

# Preface:

## What are replicative processes?

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### 1. Introduction

The present volume investigates replicative processes in language. Intuitively, we can conceive of replication as a kind of copying, with varying degrees of abstractness of the information that is reproduced. For the purposes of this volume, we identify three different kinds of replicative processes. First, there are replicative processes that affect entire ‘linguistic objects’ in the relevant domain, that is, (lexical or functional) categories in syntax, segments in phonology and morphemes in morphology. Second, replicative processes can affect more abstract objects, namely features, be they morphosyntactic or phonological. Finally, there is replication of even more abstract material such as relations, requirements or functions. As shown in figure 1, these processes fall on a scale of abstractness with regard to the material affected.

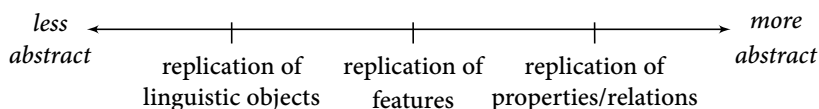


Figure 1: Degrees of replication in natural language

Concrete examples of each of these replication types will be discussed in what follows. However, while the present volume discusses numerous examples

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of replicative processes in the languages of the world, replication is also a ubiquitous phenomenon in many other natural systems, apart from language.

## 2. Replication in non-linguistic natural systems

In addition to linguistics, replication plays an important role in a number of other scientific fields, including biology, chemistry, computer science, (nano)engineering, mathematics, and sociology/anthropology. What is mainly of interest there is what is termed *self-replication*, the property of a system to use some process to create a copy of itself or part of itself. The most prominent example of this is the replication of the deoxyribonucleic acid (DNA) in the cell's nucleus during mitosis. DNA is made up of two complementary strands each consisting of a phosphate backbone chain with a sequence of four different types of bases pointing inwards. The bases are matched with those of the other strand where adenine pairs with thymine and guanine pairs with cytosine. Replication is achieved by splitting the two strands and synthesizing the missing complementary bases for each one of them thereby creating two complete copies of the original DNA. Thus, each strand encodes information about and serves as a template for replicating its respective complementary strand (figure 2).

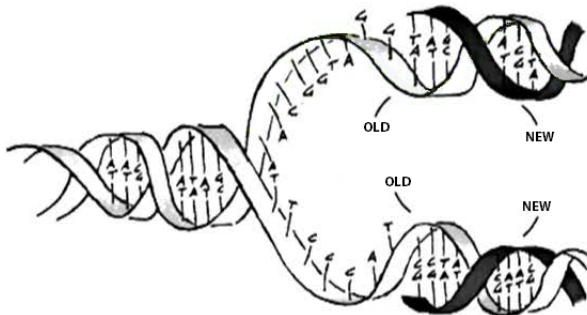


Figure 2: Replication of DNA<sup>1</sup>

Some less well-known examples include self-replicating molecular systems (chemistry), quines, i.e. self-replicating computer programs (computer science), or setisets (mathematics).

<sup>1</sup>Modified: [https://s3.amazonaws.com/ck12bg.ck12.org/curriculum/107576/thumb\\_540\\_50.jpg](https://s3.amazonaws.com/ck12bg.ck12.org/curriculum/107576/thumb_540_50.jpg)

A self-replicating molecular system is a chemical reaction that catalyses itself (auto catalysis). For example, condensation of the aldehyde **1** and the amine **2** yields the Schiff base **3** which by means of electro-magnetic interaction arranges still available molecules of **1** and **2** such that their positioning facilitates the formation of a bond between them (figure 3).

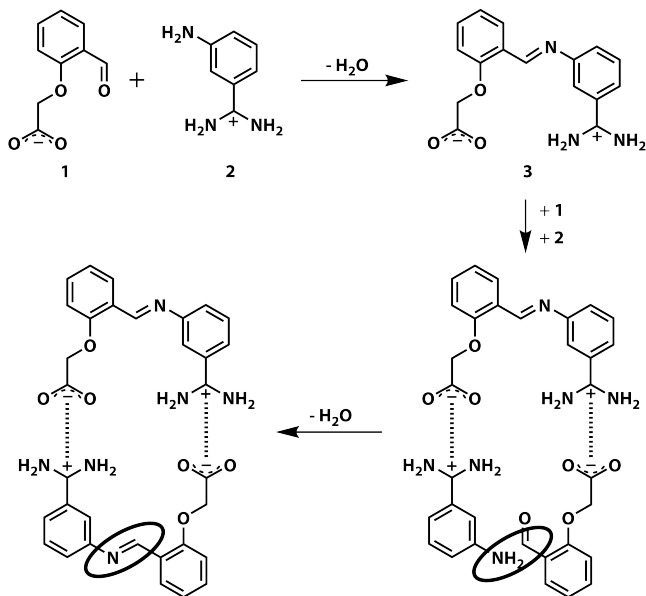


Figure 3: A self-replicating molecular system

A self-replicating computer program, known as a ‘quine’, is one whose only function is to output its own code upon execution. An example of such a program, formulated in Python, is given in (1).

(1) *Python 2 code for a quine*<sup>2</sup>

```
a="a=%c%s%c;print a%%(34,a,34)";print a%(34,a,34)
```

The print command in (1) tells python to display the value of the previously defined variable called a, replacing the so-called *format codes* (which always begin with the % operator) with the values provided in brackets. Here, the value of a is a string which contains a mixture of ordinary text and three format

<sup>2</sup>From [https://de.wikipedia.org/wiki/Quine\\_\(Computerprogramm\)](https://de.wikipedia.org/wiki/Quine_(Computerprogramm)), accessed 15.03.2016

codes, %c, %s and another %c,<sup>3</sup> which have to be replaced with 34, a and 34, respectively. The %c code can be replaced by a single character corresponding to the ASCII code provided. Here, this results in %c being replaced with the double quotation mark " (ASCII code 34). The %s code converts the value it has been assigned (a in (1)) into a string. Here, this will result in a=%c%s%c; print a%%(34, a, 34) being displayed (with no replacements, since the format codes are now treated as ordinary strings). With this explanation in place, the readers should be able to check by themselves that executing print a%(34, a, 34) results in the entire string given in (1) being displayed.

In mathematics, self-replication can be found in geometry in so-called self-tiling tile sets, or 'setisets' for short. These are sets of  $n$  shapes that can be put together in  $n$  different ways to form larger copies of themselves. An example of a perfect setiset of order four, one in which each of the four shapes is different from the others, is given in (2).

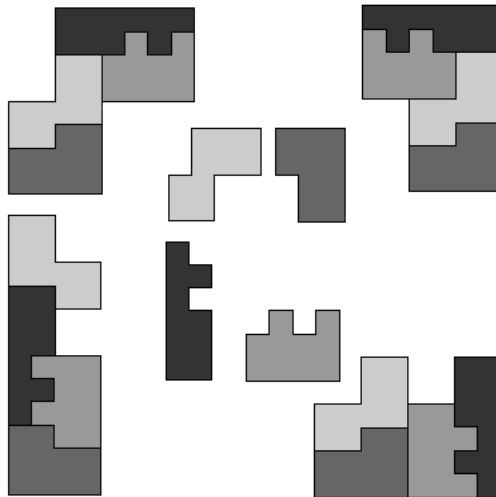


Figure 4: A perfect self-tiling tile set of order  $4^4$

<sup>3</sup>The repeated percent sign simply indicates that the symbol is not to be treated as an operator, but rather as the % character; this is equivalent to writing \% in L<sup>A</sup>T<sub>E</sub>X to print the percent character.

<sup>4</sup>Modified from [http://www.leesallows.com/files/stts%20order-4\(16\).png](http://www.leesallows.com/files/stts%20order-4(16).png) under the Creative Commons license.

What sets these examples apart from linguistic replication is that they do not involve replication of particularly abstract material. As figure 1 shows, replicative processes in language affect linguistic elements of varying degrees of abstractness. In the following sections, we discuss examples of each.

### 3. Replication of linguistic objects

#### 3.1. Phonology

Overt replication in phonology comprises a number of mostly local processes in which segments are copied or split to satisfy some higher structural constraint. An example of copying can be found in Selayarese, an Austronesian language spoken on the island of Selayar in Indonesia, where certain segments, such as [r], [l] or [s], are not allowed in the syllable coda. To salvage these consonants, Selayarese resorts to echo epenthesis. As shown in (2), the inserted vowel is an identical copy of the last vowel of the stem.

- (2) *Echo epenthesis in Selayarese (Mithun & Basri 1986: 238)*
- |             |          |                    |          |
|-------------|----------|--------------------|----------|
| ['lambere]  | 'long'   | cf. [lam'ber-aŋ]   | 'longer' |
| ['luara]    | 'wide'   | cf. [lu'ar-aŋ]     | 'wider'  |
| [aʔ'botoro] | 'gamble' | cf. [paʔbo'tor-aŋ] | 'casino' |

Another phonological process that could arguably be analysed as segmental copying is gemination. The process can be illustrated with the so-called *raddoppiamento fonosintattico*, a well-known sandhi phenomenon found in Central and Southern Italy, whereby word-initial consonants are lengthened after words that end in a stressed open syllable (as well as after a limited set of functional words), as shown in (3). It must be said, however, that the result of *raddoppiamento fonosintattico* is a long, rather than rearticulated, consonant, and that the process is usually viewed as an addition of a weight unit, rather than as copying.

- (3) *Raddoppiamento sintattico in Italian (Loporcaro 1997)*
- |              |                  |                  |
|--------------|------------------|------------------|
| farò bene    | [farəb'bene]     | 'I will do well' |
| cf. bene     | ['bene]          | 'well'           |
| città triste | [tʃittat'triste] | 'sad city'       |
| cf. triste   | ['triste]        | 'sad'            |
| però mangia  | [perəm'mandʒa]   | 'but eat'        |
| cf. mangia   | ['mandʒa]        | 'eat'            |

A different phonological phenomenon that could be seen as replication is the creation of glide-vowel sequences to resolve vowel hiatus. In Faroese, a sequence of two vowels is only allowed when both vowels are non-high. When this is not the case, the sequence is repaired by epenthesis of a glide homorganic with one of the high vowels, as illustrated in (4). One way to analyse this is to say that the high vowel splits into two featurally identical segments. The ‘copy’ of the segment that occupies the onset position is realized as a glide homorganic with the adjacent high vowel.

- (4) *Glide insertion next to high vowels in Faroese (Staroverov 2014)*
- |          |          |                 |                |             |
|----------|----------|-----------------|----------------|-------------|
| /si:-ʊr/ | [si:ʝʊr] | ‘custom’ (nom.) | cf. [si:lɛsʊr] | ‘immoral’   |
| /su:-ʊr/ | [su:ʷʊr] | ‘south’ (nom.)  | cf. [su:ri]    | ‘southerly’ |
| /kle:-i/ | [kle:ji] | ‘pleasure’      | cf. [kle:a]    | ‘please’    |

### 3.2. Morphology

The most obvious case of replication of linguistic objects in morphology is reduplication. Reduplication denotes a process whereby a phonological copy of material already present in a base form expresses some morphosyntactic property of that form. Thus, in Indonesian, plurality is expressed by copying the whole base of a noun (5).

- (5) *Full reduplication in Indonesian plurals (Sneddon 1996: 17f.)*
- |           |                |                     |                 |
|-----------|----------------|---------------------|-----------------|
| rumah     | ‘house’        | rumah-rumah         | ‘houses’        |
| singkatan | ‘abbreviation’ | singkatan-singkatan | ‘abbreviations’ |
| perubahan | ‘change’       | perubahan-perubahan | ‘changes’       |

Reduplication can be full, as in the above example, or partial. In the latter case, only a part of the base form is repeated. In Hebrew, for example, diminution of adjectives is expressed by copying only the last three segments of the base (6).

- (6) *Partial reduplication in Hebrew diminution (Levkovych 2007)*
- |        |          |            |             |
|--------|----------|------------|-------------|
| tsahov | ‘yellow’ | tsahav-hav | ‘yellowish’ |
| matok  | ‘sweet’  | metak-tak  | ‘sweetish’  |
| katan  | ‘small’  | katan-tan  | ‘tiny’      |

Furthermore, reduplication may affect different parts of speech such as nouns (5) and adjectives (6), but also verbs (7).

- (7) *Partial reduplication in Yaqui habitual* (Harley & Amarillas 2003: 9)
- |        |            |             |                         |
|--------|------------|-------------|-------------------------|
| chakte | 'to drip'  | chak-chakte | 'to drip (habitually)'  |
| kitte  | 'to knead' | kit-kitte   | 'to knead (habitually)' |
| atbwa  | 'to laugh' | at-atbwa    | 'to laugh (habitually)' |

It occurs in inflectional and derivational morphology and may denote a range of meanings including intensity, plurality, distributivity, attenuation, tense, aspect, case, and indefiniteness (cf. Rubino 2013).

Although reduplication usually replicates overt material of the base there may be discrepancies between base and reduplicant. An example is provided by Kikuyu diminution where a high tone in the base is not replicated (8).

- (8) *Toneless reduplication in Kikuyu diminution* (Peng 1993: 18)
- |      |            |           |                     |
|------|------------|-----------|---------------------|
| irá  | 'to scorn' | ira-irá   | 'to scorn a little' |
| ciná | 'to burn'  | cina-ciná | 'to burn a little'  |
| korá | 'to grow'  | kora-korá | 'to grow a little'  |

Interestingly, there may also be differences between base and reduplicant with respect to phonological processes. Thus, a process that usually applies in the base may fail to do so in the reduplicant, a case of underapplication. A process that does not apply in the base (or only applies in a restricted fashion) may nonetheless apply in the reduplicant, a case of overapplication. An illustration of the latter is provided by so-called backcopying of Nasal Spread in Malay (McCarthy & Prince 1995, Raimy 2000). In Malay, nasality iteratively spreads rightwards onto vowels from nasal segments (ʔ, h, w, y being transparent, oral consonants being opaque). In reduplicated forms, however, reduplicated vowels become nasalised even though they are not preceded by a nasal segment (marked in bold in (9)).

- (9) *Backcopying of Nasal Spread in Malay reduplicated forms*
- |        |                      |                          |
|--------|----------------------|--------------------------|
| /hamə/ | [hām̩- <b>hām̩</b> ] | 'germ/germs'             |
| /waŋi/ | [wāŋi- <b>wāŋi</b> ] | 'fragrant/(intensified)' |
| /aŋan/ | [āŋān- <b>āŋān</b> ] | 'reverie/ambition'       |
| /aŋen/ | [āŋēn- <b>āŋēn</b> ] | 'wind/unconfirmed news'  |

In those reduplicants, Nasal Spread has apparently applied in a different fashion, namely from right to left. Example (9) is therefore a case of overapplication in reduplication.

### 3.3. Syntax

Some of the most striking cases of replication in syntax take the form of ‘copying’ or ‘doubling’ constructions. One pertinent example that is discussed in this volume is predicate doubling such as (10).

(10) *Predicate fronting* (Vicente 2009: 159, Landau 2006: 32)

- a. *Salir*, Juan ha *salido* con Maria  
go.out.INF Juan has gone.out with Maria  
‘As for going out, Juan has gone out with Maria.’ (Spanish)
- b. *Lirkod*, Gil lo *yirkod* baxayim  
to.dance Gil not will.dance in.the.life  
‘As for dancing, Gil will never dance.’ (Hebrew)

In such examples, the verb appears in a fronted position with a lower copy also pronounced. Another example of this kind of replication is so-called ‘wh-copying’ (11). In these constructions, a wh-phrase appears in multiple positions in the clause.

(11) *Wh-copying* (McDaniel 1986: 182, Fanselow & Mahajan 2000: 220)

- a. *Kas* misline *kas* o Demiri dikhlâ?  
who you.think who the Demiri saw  
‘Who do you think Demiri saw?’ (Romani)
- b. *Wie* glaubst du, *wie* sie das gemacht hat?  
how believe you, how she that done has  
‘How do you think she did that?’ (German)

There are also examples of doubling inside the DP, for example determiner doubling in Swiss German (12) and the so-called ‘construct state’ in Hebrew (13). In both cases, the determiner or definiteness marking is realized twice.

(12) *Determiner doubling in Swiss German* (Barbiers 2008: 5)

- a. *ä ganz ä liebi* Frau  
a really a lovely woman  
‘a really lovely woman’
- b. *de vil de schöner* Garten  
the much the nicer garden  
‘the much nicer garden’



(13) 'Construct state' in Hebrew (Ritter 1988: 916, Danon 2008: 875)

- a. beyt *ha-mora ha-yafa*  
house the-teacher the-pretty  
'the pretty teacher's house'
- b. *ha-tmunot ha-xadašot*  
the-pictures the-new  
'the new pictures'

These are some of the clearest cases of doubling, in which the form of the replicated material is consistent. There are, of course, other well-known cases of doubling, for example clitic left/right dislocation or resumption, however these arguably involve replication at the level of features. As with phonology and morphology, the distinction between replication of objects and features is not always clear-cut, since many analyses derive the former from the latter.

#### 4. Replication of linguistic features

##### 4.1. Phonology

Possibly the most obvious and convincing cases of featural replication in phonology are assimilation and harmony processes. An example of segmental assimilation comes again from Selayarese, where a stem-final nasal assimilates to a following consonant in reduplicated forms, as shown in (14). The nasal retains its manner of articulation but its place features become identical to those of the following segment. This can be analysed as spreading but also as copying of these features.

(14) *Nasal place assimilation in Selayarese* (Mithun & Basri 1986: 245)

[bambaj]	'hot'	[bamb <b>mb</b> ambaj]	'sort of hot'
[dodon]	'sick'	[dodon <b>nd</b> odon]	'sort of sick'
[jaɲaj]	'chicken'	[jaɲa <b>n</b> jaɲaj]	'bird'

A similar analysis can be applied to cases of vowel harmony, where vowels in a certain domain are required to be identical in terms of some property, such as tongue position or lip rounding. One example can be found in Akan, a Kwa language of the Niger-Congo family, where the prefix vowels take on the [ $\pm$ ATR] ('Advanced Tongue Root') value from the initial vowel of the stem, as shown in (15).

(15) *[ATR] harmony in Akan (Dolphyne 1988: 15, Sampson Korsah p.c.)*

+ATR		-ATR	
[mì-dí]	‘I eat’	[mì-dì]	‘I am called’
[wú-dí]	‘you eat’	[wú-dì]	‘you are called’
[ò-dí]	‘s/he eats’	[(w)ò-dì]	‘s/he is called’
[jè-dí]	‘we eat’	[jè-dì]	‘we are called’

Finally, it could be argued that a process whereby one segment is split into two, both of which bear some properties of the original, is also a type of incomplete replication. Splitting, although less frequent than the phenomena discussed above, is nevertheless attested in a number of languages. One example is found in Slovene, where the palatal nasal /ɲ/ decomposes into the sequence [nj] before vowels, as shown in (16). Each of the resulting segments maintains some features of the original: [n] retains the nasality of /ɲ/, whereas [j] retains its palatality.

(16) *Decomposition in Slovene (Rubach 2008: 171, Adrian Stegovec p.c.)*

[kɔɲ]	‘horse’ (masc.nom.sg.)	[kɔɲja]	‘horse’ (gen.sg.)
[suiɲ]	‘pig’ (fem.gen.pl.)	[suiɲja]	‘pig’ (nom.sg.)
[ɔgəɲ]	‘fire’ (masc.nom.sg.)	[ɔgɲja]	‘fire’ (gen.sg.)

## 4.2. Morphology

Featural replication in morphology comprises what has been termed extended or multiple exponence (Matthews 1974) where a morphological feature is expressed by two or more separate exponents. A classic example is the double plural marking in Breton diminutives where two different markers **-ed** and **-ou** express the same single plural feature.

(17) *Breton plural marking (Matthews 1972, Stump 1989, Ortmann 1999)*

labous ‘bird’	SG	PL
	labous	labous- <i>ed</i>
DIM	labous-ig	labous- <i>ed-ig-ou</i>

Caballero & Harris (2012) provide a decent typological overview of the phenomenon. The markers that show up in extended exponence may have distinct forms as in (17) (showing that this cannot be simple copying of a linguistic

object) or the same form as is the case, for instance, in extreme extended (‘exuberant’) exponence in Batsbi class markers (18).

- (18) *Batsbi exuberant exponence (Harris 2009)*

*y-ox-y-o-y-anö*

CM-rip-CM-PRES-CM-EVID

‘Evidently she ripped it (e.g. a dress).’

Furthermore, there is some variation with regard to the degree of redundancy of the additional exponent(s). In Breton and Batsbi, the markers express exactly the same features (i.e. plural in Breton and gender-number in Batsbi). Each of them is thus fully superfluous because the other marker sufficiently encodes the feature (Caballero & Harris 2012). Conversely, in Meskwaki (19), only the person prefix is redundant since the suffix encodes number additionally. Multiple exponence is thus only partly superfluous here.

- (19) *Meskwaki (Fox) person agreement (Dahlstrom 2000)*

*ke-nowi:-pwa*

2-go.out-2.PL

‘You (pl.) go out.’

An example of overlapping multiple exponence, where none of the markers involved can be left out without losing any information, is provided by the language Daga (20).

- (20) *Daga subject-number-person agreement (Murane 1974)*

*kanda-nigas-ivin*

awaken-INTSV.1SG.SUBJ-PRES.CONT.1SG.SUBJ

‘I am awakening.’

Independently of whether multiple exponence is analysed in a realizational or incremental framework (Stump 2001), one and the same morphosyntactic feature receives expression by more than one exponent on the surface and is therefore replicated in some manner.

#### 4.3. Syntax

The clearest cases of replication of syntactic features involve agreement and concord phenomena, in which some features of a nominal expression are

reflected on an agreeing element. In an overwhelming number of languages, the verb shows agreement for some  $\phi$ -features (person, number) with the subject (21), and sometimes also the object (22).

(21)  *$\phi$ -agreement with subject in Icelandic (Sigurðsson 1996: 6)*

a. Við lás-um bókina  
we read-1PL the.book  
'We read the books.'

b. þið lás-uð bókina  
you read-2PL the.book  
'You read the book.'

(22)  *$\phi$ -agreement with subject and object (Preminger 2014: 19, Rude 1986: 126)*

a. rat x-e'-aw-ax-aj rje'  
you COM-3PL.ABS-2SG.ERG-hear-ACT them  
'You heard them.' (Kaqchikel)

b. Háama-nm péé-'wi-ye wewúkiye-ne  
man-ERG 3SUBJ/3OBJ-shoot-ASP elk-OBJ  
'The man shot the elk.' (Nez Perce)

Of course, the features that can be replicated are by no means restricted to  $\phi$ -features. Agreement can also target either gender (23) or noun class features (24) (in the latter case, both subject and object).

(23) *Gender agreement in Hindi (Bhatt & Walkow 2013: 954)*

Ve laṛkiyā akhbaar paṛh-tii thī  
those girl.F.PL newspaper.M read-HAB.F be.PST.F.PL  
'Those girls used to read (a/the) newspaper.'

(24) *Noun class agreement in Chichewa (Mchombo 2004: 19)*

Mi-káango i-ku-zí-sák-a zi-gawénga  
4-lions 4SUBJ-PRES-8OBJ-hunt-FV 8-terrorists  
'The lions are hunting the terrorists.'

Furthermore, the class of agreeing elements extends beyond verbs. Many languages show  $\phi$ -agreement on the complementizer (e.g. Bavarian German, see Bayer 1984).

DP-internal agreement is often referred to as *concord*, rather than agreement. In example (25), both the definite determiner and the adjective (as well as the noun) show gender and number marking.

(25) *Nominal concord in Italian* (Corbett 2006: 9)

- a. i            nuov-i    quadr-i  
DEF.M.PL new-M.PL picture(M)-PL  
'the new pictures'
- b. la            nuov-a    tel-a  
DEF.F.SG new-F.SG painting(F)-SG  
'the new paintings'

Concord also exists outside the DP and with polarity features. One widely discussed example is *negative concord*, in which a polarity item in the scope of negation (e.g. *anything*) also shows replication of negative features (26).

(26) *Negative concord in Serbo-Croatian* (Progovac 1994: 40)

- Milan ne    vidi    \*(n)-i-šta  
Milan NEG sees    NEG-any-what  
'Milan cannot see anything'

A less obvious case of replication of linguistic features involves resumption. In resumption, it is not the entire element that is replicated (as in *wh*-copying), but instead, a pronoun matching the  $\phi$ -features of the displaced element is realized in its base position.

(27) *Resumption in Akan and Irish* (Saah 1988: 19, McCloskey 2002: 189)

- a. Hena na wo-hu-u    no    wɔ    fie    hɔ?  
who.M FOC 2SG-see-PST RP.3SG LOC house there  
'Who did you see (him) in the house?'
- b. an    ghirseach a-r            ghoid na síogaí í  
the girl.F            COMP-PAST stole    the fairies RP.3SG.F  
'The girl that the fairies stole (her)'

## 5. Replication of properties/relations

It is also possible for replication to target more abstract linguistic material than even features. There are a number of 'sharing constructions' in language, in which it seems that an item is associated or present in more than one position (e.g. 'Across-The-Board' (ATB) movement, free relatives, parasitic gaps and a number of ellipsis phenomena such as gapping and 'Right Node Raising'). In ATB movement (28), for example, the *wh*-phrase *which book* seems to

simultaneously satisfy the subcategorization requirements of the verbs in both conjuncts. On the surface, it appears that the ability of the DP to act as an argument is replicated in these constructions.

- (28) *Across-the-Board movement* (Ross 1967, Williams 1978, *de Vries to appear*)  
Which book does Peter like \_\_\_ and Susan hate \_\_\_ ?

Furthermore, there are instances in which particular configurational requirements are replicated across a structure. One clear example of these are parallelism constraints. One prominent example comes from scope restrictions with VP ellipsis in English. In (29a), it is perfectly possible to have a wide scope reading of the universal quantifier *every teacher*, in which there are several boys and every teacher is admired by one. Interestingly, this reading is absent from (29b), which only has the narrow scope reading in which there is just one boy who admires every teacher.

- (29) *Scope restrictions on VP ellipsis* (Fox 2000: 30)
- a. A boy admires every teacher.  $(\exists > \forall) (\forall > \exists)$
  - b. A boy admires every teacher. Mary does too.  $(\exists > \forall) (*\forall > \exists)$

Thus, it seems that the elided quantifier in (29b) blocks a wide scope interpretation. There are various ways one could account for this formally, but the basic intuition is that there is a ‘parallelism’ requirement on wide scope interpretations, that is, the scopal position of a quantifier must match between an ellipsis site and its antecedent. Since the universal quantifier cannot take wide scope in the ellipsis clause in (29b) (there is not another quantifier for it to scope over), this interpretation is exceptionally blocked in the antecedent clause. Interestingly, this restriction disappears once a quantifier is introduced into the second clause (Hirschbühler 1982, Fox 2000).

- (30)
- a. A boy admires every teacher. A girl does too.  $(\exists > \forall) (\forall > \exists)$
  - b. A Canadian flag stood in front of every embassy, and an American flag did too.  $(\exists > \forall) (\forall > \exists)$

Thus, it appears that ellipsis constructions have a requirement that abstract linguistic properties such as scope relations are replicated across larger portions of structure, i.e. between the ellipsis site and the antecedent. Ellipsis has been

known to obey many more of these kinds of restrictions that constitute further examples of abstract replication (see e.g. Merchant 2001).

Furthermore, coordinate structures have been reported to also impose parallelism restrictions on their conjuncts. One pertinent example concerns ATB movement such as (28). In an ATB movement construction, there is a general requirement that the case assigned to the moved item in each conjunct must match (e.g. Borsley 1983, Dylą 1984, Citko 2005). In particular, Franks (1993, 1995) proposes an additional constraint on ATB movement that bans movement from ‘non-parallel’ positions (also see Kasai 2004). This is what rules out the example in (31), in which case matching is satisfied, but extraction is from non-parallel positions (subject vs. object).

(31) *Parallelism requirement on ATB (Franks 1995: 64)*

\*dziewczyna, której [Janek dał swoją marynarkę —<sub>DAT</sub>] a  
 girl who.DAT Janek gave his jacket and  
 mimo tego [—<sub>DAT</sub> było zimno]  
 despite this was cold  
 ‘the girl who Janek gave his jacket to but was still cold’

Furthermore, Citko (2006) shows that ATB extraction requires proper contrast between non-extracted elements in both conjuncts. The notion of contrast is also known to play an important role in ellipsis constructions such as (pseudo-)gapping (see e.g. Johnson 2014).

There are also a number of examples of replication in discourse. It is well-known that speakers in naturally occurring conversations systematically reproduce parts from previous turns. Replication in discourse is not restricted to a specific linguistic domain, and size and abstractness of the recycled material can vary considerably as well, ranging from subtle sub-segmental details (Schweitzer & Lewandowski 2014) to suprasegmental features (Szczepek Reed 2007) and from repetitions of lexical items (Button 1990) to copying of larger syntactic chunks (Du Bois 2014). In recent work, *accommodation* has been discussed extensively as an ubiquitous process by which speakers adapt their own way of speaking to that of their interlocutors (Siebenhaar 2006, 2012, Beňuš et al. 2011).

Furthermore, even before they are fully capable of reproducing segmental material, small children are known to imitate prosodic patterns early on when interacting with carers, as illustrated in figure 5. Wells (2010: 254) claims that in

line 21 of figure 5, the child is replicating the prosodic contour of the mother's previous utterance (line 20).

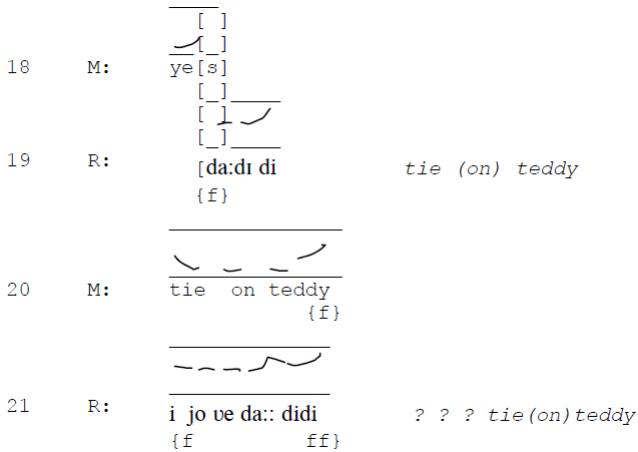


Figure 5: Tonal repetition in carer-child interaction (Wells 2010: 253)

In addition, various kinds of replication have been identified as crucial components in a number of interactional strategies (e.g. the case of other-repair as discussed in Schegloff 1987 and Wu 2009).

## 6. Contributions to this volume

The contributions to this volume address specific cases of replication in natural language that cover all points of the spectrum in figure 1. The papers address issues of replication of linguistic objects, features and properties respectively, and have been ordered accordingly.

The paper by Zimmermann offers an analysis of two copying processes in Kiranti languages triggered by certain affixes. In one of these, the final segment of an affix that precedes the triggering morpheme is copied. In the other one, it is the rhyme material (the nucleus and, if present, the coda) from the preceding affix that is copied. It is shown that the two processes receive a unified account under the assumption that the triggering affixes are underlyingly defective in the sense that they contain empty prosodic structure and if copying is viewed as segmental fission.



**Korsah** presents new data from Gã showing that negative polarity items (NPIs) corresponding to *any*-NPs in English are formed by reduplication of indefinites. However, he shows that the distribution for these elements in Gã is more restricted than their English counterparts. Two analyses are entertained and evaluated: one in which reduplication involves the valuation of a polarity feature on the indefinite, and another involving NEG-raising.

New data concerning verb doubling in Limbum are presented and discussed by **Becker and Nformi**. In particular, they discuss the close affinity between information structure and replication. They first provide convincing arguments that Limbum has two distinct focus positions in the clause and then go on to show how the various patterns of verb doubling in Limbum can be understood with reference to these positions.

**Hein** discusses verb doubling constructions in Asante Twi. With new data, he argues that this language shows the hitherto unattested pattern of asymmetric verb doubling, that is, Asante Twi is a language which doubles the verb for verb fronting but employs a *do*-support-like strategy for VP fronting. Furthermore, Hein shows how the varying order of operations at PF can derive the entire typology of verb doubling across languages.

In a response to Hein's contribution, **Müller** discusses copying phenomena in syntax from the point of view of phonological copying. Beginning with the observation that copying phenomena have radically different treatments in phonology/morphology and in syntax, Müller argues for a Copy operation in syntax similar to the one employed for reduplication in morphology. This is illustrated on the basis of patterns found with VP and predicate fronting, in particular the new Asante Twi data presented by Hein.

In a similar vein, **Murphy** challenges the widely held belief that wh-copying in languages such as German provides evidence for successive-cyclic movement. It is shown that wh-copying in German does not behave like comparable long-distance extraction structures in many crucial respects, therefore casting doubt on the traditional analysis of these constructions as involving the Spell-Out of an intermediate copy of a chain.

In their paper, **Barnickel & Hein** present an analysis of a kind of R-pronoun replication attested in several German dialects. It is argued that this doubling cannot be tied to extraction/movement since it also occurs *in situ*. Building on previous work on R-pronouns, they propose that replication comes about as a consequence of the interaction of various constraints in Optimality Theory.

**Doliana** discusses novel data from Italian, where agentive nouns can be formed by reduplication of the base form of a verb. After reviewing some phonological and syntactic restrictions of the construction, he puts forward a tentative account which treats them as a special kind of regular VN-compound, namely one that takes a non-lexical item as its internal argument.

The paper by **Trommer** deals with [ATR] and height harmony in Mayak. Trommer shows how these harmony processes interact with each other and with general markedness constraints, and argues that the fact that some of the affixes in Mayak seem to be consistent triggers of harmony while others are not can be accounted for by assuming they operate on different morphological strata.

**Himmelreich** discusses cross-linguistic differences in case matching effects with parasitic gaps and free relatives. It is argued that the strikingly asymmetric behaviour of this construction in German and Polish can be derived from differences in the order and directionality of Agree operations. In general, Himmelreich assumes that Agree can apply in either direction (upward or downward) and that the availability of case matches derives from the type of Agree involved in the language or construction in question.

A similar empirical domain is addressed by **Hein & Murphy**, who discuss case matching restrictions in so-called ‘Across-the-Board’ constructions. In particular, they aim to derive the fact that case mismatches are tolerated if the form of the cases happens to match (i.e. is syncretic). They demonstrate that current analyses of ATB cannot insightfully capture this fact and, instead, show how it follows from a new mechanism of ATB movement involving intersection of feature sets.

**Gjersøe** discusses a different kind of ‘sharing construction’, namely pseudo-coordination in Norwegian. Unlike the previous two approaches, Gjersøe invokes multidominance as the explanation for sharing. Rejecting an approach involving subordination, it is argued that pseudo-coordination in Norwegian involves coordination of *v*Ps, where the subject (and optionally adjuncts) are shared across the conjuncts via multidominance.

**Guzmán Naranjo & Paschen** develop a formal analysis of replicative interactional strategies in conversation. Drawing from the observation that speakers make systematic use of two very distinct kinds of *repetitions* in *closing sequences*, the authors argue that both can be analysed as reflexes of simple (*co-*)*indexation*, a general building block widely used in both declarative and derivational theories of grammar.

**Salzmann** proposes an analysis of ‘displaced morphology’ in German, that is, exponents that are realized in a position other than what is assumed to be their base position. In his analysis, Salzmann makes use of the Local Dislocation operation in Distributed Morphology thereby avoiding problems of purely syntactic accounts. This can be viewed as an instance of replication across modules of grammar and provides a compelling argument for postsyntactic morphology.

The contribution by **Doliana & Sundaesan** identifies a new type of control under modality that they dub ‘proxy control’. In general, control can also be viewed as a replicative process since it seems that the subject or object controller is simultaneously fulfilling some requirements in (at least) two positions in the clause. The authors’ analysis involves a non-exhaustive obligatory control relation between two sets of individuals. As well as contributing novel data and observations, it also provides a potential argument against movement theories of control.

## References

- Barbiers, Sjef (2008): Microvariation in Syntactic Doubling – An Introduction. In: S. Barbiers, O. Koenenman, M. Lekakou & M. van der Ham, eds, *Microvariation in Syntactic Doubling*. Vol. 36 of *Syntax and Semantics*, Emerald, Bingley, pp. 1–34.
- Bayer, Josef (1984): ‘COMP in Bavarian Syntax’, *The Linguistic Review* 3, 209–274.
- Beňuš, Štefan, Agustín Gravano & Julia Hirschberg (2011): ‘Pragmatic aspects of temporal accommodation in turn-taking’, *Journal of Pragmatics* 43, 3001–3027.
- Bhatt, Rajesh & Martin. Walkow (2013): ‘Locating agreement in grammar: an argument from agreement in conjunctions’, *Natural Language and Linguistic Theory* 31(4), 951–1013.
- Borsley, Robert D. (1983): ‘A Note on the Generalized Left Branch Condition’, *Linguistic Inquiry* 14(1), 169–174.
- Button, Graham (1990): On varieties of closings. In: G. Psathas, ed., *Interaction Competence*. University Press of America, Washington, pp. 93–147.
- Caballero, Gabriela & Alice Harris (2012): A working typology of multiple exponence. In: F. Kiefer, M. Ladányi & P. Siptár, eds, *Current Issues in Morphological Theory: (Ir)regularity, analogy and frequency*. John Benjamins, Amsterdam/Philadelphia, pp. 163–188.
- Citko, Barbara (2005): ‘On the Nature of Merge: External Merge, Internal Merge, and Parallel Merge’, *Linguistic Inquiry* 36(4), 475–496.

- Citko, Barbara (2006): 'The Interaction between Across-the-Board Wh-Movement and Left-Branch Extraction', *Syntax* 9(3), 225–247.
- Corbett, Greville (2006): *Agreement*. Cambridge University Press, Cambridge.
- Dahlstrom, Amy (2000): Morphosyntactic Mismatches in Algonquian: Affixal Predicates and Discontinuous Verbs. In: A. Okrent & J. P. Boyle, eds, *Chicago Linguistic Society 36: The Panels*. Chicago Linguistic Society, Chicago, pp. 63–87.
- Danon, Gabi (2008): 'Definiteness spreading in the Hebrew construct state', *Lingua* 118, 872–906.
- de Vries, Mark (to appear): Across-the-Board Phenomena. In: M. Everaert & H. van Riemsdijk, eds, *Blackwell Companion to Syntax*. 2 edn, Blackwell, Oxford.
- Dolphyne, Florence (1988): *The Akan (Twi-Fante) language: Its sound system and tonal structure*. Ghana Universities Press, Accra.
- Du Bois, John W. (2014): 'Towards a dialogic syntax', 25, 359–410.
- Dyła, Stefan (1984): 'Across-the-Board Dependencies and Case in Polish', *Linguistic Inquiry* 15(4), 701–705.
- Fanselow, Gisbert & Anoop Mahajan (2000): Towards a Minimalist Theory of Wh-Expletives, Wh-Copying and Successive-Cyclicity. In: U. Lutz, G. Müller & A. von Stechow, eds, *Wh-Scope Marking*. John Benjamins, Amsterdam, pp. 195–230.
- Fox, Danny (2000): *Economy and Semantic Interpretation*. MIT Press, Cambridge, MA.
- Franks, Steven (1993): 'On Parallelism in Across-the-Board Dependencies', *Linguistic Inquiry* 24(3), 509–529.
- Franks, Steven (1995): *Parameters of Slavic Morphosyntax*. Oxford University Press, Oxford.
- Harley, Heidi & Maria Amarillas (2003): Reduplication multiplication in Yaqui: Meaning × form. In: L. Barragan & J. Haugen, eds, *Studies in Uto-Aztecan*. Vol. 5 of *MIT Working Papers on Endangered and Less Familiar Languages*, MITWPL, Cambridge, Mass., pp. 105–139.
- Harris, Alice (2009): 'Exuberant Exponence in Batsbi', *Natural Language and Linguistic Theory* 27, 267–303.
- Hirschbühler, Paul (1982): VP Deletion and Across-the-Board Quantifier Scope. In: J. Pustejovsky & P. Sells, eds, *Proceedings of NELS 12*. GLSA, Amherst, MA, pp. 132–139.
- Johnson, Kyle (2014): Gapping. Ms. University of Massachusetts.
- Kasai, Hironobu (2004): 'Two Notes on ATB Movement', *Language and Linguistics* 5(1), 167–188.
- Landau, Idan (2006): 'Chain Resolution in Hebrew V(P)-fronting', *Syntax* 9(1), 32–66.
- Levkovich, Nataliya (2007): Totale Reduplikation im Neuhebräischen. In: A. Amman & A. Urdze, eds, *Wiederholung, Parallelismus, Reduplikation. Strategien der multiplen Strukturanwendung*. Brockmeyer, Bochum, pp. 109–164.

- Loporcaro, Michele (1997): *L'origine del raddoppiamento fonosintattico: Saggio di fonologia diacronica romanza*. Francke Verlag, Basel and Tübingen.
- Matthews, Peter H. (1972): *Inflectional Morphology: A Theoretical Study Based on Aspect of Latin Verb Conjugation*. Cambridge University Press, Cambridge.
- Matthews, Peter H. (1974): *Morphology*. Cambridge University Press, Cambridge.
- McCarthy, John & Alan Prince (1995): Faithfulness and reduplicative identity. In: *Papers in Optimality Theory*. Vol. 18 of *University of Massachusetts occasional papers in linguistics*, GLSA, University of Massachusetts, Amherst, pp. 249–384.
- McCloskey, James (2002): Resumption, successive cyclicity, and the locality of operations. In: S. Epstein & T. Seely, eds, *Derivation and Explanation in the Minimalist Program*. Blackwell, Oxford, pp. 184–226.
- McDaniel, Dana (1986): Conditions on Wh-Chains. PhD thesis, City University of New York.
- Mchombo, Sam (2004): *The Syntax of Chichewa*. Cambridge University Press, Cambridge.
- Merchant, Jason (2001): *The Syntax of Silence: Sluicing, Islands and the Theory of Ellipsis*. Oxford University Press, Oxford.
- Mithun, Marianne & Hasan Basri (1986): 'The phonology of Selayarese', *Oceanic Linguistics* 25, 210–254.
- Murane, Elizabeth (1974): *Daga Grammar: From Morpheme to Discourse*. Summer Institute of Linguistics of the University of Oklahoma, Norman.
- Ortmann, Albert (1999): 'Affix Repetition and Non-Redundancy in Inflectional Morphology', *Zeitschrift für Sprachwissenschaft* 18(1), 76–120.
- Peng, Long (1993): 'The canonical verb root and Kikuyu reduplication', *Journal of West African Languages* 23(2), 1–26.
- Preminger, Omer (2014): *Agreement and its Failures*. MIT Press, Cambridge, Mass.
- Progovac, Ljiljana (1994): *Negative and Positive Polarity: A Binding Approach*. Cambridge University Press, Cambridge.
- Raimy, Eric (2000): 'Remarks on Backcopying', *Linguistic Inquiry* 31(3), 541–552.
- Ritter, Elizabeth (1988): 'A head-movement approach to construct-state noun phrases', *Linguistics* 26(6), 909–929.
- Ross, John R. (1967): Constraints on variables in syntax. PhD thesis, MIT.
- Rubach, Jerzy (2008): 'Palatal nasal decomposition in Slovene, Upper Sorbian and Polish', *Journal of Linguistics* 44, 169–204.
- Rubino, Carl (2013): Reduplication. In: M. S. Dryer & M. Haspelmath, eds, *The World Atlas of Language Structures Online*. Max Planck Institute for Evolutionary Anthropology, Leipzig.  
URL: <http://wals.info/chapter/27>
- Rude, Noel (1986): 'Topicality, transitivity, and the direct object in Nez Perce', *International Journal of American Linguistics* 10, 109–136.

- Saah, Kofi K. (1988): 'Wh-questions in Akan', *Journal of West African Languages* 18, 17–28.
- Schegloff, Emanuel A. (1987): Recycled turn beginnings. In: G. Button & J. Lee, eds, *Talk and Social Organisation*. Multilingual Matters, Clevedon, pp. 70–85.
- Schweitzer, Antje & Natalie Lewandowski (2014): Social factors in convergence of F1 and F2 in spontaneous speech. In: *Proceedings of the 10th International Seminar on Speech Production, Cologne*. pp. 391–394.
- Siebenhaar, Beat (2006): 'Code Choice and Code-switching in Swiss-German Internet Relay Chat Rooms', *Journal of Sociolinguistics* 10, 481–506.
- Siebenhaar, Beat (2012): 'Akkommodation und Sprachattitüden von Deutschschweizer Migranten im ostmitteldeutschen Sprachraum', *Sociolinguistica* 26, 151–164.
- Sigurðsson, Halldór Ármann (1996): 'Icelandic finite verb agreement', *Working Papers in Scandinavian Syntax* 57, 1–46.
- Sneddon, James N. (1996): *Indonesian: A Comprehensive Grammar*. Routledge, London.
- Staroverov, Peter (2014): Splitting theory and consonant epenthesis. PhD thesis, Rutgers University, New Brunswick, NJ, USA. PhD thesis.
- Stump, Gregory (1989): 'A Note on Breton Pluralization and the Elsewhere Condition', *Natural Language and Linguistic Theory* 7, 261–273.
- Stump, Gregory (2001): *Inflectional Morphology*. Cambridge University Press, Cambridge.
- Szczepek Reed, Beate (2007): *Prosodic Orientation in English Conversation*. Palgrave Macmillan.
- Vicente, Luis (2009): 'An Alternative to Remnant Movement for Partial Predicate Fronting', *Syntax* 12(2), 158–191.
- Wells, Bill (2010): Tonal repetition and tonal contrast in English carer-child interaction. In: D. Barth-Weingarten, E. Reber & M. Selting, eds, *Prosody in Interaction*. John Benjamins, Amsterdam, pp. 243–262.
- Williams, Edwin (1978): 'Across-The-Board Rule Application', *Linguistic Inquiry* 9, 31–43.
- Wu, Ruey-Jiuan Regina (2009): Repetition in the initiation of repair. In: J. Sidnell, ed., *Conversation Analysis: Comparative Perspectives*. Cambridge University Press, pp. 31–59.