurrence of total reduplication.

children) (for MANDARIN see Chao 1968: 202, for various languages see Gonda 1949: 174 and especially Ferguson 1966, 1974 and additional references there). Reduplication also occurs in artificially constructed "secret" languages such as what HUNGARIAN children use (e.g. the standard HUNGARIAN sentence Te vagy a hibás 'You are the culprit' is translated into this language as Teve vavagy ava hivibávás, the rule being that each vowel should be reduplicated with an inserted, immediately preceding v and pronounced immediately following its original) or the ones mentioned by Key (1965). Tentative hypotheses consistent with the facts known to me would be that all pidgins and creoles and all baby talk registers include some reduplicative patterns.

3. Conclusions

The domain of a structural study of language is delimitable either by meaning or by form. In other words, we may either hold a particular meaning, such as determination, constant, and ask how it is expressed in one or more languages; or we may hold a particular form pattern constant, such as agreement, and ask what meanings it is correlated with in one or more languages. In this present study, a particular form property has been chosen as criterial to the delimitation of the subject matter; in particular, intralinguistically cooccurring pairs of utterances were investigated whose form includes a meaning-differentiating quantitative form difference. Of such utterances pairs, we wanted to know, first of all, which subtypes of those form-related types that fall within the definition actually occur and which do not; what meanings are expressed by them and what meanings are not; and what are the conditions that determine the occurrence of these forms in a sentence. With respect to each of these three questions, an attempt was made to consider both the logically possible answers and also the actual facts, the result of which was a small set of generalizations about what form-related subtypes of reduplicative constructions do exist and which do not (although they could), and what conditions may be predictive of the occurrence of reduplicative patterns in an utterance and what conditions do not seem to be (although they could). Each of these generalizations serves to explain particular facts about reduplicative constructions. Each, however, is an explanandum itself: we want to know why just those answers are the true ones to our questions that have so far been found to be true, and not the others included in the logically possible sets of answers.

In principle, explanations to such generalizations within linguistics could be provided by grammatical rules, rule-applicational

principles, metaconstraints on rules and rule-applicational principles and on their intralingual cooccurrences, and by generalizations about the temporal, spatial and functional distribution of languages and styles. This paper, however, has been an informal study and no true explanations will even be attempted. In the closing paragraphs I would nonetheless like to point out some facts about non-reduplicative constructions that, informally speaking, appear relatable to some of our observations about reduplicative patterns and which may thus eventually be subsumed under the same explanatory generalizations that also explain properties of reduplicative constructions. There are three such remarks that I can make.

First, it was noted that phonological properties determining which part of a string be reduplicated in cases of partial reduplication are restricted to "canonical form"-type properties; e.g. consonantality, vowelhood, and linear precedence among the segments and boundaries. It is striking that in those scattered cases in languages where the temporal ordering of morphemes is (partly) determined by phonological properties (such as in TAGALOG or in CHINESE), the crucial property type is syllable number which appears related to CV sequencing.

Second, a tendency has been noted for languages to use reduplicative patterns — i.e. quantitative form differentiation — for the expression of meanings that have something to do with the quantity of referents. This kind of onomatopoeic use of a form device also appears to have parallels outside the domain of reduplicative constructions: temporal precedence of phrases, for instance, is used in some cases to parallel the temporal precedence of referent events (such as in John went home and had dinner, where it is understood that the first-mentioned event occurred first and the last-mentioned event occurred last), and quality of sound is often used to evoke the image of a similar referent sound (such as in animal calls; see also Ultan 1970).

Third, a strong tendency was noted for reduplicative constructions to express a more specific meaning that their unreduplicated counterparts. There is, in other words, in most cases a strong correlation between "increased phonological body" and "increased specificity of meaning." As pointed out to me by Merritt Ruhlen, this correlational tendency is not restricted to reduplicative constructions: (non-reduplicative) affixing or modifier-addition, for instance, are also generally correlated with increased semantic specificity (cp. Greenberg 1966).

I hope that the results of this study, limited and informal as it has been, will contribute to the understanding of the role of quantitative form differences in linguistic expression, and through it to the understanding of the relation of sound and meaning in language.

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Lexical Universals of Body-Part Terminology

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ABSTRACT

The lexical structure of human body part terms across languages reveals a limited set of patterns. This domain tends to be organized into a hierarchical structure with five (or occasionally six) levels, in which visually perceptible properties, especially properties of shape (e.g. round, and long) and of spatial location (e.g. upper body versus lower body) play a major role. Developmental data from children further support the premise that the universal principles of categorization and of nomenclature that determine this regularity of structure are largely the same as those operating in many other semantic domains, and derive from the ability of the human perceptual apparatus to deal with attributes like shape, size, and spatial orientation.

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