

# A Preliminary Study of the Semantics of Reduplication

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## Abstract

There is a universal component to the semantics of reduplication, which can be expressed as a radial category of concepts. I present this radial category, along with supporting evidence from a range of languages, and motivations for the links between the various senses. The structure of the radial graph gives rise to a number of predicted implicational universals. I also show that the radial category for reduplication shares an entire subsystem of concepts with the radial category for the Russian verbal prefix *raz-*. This sharing of subsystems of concepts across separate radial categories suggests that there is a single universal core conceptual network, with individual constructions covering different, possibly overlapping, regions.

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# 1 The Semantics of Reduplication

Reduplication expresses a wide and initially somewhat arbitrary-seeming array of meanings cross-linguistically. There is, however, a core set of meanings which recur so frequently and in so many languages as to demand explanation. Consider for example the English words *higgledy-piggledy*, *helter-skelter*, *pell-mell*, and *willy-nilly*. These reduplicatives share a semantic component of lack of control with reduplicatives from many other languages, e.g. Russian *tjap-ljap* (in a slipshod manner) and Bengali *ulat-palat* (helter-skelter).

Other senses which recur cross-linguistically include intensity, increased quantity, scattering, plurality, diversity, member of a class, repetition, continuation, more than appropriate, diminution, endearment, contempt, attenuation, augmentation, similarity, derogation, and habituality (Moravcsik 1978). In addition to these, Nomura & Kiyomi (1993) note disorder, carelessness, pretense, reciprocity, aimlessness, and attempt. The apparent incoherence of the set of meanings she was examining led Moravcsik (1978:325) to conclude:

Given that reduplication is neither the exclusive expression of any one meaning category in language, 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*. [ Emphasis added ]

In this work I hope to demonstrate that despite this bewildering diversity of meanings, some tentative explanatory and predictive generalizations can be made concerning the semantics of reduplication. I shall cast the various meanings expressed by reduplication as a *radial category* of concepts (Lakoff 1987). This construct allows one to express the relations between various senses of a linguistic unit, without assuming that there exists a single abstract meaning which covers all these senses and no others. In general, the construction of a radial category involves the identification of a prototypical central sense and motivations for links radiating out from that sense to various other senses, and then possibly further links from those senses on to yet more peripheral senses. In using this construct to express universal tendencies in the semantics of reduplication, I adopt the notion of a *universal radial category* from Pederson (1991) and Jurafsky (1993):

... all languages which share the common prototype will have a set of extensions from that prototype which is a coherent subset of the universally-sanctioned potential extensional structure. That is, while each language may have a unique extensional structure, each language's extensional structure will consist only of nodes and links which are adjacent in the universal network. No language will have nodes which are non-adjacent in

the universal network unless it also has (or has had) all the intermediate nodes as well. (Pederson 1991:2)

Here the nodes represent individual senses or meanings, and the links represent motivated conceptual relations between these meanings. The central prototype node is taken to represent not only the semantically central sense of the construction, but also the origin from which a history of semantic extension eventually led to the radial category as manifested synchronically (Pederson 1991; Nikiforidou 1991; Jurafsky 1993). This conception of a universal radial category lends some explanatory coherence to what might otherwise be a bafflingly heterogeneous set of meanings, and predicts implicational universals of the sort described above by Pederson.

The use of radial categories in explicating the semantics of reduplication makes this work very similar in spirit to the work of Nomura & Kiyomi (1993), which uses radial categories for similar purposes. However, this work does not restrict its attention to verbal reduplication, as theirs did, nor to instances of reduplication in which the unreduplicated stem is meaningful. On the other hand, their coverage of the world's language families is more thorough.

We shall see below that the radial category for reduplication shares an entire subsystem of concepts with the radial category for the Russian verbal prefix *raz-*. In other words, many of the same extended senses are expressed both by reduplication and by *raz-*, although reduplication and *raz-* have different central senses. This sharing of conceptual structure suggests the existence of a single interconnected conceptual network, with individual linguistic constructions rooted at different nodes, covering possibly overlapping subsets of nodes.

Figure 1 illustrates some of the various senses of reduplication, and their interconnections. The senses shown in ellipses are shared with *raz-*, while those shown in rectangles are not. The central sense, repetition, is shown in a double rectangle. The graph structure shown here divides quite cleanly into two halves: the subgraph on the left, which is not shared with *raz-*, and that on the right, almost all of which is. The links between senses are directed, indicating the direction in which I am proposing semantic extension took place. Traugott (1982) has argued for the unidirectionality of semantic change, in general from a concept concerning some state or object description to a concept concerning the speaker's attitude. As we shall see, some of the links shown here represent extensions of this sort, e.g. the link from small to contempt.

Evidence for the senses shown here, and motivation for the links between them, are presented below. Whenever possible, independent motivation for the various links is adduced. As this work is preliminary in nature, not all of the senses found by Moravcsik (1978) and Nomura & Kiyomi (1993) are covered here, although some new ones are, e.g. insect and bird. In addition, it may be the case that some of the particulars of the graph structure presented here are incorrect or incomplete. A more accurate model will have to await the incorporation of more data, hopefully including

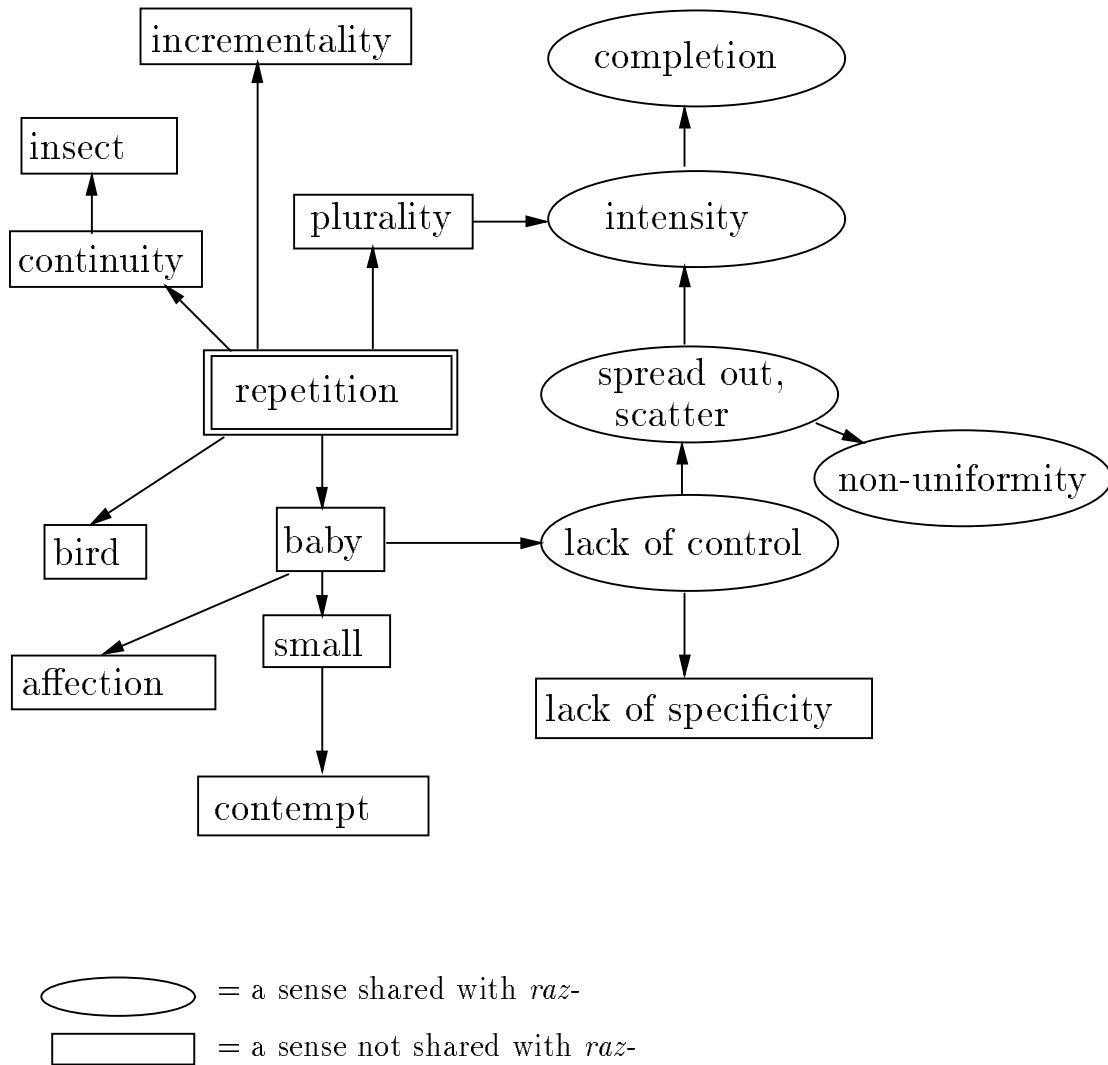


Figure 1: Radial category for the semantics of reduplication.

historical data indicating the course of semantic extension of reduplication.

## Repetition

English	<i>boogie-woogie</i>	
Mongolian	<i>bayn bayn</i>	often, constantly
Sundanese	<i>guguyon</i>	to jest repeatedly ( <i>guyon</i> - to jest)
Tzeltal	<i>-pikpik</i>	to touch it lightly repeatedly ( <i>-pik</i> - to touch it lightly)

I take repetition as the central sense of reduplication. In choosing this as the central sense, I differ from Nomura & Kiyomi (1993), who take an abstract notion of replication as the center, which then gives rise to repetition (and continuation) as “replication across time”, and plurality as “replication across participants”. I have chosen repetition as the center primarily because it, unlike either plurality or the more abstract replication, is directly iconically grounded in the repetition of the stem in the linguistic form.

## Plurality

The use of reduplication to express plurality is widespread, appearing in Dakota, Agta (Niepokuj 1991), Comox (Sapir 1915), the Australian language Djaru (Nomura & Kiyomi 1993), Papago, Samoan, and numerous other languages (Moravcsik 1978). There are several variations on this general theme, reduplication sometimes expressing simple nominal plurality, sometimes plurality of verbal subject, sometimes plurality of verbal object, etc.

Plurality is closely related to the central sense, repetition, in that the repetition of the stem in reduplication results directly in plurality of the number of times the stem has been uttered.

## Incrementality

Farsi	<i>kam kam</i>	gradually
Mongolian	<i>tus tus</i>	each separately, each individually ( <i>tus</i> - this, this same)
Pal. Arabic	<i>šway šway</i>	little by little ( <i>šway</i> - a little)
Tangale	<i>dodok-dodok</i>	one by one ( <i>dodok</i> - one)

Incrementality is related to repetition through a PART FOR WHOLE metonymy, a conceptual link used widely throughout language. An example of this is the English expression *fifteen head*, e.g. of cattle, in which the word *head*, a part of the individual cow, is used metonymically to refer to the cow as a whole. This metonymy is applicable here since incrementality, the notion of performing some action bit by bit, involves the *repeated* application of some subpart of the overall action, gradually

completing the action as a whole. Repetition is therefore a part of the semantics of incrementality, so the use of a form meaning repetition to also mean incrementality is well motivated metonymically.

## Continuity

The use of reduplication to express continuity has been noticed by many researchers. Reduplication expresses continuative aspect in Tagalog (French 1988) and Javanese (Niepokuj 1991). In addition, the continuative sense of reduplication is evident in Iraqi Arabic *ṭanṭan* (to buzz or hum), Hindi *kit kit* (monotonous droning on), and arguably English *dilly-dally*.

The use of reduplication in the sense of continuity is easily motivated from repetition using the well-established MULTIPLICITY TO MASS image schema transformation (Lakoff 1987:428). This transformation appears in many other aspects of language, such as the polysemy of English *over*: one can say, for example, *The guards were posted all over the hill*, implicitly viewing the multiple guards as a mass which covers the hill. While this transformation is often used in reference to physical mass and multiplicity, it is here analogously used in the temporal domain: continuity is the mass form of repetition.

## Insect

Azeri	<i>migmiga</i>	mosquito
Comox	<i>xwaxwadjōm</i>	fly
Syr. Neoaramaic	<i>‘ir‘ra</i>	wasp

A number of languages have reduplicative names for buzzing insects. An intuitively appealing motivation for this is simply that these insects make continuous sounds, and this association provides a conceptual link from continuity to insect. We shall see a number of links below which are similarly motivated.

## Bird

Atsugewi	<i>qasqasā</i>	crow
Comox	<i>xōpxōp</i>	humming-bird
English	<i>cuckoo</i>	
Spanish	<i>caracara</i>	
Tamil	<i>kaka</i>	crow

It is quite common for birds to have reduplicative names. The motivation for this is entirely analogous to the motivation for insects: birds often make repetitive sounds, providing a simple conceptual link from repetition to bird.

## Baby

English	<i>baby</i>	
French	<i>bébé</i>	baby
Tamil	<i>papa</i>	baby

A number of languages use reduplicative nouns for the concept baby. This is presumably the case because babies, like birds, often make repetitive sounds, yielding an associational link from repetition to baby.

In addition to this, and related to it, reduplication can be used to mark “baby register”, that register used when addressing babies. Consider for example English *teeny-weeny*, *Georgie-Porgie*, and Farsi *rizeh-mizeh* (teeny-weeny, *rizeh* - little). There is also the related use of reduplication to express affection, noted by Moravcsik (1978) and exemplified by Palestinian Arabic *Dandūn*, the hypocoristic form of the name Dina. This extension from baby to affection is the sort of unidirectional semantic spread for which Traugott argues, from concrete reference to an expression of the speaker’s attitude.

## Small

Comox	<i>djidjidis</i>	little tooth ( <i>djidis</i> - tooth)
English	<i>tidbit</i>	
English	<i>nitty-gritty</i>	
Farsi	<i>rizeh-mizeh</i>	teeny-weeny ( <i>rizeh</i> - little)

The use of reduplication to express diminution, i.e. the concept small, is fairly widespread, and is noted by both Moravcsik (1978) and Niepokuj (1991). The link from baby to small is motivated by the perceptually very salient fact that babies are small, and may well be the most conceptually salient class of small things. The use of linguistic forms meaning baby to also mean small is illustrated in such English sentences as *Look, a baby airplane*, meaning a small airplane.

## Contempt

Bengali	<i>bhethor-shethor</i>	in, but that is insignificant ( <i>bhethor</i> - in)
Dutch	<i>mik-mak</i>	worthless collection
English	<i>claptrap</i>	
English	<i>hillbilly</i>	
German	<i>Pille-palle</i>	insignificant things
Yiddish	<i>layfen-shmayfen</i>	running is beside the point ( <i>layfen</i> - to run)

A number of languages use reduplication to express contempt, insignificance, or irrelevance. This can be motivated via the metaphorical conceptual link POWER

AND IMPORTANCE IS SIZE, linking small to contempt (Jurafsky 1993). Jurafsky, in his work on the semantics of the diminutive, points out that this metaphor can be seen in the semantics of the English *-y* suffix: while often used for diminution (e.g. *doggy*), *-y* can also express derogation or contempt (e.g. *limey*, a derogatory term for an Englishman). This extension, like the extension from baby to affection, is an instance of directed semantic spread from the concretely referential to the attitudinal.

### Lack of Control

Bengali	<i>ulat-palat</i>	helter-skelter
Danish	<i>misk-mask</i>	mess, disorganized jumble
Dutch	<i>schelle-belle</i>	overly independent young woman
English	<i>helter-skelter</i>	
Farsi	<i>goti-poti</i>	pell-mell
German	<i>Remmidemmi</i>	noisy event, e.g. party
Pal. Arabic	<i>harj w marj</i>	confusion, hubbub
Russian	<i>tjap-ljap</i>	anyhow, in a slipshod manner

Lack of control and disorder are expressed by reduplication in a number of languages; in addition to the ones shown above, Nomura & Kiyomi (1993) cite examples from the Bantu languages Southern Sotho, Luba-Shaba, and Ndengese. A plausible motivation for this phenomenon springs from the fact that babies are often out of control, doing things we wish they wouldn't. This gives us a simple associative link from baby to lack of control.

### Spread Out / Scatter

Japanese	<i>tokorodokoro</i>	scattered
Mongolian	<i>aravgar-saravgar</i>	spread out
Tamil	<i>inge-ange</i>	here and there
Uzbek	<i>alang-jalang</i>	looking around

The notion of scattering or spreading out is also often expressed by reduplication. Motivation for this can be found in the fact that lack of control can cause scattering or spreading out. The image of an out-of-control child throwing food around may be helpful in making this association concrete. This link is also highlighted in the colloquial American English sentence *He's a very together person*, which uses a word whose central sense is the opposite of dispersion or distension to express self-control, i.e. the opposite of lack of control. The English word *scatterbrained* makes use of the same mapping. In these English examples the extension operates in the other direction, in that they use lexemes indicating scattering (or lack thereof) to denote control (or lack thereof), while in reduplication the directionality is reversed. They do provide independent motivation for the existence of the link, however.



There is an interesting phenomenon in Palestinian Arabic related to this sense of reduplication: many small sprinklable and hence scatterable foods have reduplicative names, e.g. pepper (*filfil*), sesame (*simsim*), mint (*na'na'*), and crumbs (*fatāfīt*). While apricot (*mišmiš*) does not seem to fit the general pattern at first, it may be significant that in the Levant apricot is often beaten out flat into sheets, dried, and sold in that form. This gives us an obvious connection to the sense of spreading.

## Lack of Specificity

Farsi	<i>hulu-mulu</i>	peaches and such ( <i>hulu</i> - peach)
Latin	<i>quisquis</i>	whoever ( <i>quis</i> - who)
Pal. Arabic	<i>kaza-kaza</i>	whatchamacallit
Sundanese	<i>sahasaha</i>	whoever ( <i>saha</i> - who)

Lack of specificity is expressed by reduplication in a range of languages, including those shown above, Khasi and Turkish (Moravcsik 1978), Hindi, and Uzbek. The motivation for this comes from lack of control, in that these examples can be seen as denoting lack of control in referential specificity, a sort of sloppy uncontrolled scattering motion in semantic space, picking out a cluster of closely related meanings rather than just a single one. There appears to be an interesting areal phenomenon encompassing Turkish, Uzbek, Farsi, and Hindi, in which the use of partial reduplication with the initial consonant of the stem altered to a labial in the second occurrence denotes lack of specificity. Consider for example Turkish *kitap-mitap* (books and such, *kitap* - book), Uzbek *nɔn-pɔn* (bread and such, *nɔn* - bread), Farsi *hulu-mulu* (peaches and such, *hulu* - peach), and Hindi *kitab-vitab* (books and such, *kitab* - book).

## Non-Uniformity

English	<i>hodge-podge</i>	
German	<i>zick-zack</i>	zig-zag
Kurd. Neoaramaic	<i>range-range</i>	in several colors ( <i>range</i> - color)
Tamil	<i>ippo-appo</i>	now and then

Non-uniformity is sometimes expressed by reduplication, as shown by the examples above. The primary motivation for this is the metaphor STATES ARE LOCATIONS, which transforms physical scatteredness, or non-uniformity of location, to non-uniformity of state, taking us from scatter to non-uniformity. This widely-used metaphor can also be seen in such expressions as *They're moving toward reconciliation*, in which progress toward the abstract social state of reconciliation is expressed in terms of physical motion towards a goal. In addition to this motivation, one could imagine a link from plurality to non-uniformity, in that non-uniformity implies a plurality of different states.

It is interesting to note that the sense of non-uniformity is often expressed by non-uniformity of form, i.e. by partial rather than complete reduplication. Many English reduplicatives with this sense seem to exhibit variance in form between the first and second instantiations of the stem e.g. *mish-mash*, *hodge-podge*, *knick-knacks*, *bric-a-brac*, *zig-zag*. This need not be the case in all languages of course; Neoramaic *range-range* is a counterexample.

## Intensity

English	<i>a whole whole lot</i>	
Hindi	<i>lal-lal</i>	very red ( <i>lal</i> - red)
Mongolian	<i>aray čaray</i>	just barely ( <i>aray</i> - barely)
Mongolian	<i>öčnööñ töčnööñ</i>	a great deal

Reduplication is often used to express intensity. In addition to the examples listed above, this sense appears in Dakota, Turkish, Dagur, Perak Malay, Tangale (Niepokuj 1991), Sundanese, and Thai (Moravcsik 1978). There are at least two possible sources of motivation for this use. One of these is a link from plurality, highlighted by the English expressions *many thanks* (Moravcsik 1978) and *a thousand pardons*, in which quantity is used to express intensity. The other is a link from spread out, or perhaps more accurately from the result of spreading out, from enlargement. For example, we can see from the Russian expression *bol'shoe spasibo* (literally, big thank-you) that size can also be used to express intensity.

## Completion

Completion is also sometimes expressed by reduplication. An example of this from the Bantu language Ewondo is *bɔ-bɔ* (to make/do completely), where *bɔ* means to make or do (Nomura & Kiyomi 1993). In addition, Moravcsik (1978) notes that reduplication marks the perfect in Sanskrit, Greek, Latin, and Gothic. A plausible motivation for the use of reduplication in this sense stems from intensity: performing an action intensely can lead to completion of the overall action. For example, working intensely on a research project will tend to result in completion of the project.

## Discussion

There are a number of senses of reduplication I have not incorporated into the radial category presented here. Some are extremely rare, and are probably best viewed as aberrations, e.g. the use of nominal reduplication to express third person singular possession in Tarok (Niepokuj 1991:10). Others, such as the concept game are apparently fairly widespread: consider English *ping-pong*, *pall-mall*, *tic-tac-toe*, Basque (and now Spanish and English) *jai-alai*, Hindi *holi-koli*, and *šeš-beš*, a Levantine vari-

ety of backgammon.<sup>1</sup> Senses such as this one, and the numerous others already noted by other researchers, are common enough that their inclusion in the radial category would be required for a more complete account of the semantics of reduplication. Another serious flaw in the work as it currently stands is that its coverage of the world's languages is quite limited.

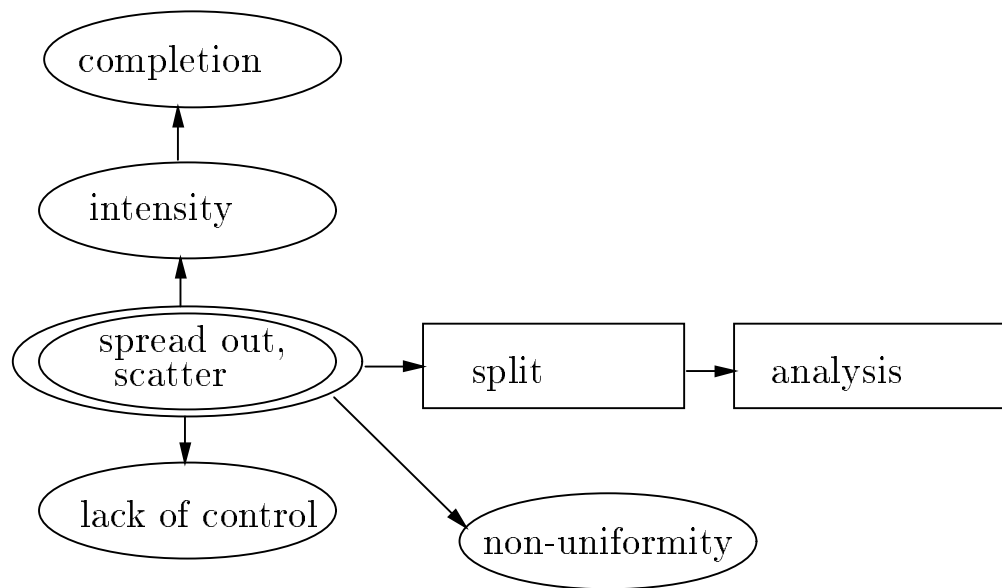
Despite these and no doubt a number of other shortcomings, I hope that this analysis provides some explanatory insight into the polysemous structure of reduplication, and helps to make sense of an initially rather random-seeming welter of data. In many cases, the conceptual links between senses can be independently motivated by non-reduplicative data, and in some cases they are in keeping with the previously observed tendency of unidirectional semantic extension from the concrete to the attitudinal. Perhaps the most satisfying aspect of a model of this sort, however, is that it makes concrete and falsifiable predictions. Following Pederson (1991), if we view the universal radial category for reduplication as not only an indication of universally sanctioned synchronic structure, but also one of historical semantic development, predictions arise from the structure of the graph itself. Specifically, if we view the graph as a trace of semantic extension over time, we would predict that any language in which reduplication expresses some peripheral sense would also have, or at some time have had, reduplicative terms expressing the central sense of repetition, along with all intervening senses on a path from the center to the peripheral node in question. For example, we would predict that if a language uses reduplication to express spread out, it would also use, or have used, reduplication to express repetition, baby (presumably including baby register), and lack of control, as these concepts lie on the only path from the central sense repetition to spread out. While the work is still somewhat speculative in nature, the process of trying to falsify the predictions generated by the model as it stands should prove helpful in constructing a more accurate model.

## 2 The Semantics of the Russian Verbal Prefix *raz-*

The radial category for reduplication shares a number of interconnected concepts with the radial category for the Russian verbal prefix *raz-*. This can be seen from Figure 2, which illustrates some of the more frequently attested senses of *raz-*, and the links between them. We have already seen most of these from our look at the semantics of reduplication. In particular, the senses shown in ellipses are shared with reduplication, while those shown in rectangles are not. Roughly the same radial

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<sup>1</sup>This last example is particularly intriguing. After throwing the dice it is customary to call out the numbers that appear, and in the Arabophone Levant this is done in Farsi for almost all pairs of numbers. A notable exception is the pair six-five. In this case, the six is called out in Farsi (*šeš*) but the five is called out in Turkish (*beš*), and the game is named after this combination. It is at least possible that this departure from the use of Farsi alone is the result of coercing the name of the game into a reduplicative template, done presumably because of some as-yet-undetermined conceptual link indicating that games are appropriately named using reduplication.




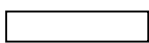
 = a sense shared with reduplication  
 = a sense not shared with reduplication

Figure 2: Radial category for the Russian verbal prefix *raz-*.

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category of senses seems to hold for the use of *raz-* in some other Slavic languages. Intriguingly, Atanasova *et al.* (1992) list “harum-scarum” as the meaning of Bulgarian *razvej-prax*, highlighting the semantic overlap between *raz-* and reduplication with which we are concerned here.

This sharing of structure is significant since it suggests that the concepts and the links between them are not peculiar to reduplication, or to *raz-*, but are rather part of a universal core conceptual network, subsections of which may be expressed by various linguistic constructs. The idea then is that the radial categories for reduplication and *raz-* simply give us snapshots of subregions within a much larger conceptual network, and the radial category overlap gives us an indication of how the snapshots fit together.

I take the central sense of *raz-* to be spread out, scatter. From here, there are links to the non-shared senses of split and analysis, as well as conceptual links we have already discussed leading to intensity, completion, non-uniformity, and lack of control. In all cases except one, these links are of the same directionality as the corresponding links we saw in the radial category for reduplication. The exception is the link from spread out, scatter to lack of control. I take the fact that the same link appears with two directionalities in the two radial graphs as evidence of an underlying *bidirectionally sanctioned* link between the two concepts, that is, a link in the overall conceptual network which will allow semantic extension to travel across it in either direction. It is critical to draw a distinction between the directionality of semantic extension from one concept to another *as posited for a particular linguistic form such as reduplication*, and the directionality which that link in the overall conceptual network may assume in general. Traugott’s work suggests that some links will be unidirectional not only from the point of view of radial categories for individual linguistic forms, but in the overall conceptual network generally. Others however, such as the one in question here, may be potentially bidirectional.

I present below a number of examples of the use of *raz-* in its various senses. Since all links except the ones from spread out to split and from split to analysis have already been discussed, I shall motivate only these two.

## Spread Out / Scatter

<i>razgonjat'</i>	to disperse
<i>razmetat'</i>	to scatter (s.t.); to spread (s.t.) out
<i>raznosit'sja</i>	to spread
<i>raskidyvat'</i>	to scatter; spread
<i>rasprostranjat'</i>	to spread, distribute
<i>rasseivat'</i>	to disperse, scatter
<i>rassredotochivat'</i>	to disperse
<i>rasstilat'</i>	to spread

## Lack of Control

<i>razbushevat'sja</i>	to rage, get violent, start lashing out
<i>razvolnovat'</i>	to upset (s.o.)
<i>razlazhivat'sja</i>	to go wrong
<i>razmechat'sja</i>	to be lost in dreams
<i>razozlit'sja</i>	to get furious
<i>razrydat'sja</i>	to burst into sobs
<i>raskapriznichat'sja</i>	to become very naughty, act up
<i>rasserdit'</i>	to annoy, to make angry

## Split

<i>razgorazhivat'</i>	to partition (s.t.)
<i>razgryzat'</i>	to bite (s.t.) in two
<i>razdvaivat'</i>	to divide (s.t.) into two, split in two
<i>razdeljat'sja</i>	to break up, split up
<i>razluchat'</i>	to separate
<i>raznimat'</i>	to part; to separate

Split can be motivated by viewing it as a special case of scatter: when the number of objects to be scattered is two, to scatter is to split or separate.

## Analysis

<i>razgljadyvat'</i>	to examine
<i>razdumyvat'</i>	to think, ponder
<i>razlichat'</i>	to make out, discern; to distinguish between
<i>rassledovat'</i>	to investigate, inquire into
<i>rassmatrivat'</i>	to consider, examine
<i>rassuzhdat'</i>	to reason
<i>rasschityvat'</i>	to calculate

These words appear to have in common a semantic element of analysis. This can be motivated from split through the metaphor MENTAL OBJECTS ARE PHYSICAL OBJECTS, evidenced in the English phrase *tossing a few ideas around*. To analyze, then, is to separate and be able to distinguish between mental objects, much as to split is to separate physical objects.

## Non-Uniformity

<i>razdumat'</i>	to change one's mind
<i>razlichat'sja</i>	to differ, be distinguished
<i>raznit'sja</i>	to differ
<i>raznoobrazit'</i>	to diversify
<i>raskhodit'sja</i>	to disagree, differ

## Intensity

<i>razbalivat'sja</i>	to be or become properly ill
<i>razobidet'sja</i>	to take great offense ( <i>obidet'sja</i> - to be offended)
<i>raskaljat'</i>	to make scorching hot
<i>rasshalit'sja</i>	to get very playful

## Completion

<i>raskupat'</i>	to buy up
<i>raspivat'</i>	to empty a bottle drinking
<i>razgadyvat'</i>	to solve; to get to the bottom of
<i>razljubit'</i>	to stop loving
<i>razrjazhat'sja</i>	to run down, be used up
<i>razygryvat'</i>	to bring to a conclusion

In addition to the examples of completion shown above, *raz-* can be used as a perfective marker; e.g. *rasserdit'sja* is the perfective form of *serdit'sja* (to become angry). It is presumably noncoincidental that this verb has a semantics involving lack of control, another sense of *raz-*. I have not yet determined whether all Russian verbs which take *raz-* as a perfective marker have a base semantics implicating one of the senses listed above.

## 3 Conclusions

The striking cross-linguistic regularities which appear in the semantics of reduplication can be explained through the construction of a universal radial category of concepts, following Pederson (1991). This radial category may be interpreted as indicating not only synchronic relations between the various senses of reduplication, but also a possible historical trace of semantic extension from the central sense of repetition out to senses whose motivation is less obvious. Importantly, it is not the case that each language must have each sense shown in the graph; however, the graph does predict which senses enable extension to which others. Thus, the model will pre-

dict that any language which uses reduplication to express a peripheral sense will also use reduplication (or have used it at some time in its past) to express all senses on a path from the central sense to the sense in question.

In general, this work will have been successful to the extent that it lends some explanatory coherence to what would otherwise be a rather haphazard-seeming set of cross-linguistic regularities.

Interestingly, the semantics of reduplication and the semantics of the Russian verbal prefix *raz-* overlap to a surprising degree: an entire subsystem of concepts and links is shared. The significance of this shared conceptual structure is that it suggests the existence of a single unified conceptual network, such that the radial categories for reduplication and *raz-* are simply overlapping subregions in this larger network.

This study has been exploratory and preliminary in nature; much remains to be done. To buttress claims of universality, more languages must be examined, from different language families. Currently unattached senses of reduplication such as game must be incorporated into the radial category. And perhaps most importantly, the predictions implicitly made by the graph structure of the universal radial category for reduplication must be empirically tested. I leave these tasks for future research.

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Tzeltal data from Berlin (1963), seen in (Moravcsik 1978); Tangale data from Kidida (1985), seen in (Niepokuj 1991); Sundanese data from Robins (1959); Azeri data from Haneda & Ganjelu (1979); French data from Mansion (1991); Iraqi Arabic data from Erwin (1963); Mongolian data from Bosson (1964); Japanese data from Matsuda (1974); Kurdish Neoaramaic data from Krotkoff (1982); Latin data from Glare (1983); Syrian Neoaramaic data from Spitaler (1938); Turkish data from Moravcsik (1978); Comox data from Sapir (1915); Russian data from Taube *et al.* (1987).

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