

Do not repeat: repetition and reduplication in German revisited

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for Caroline¹

1 Introduction

Language is rife with repetition. Repetition is a feature of, and in fact a necessity for, any natural language because natural languages operate with a finite and comparatively small set of discrete (sub-)symbolic units (phonemes, letters, words); since the usage frequency of these units approximately matches a Zipfian distribution, some are repeated more often than others. Crucially, however, the usability of all primary linguistic units presupposes at least some repetition, otherwise they couldn't be recognized. Repetition is also one of the most basic and simple linguistic operations, and repetitive procedures like recursion and reduplication are strong contenders for the charts of universals. At the same time, excess repetition is clearly avoided in language, as it leads to formal and semantic redundancy. The deviance from a normal degree of repetition may be used purposefully as a poetic device (think of Gertrude Stein's famous line "Rose is a rose is a rose is a rose") or it may be a pathological symptom of disordered speech (e.g. in stuttering or stammering). These and other extreme cases of repetition, which are associated with the poetic function of language (Jakobson 1960), illustrate the general aesthetic appeal of linguistic repetition that ranges between arousing attention, leading to boredom, or causing annoyance (Görner 2015). Therefore, in order not to over-emphasise the poetic function at the cost of the referential function, normal language use has to find a balance between necessity and avoidance of repetition. Given the above-stated ubiquity and necessity of repetition in language, there must be some regulation in the system that codifies repetition avoidance. Suzuki (1998), in his cross-linguistic

¹ This paper is dedicated to Caroline Féry who planted the seeds of, and cultivated the environment for, not only the ideas developed here but many more. All shortcomings and errors are my own.

study on dissimilation, accredits repetition avoidance to the workings of a universal linguistic constraint (*Generalized Obligatory Contour Principle*) with different language-specific parametrizations. The Obligatory Contour Principle (OCP, McCarthy (1986); Yip (1988) among many others) flags as marked adjacent identical elements in the phonological representation.

Walter (2007), on the other hand, discusses two distinct general, non-linguistic functional pressures that (at least partly) explain repetition avoidance in natural language: First, close repetition of articulatory gestures is often physiologically difficult, especially if gesture repetition involves timing on the scale of milliseconds. Secondly, repetition is problematic from a perceptual point of view. Being exposed to regularly repeated instances of a stimulus eventually leads to habituation and consequently to blurred and suppressed perception. Specifically, experiments by Kanwisher (1987) suggest the individuation of repeated tokens of a signal (in her case: written words) to be hampered, a phenomenon she terms “repetition blindness”. Human language, Walter (2007) argues, has adapted to these general, language-independent pressures and therefore shows extensive repetition avoidance.

Whatever the underlying cause, within and across languages, all kinds of phenomena that may be categorised as repetition avoidance have been observed. Here, I discuss repetition avoidance in the case of German and show that there is a surprisingly consistent ban in the lexicon of exact adjacent repetition across all levels of the phonological hierarchy (segment – syllable – foot – word – phrase). As it turns out, in order to be admitted to the lexicon, a phonological form must not contain exact adjacent repetition of phonological material on any of these levels. This is stated in the following phonotactic law (1).

- (1) DO NOT REPEAT: Lexical items must not contain exact adjacent repetitions of phonological material (segments, syllables, feet, phonological words).

This law is a variant of the OCP. In contrast to other instantiations of the OCP, the generalisation in (1) is confined to lexical representations. It is also more restricted in that it only registers as adjacent two phonological elements that are actually realized next to each other; that is, elements that are considered adjacent on a relevant autosegmental tier but separated by other material when realized do not violate (1).² On the other hand, the scope of (1) is wider than that of other exemplars of the OCP, as it covers identical elements across the phonological hierarchy. Note that, for all levels of the phonological hierarchy, cases of exact adjacent repetition are attested in German. However, as will be shown, these cases are confined to the post-lexical

² Root-internal co-occurrence restrictions represent such a case, i.e. the avoidance of C_iVC_i roots featuring two instances of the same consonant that, on the surface, are typically separated by a vowel (Berent & Shimron 2003; Pozdniakov & Segerer 2007).

realm, in line with (1). If a repetitious form becomes lexicalised, it needs to either i) involve phonological alteration thwarting exact identity of the repeated elements, or ii) it will involve interspersed material separating the iterated entities from each other. The only true exceptions to (1) are a small number of loans, onomatopoeic words, ideophones and lexicalised abbreviations (discussed in Section 3.1.1).

The remainder of this paper is devoted to corroborating these claims and to identify the lexicon as one of the sites responsible for repetition avoidance in German. Starting from the segmental level (Section 2.1) and going up to the phrase level (Sections 3.3), I discuss relevant cases of repetition in German, and consider their potential for lexicalisation. In the General Discussion (Section 4), I will briefly discuss repetition avoidance beyond lexical phonology, namely in syntax and discourse.

2 Repetition and repetition avoidance at the sub-lexical level

2.1 *The segmental level*

The lexicon of German is clean of geminates. While this statement may not be true of all varieties (Kraehenmann 2001; Fleischer & Schmid 2006; Drake 2013), it is true for the great majority thereof, at any rate for the varieties of modern standard German and also for the modern varieties of the other major West Germanic languages like English or Dutch; there are simply no lexical roots that feature geminates. In terms of autosegmental phonology, geminates are understood as a sequence of two consonantal positions with the same melodic specification (Schein & Steriade 1986); even though the phonetic surface often suggests a single segment that is lengthened (see, e.g. (Ridouane 2010), and references therein), the phonological consensus is true to the literal sense of the term “geminate” (the Latin term for twin, i.e. two instances of the same), and this is why it concerns us in the context of a discussion of repetition in language. When morphology motivates gemination, the lexical phonology will often either de-geminate, or – if, for whatever reason, degemination is not an option – block the formation of the word altogether. Obligatory degemination is illustrated in (2-a): when the diminutive suffix *+lein* attaches to stems ending in a schwa-[l] sequence, the result is always a singleton [l]; the underlying geminate does not surface. In case of monosyllabic stems ending in [l] the suffix *+lein* is blocked (2-b) and *+chen* is used for diminution. Conversely, stems that end in a dorsal fricative [ç, x] do not accept *+chen*, as this leads to (underlying) gemination of the dorsal fricative (2-c) (Brugmann 1917).

- (2) Diminutive suffixes *+lein* and *+chen*

- a. *Englein* ‘angel.DIM’ /ɛŋəl+l̩aɪn/ [*ɛŋəl:aɪn, ɛŋəl̩aɪn]
Vögelein ‘bird.DIM’ /fo:gəl+l̩aɪn/ [*fø:gəl:aɪn, fø:gəl̩aɪn]
Eselein ‘donkey.DIM’ /e:zəl+l̩aɪn/ [*e:zəl:aɪn, e:zəl̩aɪn]
- b. **Spiellein*~*Spielchen* ‘play.DIM’ /*ʃpi:l+l̩aɪn/~ʃpi:l+çən/ [ʃpi:lçən]
**Bällelein*~*Bällchen* ‘ball.DIM’ /*bal+l̩aɪn/~bal+çən/ [bəlçən]
**Knöllein*~*Knöllchen* ‘nodule.DIM’ /*knɔ:l+l̩aɪn/~knɔ:l+çən/ [knœlçən]
- c. **Bächchen*~*Bächlein* ‘crook.DIM’ /*baç+çən/~baç+l̩aɪn/ [bæçl̩aɪn]
**Kelchchen*~*Kelchlein* ‘goblet.DIM’ /*kɛlç+çən/~kɛlç+l̩aɪn/
**Mönchchen*~*Mönchlein* ‘monk.DIM’ /*mønç+çən/~mønç+l̩aɪn/

Arguably for the same reason, the otherwise productive adjectival suffix *-lich* is blocked from attaching to stems ending in [l], and, whenever possible, alternative suffixes are used instead (3).³

- (3) a. *wechsel+haft*, **wechsel+lich* ‘changeable’
wandel+bar, **wandel+lich* ‘changeable’
cf. *veränder+lich* ‘changeable’
- b. *wohl+ig* **wohl+lich* ‘pleasant’
nebl+ig **nebl+lich* ‘foggy’
ekl+ig **ekl+lich* ‘disgusting’

Similarly, the deonymic collective suffix *-s* (4) cannot attach to names ending in a stressed syllable with final [s] (4-c). In this case, the allomorph *-ens* is used or, alternatively, a periphrastic form. If the name ends in an unstressed syllable with final [s] (4-d), only singleton [s] will surface, geminate [s:] is out of bounds: /ja:kɔps+s/ → [ja:kɔps ~ *ja:kɔps:].

- (4) Family name – collective
 - a. *Müller* – *die Müllers*
 - b. *Schmidt* – *die Schmidts*
 - c. *Fuss* – **die Fuss-s* ~ *die Fussens* ~ *Familie Fuss*
 - d. *Jacobs* – *die Jacobs* ~ *die Jacobsens* ~ *Familie Jacobs*

While *+lein*, *+chen*, and *+lich* never lead to geminates when attached to their stems, this is not true for the suffixes *+los*, *+bar*, and *+tum*. This difference correlates with the fact that the former suffixes may trigger stem allomorphy (umlaut) while the stems remain unaffected by suffixation of the latter.

A recent study by Kotzor et al. (2016) attests to gemination of the lateral in [l]-final stems suffixed with *+los* like *wahl+los*, *zahl+los*, *ziel+los* ‘indiscriminate,

³ Similarly, the *-ling* suffix does not attach to [l]-final stems in Modern Standard German.

countless, aimless’ when compared to singleton [l] in *Wahl+en*, *Zahl+en*, *ziel+en* ‘elections, numbers, aim.INF’.

In contrast to the other suffixes discussed so far, the boundary between stem and the *+bar-* or *+tum-*suffix always corresponds to a syllable boundary.⁴ Correspondingly, with stem-final /t/ in (5) or /b,p/ in (6), geminates may arise.

Words with the *+tum* suffix are exceedingly rare and probably only productive when used as deonym (as in *Griechen+tum* ‘hellenism, greek culture’, *Franzosen+tum* ‘french culture’, *Luther+tum* ‘Lutheran culture’); the usage of the suffix is clearly restricted to elevated registers or scholarly language.

(5) Geminate [t:]

- a. *Gott+tum* ‘divinity’
- b. *Heimat+tum* ‘traditions pertaining to the homeland’
- c. *Schrift+tum* ‘literature’

The more productive suffix *+bar* attaches to verbal bases and produces geminates when the verbal root ends in a labial plosive /p,b/ (6).

(6) Geminate [b:]

- a. *handhab+bar* ‘manageable’
- b. *heb+bar* ‘liftable’
- c. *kipp+bar* ‘tiltable’
- d. *klapp+bar* ‘foldable’
- e. *kleb+bar* ‘glueable’
- f. *wölb+bar* ‘curvable’

However, geminate avoidance is still observable in the context of the *+bar*-suffix: in current language use, the conceivable forms with *+bar* in (7) are blocked and supplanted by alternative constructions that forgo the geminate.

(7) Geminate avoidance

- a. ??*glaub+bar* ~ ✓*glaub+haft* ~ ✓*glaub+würdig* ‘believable’
- b. ??*lob+bar* ~ ✓*lob+lich* ~ ✓*lob+ens+wert* ‘laudable’
- c. ??*an+streb+bar* ~ ✓*er+streb+ens+wert* ‘desirable’

In any case, geminates that come about by suffixation of *+tum* or *+bar* or *+los* are considered post-lexical. Lexicalisation of the suffixed words is not motivated, since the morphophonology is entirely regular: in contrast to diminutive *+lein* or

⁴ As these suffixes start in a plosive, which constitutes a sonority minimum, resyllabification is not an option. In the case of the other suffixes, stem-final material may well resyllabify: *Kind+lein* ‘child.DIM’ [km.tlɛ̃n]; *Kind+chen* ‘child.DIM’ [km.tçən]; *Kind+lich* ‘childish’ [km.tlɪç].

+*chen* or adjectival +*lich*, these suffixes do not trigger umlaut or any other stem allomorphy. Also, the semantics of the complex words is transparent and fully predictable. Kotzor et al. (2016) coin the term “fake geminate” for these post-lexical geminates.

Post-lexical geminates may also be found in compounds (8).

- (8) Geminates in compounds (Kloeke 1982: 225)
- a. *Schalt+technik* [ʃaltːɛçnik] ‘switching technology’
 - b. *Fehl+leistung* [feːlːaɪstʊŋ] ‘mistake’
 - c. *Stief+vater* [ʃtiːfːatɐ] ‘stepfather’

There are certain compounds the high usage frequency of which suggests that they may be listed as full forms in the lexicon (9). As would be predicted according to (1), these compounds do not show geminates unless in overarticulate speech, e.g. when the speaker needs to clarify the morphological structure of the word.

- (9) De-gemination in lexicalised compounds
- a. *Hand+tasche* [#hantːaʃə ~ hantaʃə] ‘handbag’

Further evidence for geminate prohibition in the German lexicon comes from loan assimilation. As the examples in (10) show, geminates from the source language get lost in translation and resurface as singleton (if ambisyllabic) consonants.

- (10)
- a. *Pizza*
Italian: [pidzːa]
German: [pɪtsa]
 - b. *Mortadella*
Italian: [mɔrtadɛːla]
German: [mɔɐ̯tadɛla]
 - c. *Spaghetti*
Italian: [spagetːi]
German: [ʃpageti]

In sum, the data confirm that consonant repetition, or gemination in German may apply between, but is prohibited within, lexical items.

2.2 The syllable level

The repetitive forms in (11), at first sight, cast doubt on the central proposal (1) of this paper: These words – which are usually associated with child language – are clearly lexicalised (or lexicalisable) disyllables the two syllables of which appear to have identical segmental content. A similar pattern is used for nickname formation

(12). This derivational process involves truncation of the full name to the initial light CV syllable and subsequent doubling of that syllable. Doubling serves to establish wordhood (Saba Kirchner 2010), as a light syllable cannot serve as a word on its own. The pattern is productive yet heavily constrained by segmental context: names with complex, laryngeal or rhotic onsets do not undergo this truncation plus doubling process (13-a).

(11) *Mama, Papa, Pipi, Kaka* ‘Mama, Papa, pee, poo’

- (12) a. *Johannes* → [jo] → [jo:jo]
 b. *Luise* → [lu] → [lu:lu, lulu]
 c. *Nadine* → [na] → [na:na]
 d. *Kirsten* → [ki] → [kiki]
 e. *Viola* → [vi] → [vi:vi, vivi]
- (13) a. *Zacharias* → [tsa] → *[tsa:tsa]
 b. *Britta* → [bri] → *[bri:bri]
 c. *Ina* → [ʔi] → *[ʔi:ʔi]
 d. *Hartmut* → [ha] → *[ha:ha]
 e. *Robert* → [ro] → *[ro:ro]

Likewise, only names with cardinal vowels allow this truncation-plus-doubling process. Syllables with diphthongs (14-a) or front rounded vowels (14-b), (14-c), (14-d) cannot be doubled in this way because the resulting structure would feature such a vowel in a final open unstressed syllable, which is ungrammatical in German.

- (14) a. *Meike* → [maɪ] → *[maɪmaɪ]
 b. *Lydia* → [ly] → *[ly:ly]
 c. *Hoeness* → [hø] → *[hø:hø]
 d. *Käthe* → [kɛ] → *[kɛ:kɛ]

As for the licit patterns, closer inspection reveals a fundamental phonological difference between the two syllables involved, and this difference is related to stress. Note that the words in (11) and (12) are trochaic, i.e. the first syllable is stressed and the second unstressed. Crucially, a difference in terms of stress engenders a segmental difference as well, at least under the rather uncontroversial assumption that light CV syllables cannot bear stress in German. Correspondingly, the stressed initial syllables of the forms in (11) and (12) need to become heavy (or bimoraic), either featuring a long vowel or a coda consonant; for the coda, the onset of the second syllable is harnessed, making it an ambisyllabic yet singleton consonant. Tense vowels undergo laxing in this process (*Diane* > *Didi* [dɪdɪ]). This prosodic difference upholds the claim in (1); i.e. disyllabic forms with one stressed and one unstressed syllable cannot possibly violate the law because of the implied segmental

difference of the two syllables. In order to invalidate (1), one would need to adduce forms with two segmentally identical syllables that also feature the same stress value.

Sequences of unstressed identical syllables may surface, but they come about by inflection only (15) – consequently, these forms are not assumed to be stored as independent items in the lexicon and thus do not violate (1).

- (15) a. *lecker+er+er* [lɛkɐʁɐʁɐ] ‘delicious+COMP+STRONGINFL’
 b. *heiser+er+er* [haɪ.zɐʁɐʁɐ] ‘hoarse+COMP+STRONGINFL’
 c. *begonn+en+en* [bəɡɔnɛnɛn] ‘begin+PST.PART+PL’

I fail to find uninflected multisyllabic items in my native German that exhibit a sequence of two (or more) segmentally identical unstressed syllables.

As for sequences of segmentally identical syllables bearing stress, we need to move higher up in the phonological hierarchy; for every stressed syllable projects a phonological foot of its own. It would thus be considered a repetition of (monosyllabic) feet rather than syllables.

3 Repetition at the word level and above

3.1 The foot level

The minimal phonological word in German consists of a metrical foot which in turn consists of exactly one stressed syllable and, optionally, of adjacent unstressed ones. The prototypical foot in German is an at least bimoraic trochee, which may be disyllabic, as in *Blume* ‘flower’, or monosyllabic (*Kamm* ‘comb’). Reduplication in German (16) targets the trochaic foot and is thus an example of prosodic morphology, producing forms comprising of exactly two feet; consequently, these forms are either disyllabic (when the base is monosyllabic) or quadrisyllabic (disyllabic base).

- (16) Rhyme and ablaut reduplication (Kentner 2017)
- a. *Hinkepinke* (<hink), *Hasepase* (<Hase), *popelmopel* (<Popel)
 hopscotch (<hobble), sweetheart (<bunny), nose picker (<bogy)
- b. *Wirrurr* (<wirr), *Mischmasch* (<misch), *Krimskrams* (<Krams)
 jumble (<woozy), hotchpotch (<mix), bric-a-brac (<stuff)

My recent analysis of these words (Kentner 2017) considers reduplication to be the consequence of affixation of segmentally underspecified prosodic structure, viz. a metrical foot that is the exponent of an expressive morpheme responsible for the facetiously pejorative meaning that is associated with these words. Reduplication is productively used for nickname formation and, as such, it creates lexicalisable forms. Crucially, base and reduplicant have to be strictly non-identical, in line with

(1). Non-identity is ensured by either rhyme (16-a) or ablaut (16-b). A variant of rhyme reduplication involves a linking element thwarting adjacency of base and reduplicant.

- (17) Rhyme reduplication with linking *pop*
Annepopanne (< *Anne*), *Edepopede* (< *Ede*), *Ingepopinge* (< *Inge*)

A related case of reduplication is represented by the words in (18). Umlaut on the second stem thwarts exact adjacent repetition in this construction. Interestingly, even though only the expressions in (18-a) are listed in lexica, the pattern appears to be weakly productive: One may occasionally find expressions like (18-b) which appear to be modeled on the pattern in (18-a). However, stems that resist umlaut in the context of the suffix *+lich* (*laut+lich* ~ **läut+lich* ‘phonemic’) do not surface in this construction (19-a). Likewise, conceivable expressions with stems that prohibit umlaut (19-b) (Fanselow & Féry 2002) are clearly ineffable. This observation is in line with the ban on exact adjacent repetition in (1).

- (18) a. *tagtäglich* ‘every single day’ lit.: ‘day-daily’
 wortwörtlich ‘literally, word by word’ lit.: ‘word-wordly’
 b. *jahrjährlich* ‘every single year’ lit.: ‘year-yearly’
 wochwöchentlich ‘every single week’ lit.: ‘week-weekly’
 stundstündlich ‘every single hour’ lit.: ‘hour-hourly’
- (19) a. **lautlautlich* intended: ‘faithful to the sound sequence’
 b. **monatmonatlich* intended: ‘every single month’

3.1.1 Exceptions to (1)

While the examples in (16), (17), and (18) abide by the letter of (1), there are words that do exhibit exact adjacent repetitions of foot-sized material. These instances are clearly lexicalised and therefore true exceptions to (1). I will first distinguish two types of words, discuss their status in the lexicon, and then consider why they may be beyond the reach of the law in (1).

First, there are a couple of words (20) that are not morphologically derived but onomatopoeias, ideophones, or borrowings. That is, in contrast to (16), the phonological roots of the repetitious forms in (20) do not have a morphological analogue. Since the phonological doubling does not operate on a morphological base, these words do not count as reduplications (reduplication being understood as a process forming morphologically complex words).

- (20) a. *Bonbon, Couscous, Kuckuck, Tse-tse-Fliege, Wauwau*
 goody, couscous, cuckoo, tsetse, bow-wow
 b. *ballaballa, Dumdum, [aus dem] Effeff [können], plemplem, Tamtam*
 crazy, dumdum, to know off pat, batty, tomtom

Forms that belong to this group are few and far between. Their origin is varied and often unclear. *Bonbon, Couscous, Tsetse* and *Dumdum* are loan words; *Tamtam, Wauwau* and *Kuckuck* are onomatopoeic; *Effeff* may be derived from an abbreviation, while *ballaballa* and *plemplem* appear to be ideophonic coinages created out of thin air. The fact that the latter involve doubling of phonological material may be related to the fact that they are typically accompanied by a repetitive hand gesture (e.g. repetitive tipping of the index against the forehead, indicating craziness). The words in (20-a) are accented like compounds, i.e. on the first foot; the ones in (20-b) are accented on the second foot. One might say that the difference concerning word accent is enough to uphold the claim in (1). However, in contrast to the forms in (12), the difference in terms of accent between the syllables of the words in (20) does not affect the segmental structure of the syllables; in this regard, the phonological effect of accent position is weak or non-existent, even though accent certainly affects the phonetic implementation.

The second group of words violating (1) are abbreviations (21). When an abbreviation contains a sequence of equal letter names, the spoken rendition will exhibit exact adjacent repetition of phonological feet. With the exception of the name for the letter <y> /ypsilon/ – which does not feature in any current German abbreviation – all letter names in German are monosyllabic, featuring either a long vowel (e.g. <d> /de:/, <h> /ha:/), a diphthong (<v> /fau/) or a short vowel plus coda (e.g. <f> /ɛf/, <j> /jɔt/, <l> /ɛl/). That is, they are bimoraic and stressable, and thus correspond to a phonological foot. As abbreviations often serve as proper names, they are clearly lexical items (for pertinent neurolinguistic evidence, see [Brysbaert et al. 2009](#)). The majority of abbreviations is two or three letters long, but there are exceptions (e.g. *HfMDK* – *Hochschule für Musik und darstellende Kunst* – ‘university of music and performing arts’).

- (21) AA – *Auswärtiges Amt* [ˌʔaːʔaː]
 BBC – *British Broadcasting Corporation* [ˌbiːˌbiːsiː]
 CC – *Carbon Copy* [ˌtseːʔtseː]
 DDR – *Deutsche Demokratische Republik* [ˌdeːˌdeːʔɛɐ̯]
 FFM – *Frankfurt am Main* [ˌʔɛfˌʔɛfʔɛm]
 FKK – *Freikörperkultur* [ˌʔɛfˌkaːˈkaː]
 GG – *Grundgesetz* [ˌgeːˈgeː]
 HH – *Hansestadt Hamburg* [ˌhaːˈhaː]

KKW – *Kernkraftwerk* [ka:ka:'ve:]
PNN – *Potsdamer Neueste Nachrichten* [pe:ʔɛn'ʔɛn]
ÖBB – *Österreichische Bundesbahn* [ʔøbe:'be:]
RBB – *Rundfunk Berlin-Brandenburg* [ʔɛʁbe:'be:]

Compared to (20), the list of current, conventional abbreviations with iterating letter names is certainly longer (and systematically expandable).

What sets the abbreviations apart from other instances of doubling (12) or (16) is the fact that the repetitions in (21) are accidental. In the cases of syllable doubling and reduplication, the repetition is an inherent part of the word formation, and the repetitive elements derive from a single underlying morphophonological source. The source form of the abbreviations, in contrast, already features two independent (non-adjacent) instances of the letters that come to be adjacent parts of the initialism.

In spite of the law in (1), the lexicon appears to tolerate exact adjacent repetitions in the case of the abbreviations. Note however that, apart from the violation of (1), abbreviations exhibit other morphophonological exceptions: The inventory of syllables is restricted to the 28 letter names. These letter names are stressed monosyllables with strong constraints on syllable structure: the rhyme of the syllables is strictly confined to two positions, featuring either a long vowel without coda or a short vowel with a coda. There are no complex onsets or codas (with the exception of <x>). Also, again with the exception of <y>, there are no unstressed syllables in letter names. The main stress (or word accent) of the initialism is on the last syllable, irrespective of the length. In this regard, they differ from words like (22) that feature similarly simple syllable structure but vary w.r.t. word accent.

- (22) a. Harakiri [ha:ʁa'ki:ʁi]
 Orinoko [ʔo:ʁi'no:ko]
 b. Marabu ['maʁabu]
 Natalie ['natali]

The phonological behaviour thus marks these lexical items as special. Moreover, while the word forms in (16) are readily interpretable as complex words with a transparently traceable base, deriving the source word/phrase for an abbreviation is hardly possible without explicit knowledge, as the association between the letter and the source word is indeterminate. Therefore, even though the individual letters each represent meaningful material (as stand-ins for whole words), abbreviations are not morphologically structured. In contrast to other processes of word formation like derivation or compounding or even reduplication, there is no systematic head-modifier relationship among the constituting elements (i.e. the letters) in initialisms. Moreover, as noted by Mattiello (2013), and references therein, initialisms do not alter the morphosyntactic category or semantics of the source form. Therefore, it

stands to reason that abbreviations constitute a lexical stratum of their own, with different morphological and phonological rules applying to them. The law in (1) appears to be demoted in this stratum.

3.2 Repetition at the p-word level

Repetition of phonological words (p-words) may either lead to special kinds of compound (23), (24), (25), or to a repetitious word sequence (26). Each of these examples will be discussed in relation to the law in (1). Moreover, some phrasal constructions exhibit repetitions of words; these are likewise of varied nature and deserve discussion in a section of their own (Section 3.3).

- (23) “Self-compounding”
Kindeskind ‘grandchild’; lit: ‘child’s child’
Helfershelfer ‘accomplice’; lit: ‘helper’s helper’
- (24) Identical constituent compound
Willst Du Reisreis oder Basmatireis?
 Want.2SG you rice-rice or Basmati-rice
 ‘Do you want rice-rice or Basmati rice?’
- (25) (unbounded) recursive prefixation
Vor-vor-gestern ‘three days ago’; lit: ‘the day before the day before yesterday’
über-über-über-morgen, lit: ‘the day after the day after tomorrow’
Ur-ur-ur-oma ‘great-great-great-grandmother’
klitze-klitze-klitze-klein ‘teeny-weeny’
- (26) Lexical sequences
 - a. *dalli dalli, hopp hopp, los los*⁵
 ‘hurry up, get a move on, go’
 - b. *sehr sehr schön*
 ‘very very nice’
 - c. *ein alter alter Mann*
 ‘an old old man’

3.2.1 “Self-compounding”

“Self-compounds” (ger.: *Selbstkompositum*) like *Kindeskind* (23) present with iterating phonological material, yet, at least in the case of the few lexicalised items I am

⁵ The orthographic representation of these sequences is quite variable. *Dallidalli*, *dalli-dalli*, and *dalli dalli* are all attested

aware of (23), the repeated elements are separated by linking elements (the insertion of which may additionally lead to phonological alteration, e.g. the non-application of final devoicing in *Kin[d]-es-kin[t]*). The linking element prevents adjacency of the identical stems and thus the law in (1) is upheld. The few current “self-compounds” are typically used in idiomatic contexts and need to be lexicalised because of their somewhat opaque semantics (*Kindeskind* does not only refer to the generation of the ‘child of the child’ or grandchild but also to the following generations; the meaning of *Helfershelfer* is restricted to accomplices for malicious deeds). Other compounds with the same structure (N_i +linking element+ N_i ; e.g. *Verein+s+verein* lit: ‘union’s union’) may occasionally be produced but if they are, they are typically created “for the nonce” (i.e. they are not lexicalised). However, Günther (1981) and Freywald (2015) suggest that these words are mostly intelligible even when presented without context.

3.2.2 Identical constituent compounds (ICC)

A similar type of compound is exemplified in (24). These special compounds have various names in the literature: *Identical Constituent Compound*, ICC (Hohenhaus 2004), *Contrastive Focus Reduplication*, CFR (Ghomeshi et al. 2004), *Lexical Clones* (Horn 1993; 2018), *Real-X-Reduplication* (Stolz et al. 2011). For our concern, the relevant difference from the examples in (23) lies in the lack of the linking element, making the compounds an example of exact adjacent repetition. The formal difference is accompanied by a difference concerning their use, their interpretation and, crucially, their potential for lexicalisation. ICCs are created as ad-hoc compounds that restrict the meaning of the lexical item to its prototypical or ideal properties. Crucially, the interpretability is bound to contrastive contexts, as the construction denotes the stem’s prototypical features vis-à-vis less prototypical but salient alternatives. However, the relevant dimensions for determining prototypicality hinge on the situation of usage. This semantic indeterminacy is vividly illustrated by the word *Freundfreund* ‘friend-friend’ which may be interpreted either as ‘boyfriend, romantic partner’ or as ‘buddy, not romantic partner’, depending on the context (Freywald 2015: 920-921). Therefore, in line with the context-boundedness, and in fact their ad-hoc creation and use, an essential characteristic of these items is their resistance to lexicalisation. As Horn (2018) writes:

“... no move is made to register such an item in the permanent lexicon.”

(Horn 2018: 236)

Apparently, the pragmatics and the indeterminate meaning prevent lexicalisation; these words are therefore not affected by the law in (1), i.e. exact adjacent repetition is permissible.

Finkbeiner (2014) and Freywald (2015) call attention to the fact that not all ICCs that lack linking elements give rise to the context-dependent prototypicality reading. Instead, some are interpreted along the lines of other endocentric compounds. Consider e.g. the word *Umfrage-umfrage* lit.: ‘survey-survey’ in which the modifier represents the intellectual content of the head (i.e. a survey concerning surveys); or *Glas-Glas* (a drinking glass made of glass) the modifier of which denotes the material the head is made of. However, it is important to note that these words are nonces, i.e. they are used exclusively for the occasion in which they are created, and do not become lexicalised. In fact, the law in (1) predicts that the lack of the linking element (or of phonological alternation) prohibits the lexicalisation of these compounds. I am not aware of any exceptions to this prediction.

3.2.3 Unbounded repetition

While the repetition in the previous examples produces a sequence of maximally two instances of a word, the repetition in (25) and (26) are unbounded in principle. Multiple repetition is observable in the context of certain recursive derivational⁶ affixes (25): the prefixes *vor+*, *über+*, *klitze+*, and *ur+* may be iterably attached to the stem. Performance factors aside, there is no upper bound to this process. As unboundedness is incompatible with lexicalisation, each of these words needs to be created on the fly out of the elementary morphemes and will not, as a whole, become part of the lexicon. The law in (1) therefore holds in spite of the exact adjacent repetitions.

Unboundedness also holds for repetitive word sequences like (26): the grammar does not determine a maximum number of repetitions. As Schindler (1991) convincingly shows, repetitive sequences like *sehr sehr schön* fail to show lexical integrity as they might be broken up (*sehr, wirklich sehr schön* ‘very, really very nice’). Correspondingly, even though a repetition producing two instances of the word (as in *hopp hopp*) may be normal and more common than a single instance (*hopp*) or threefold repetition (*hopp hopp hopp*), this number is not fixed. These repetitive sequences are thus not assumed to be lexicalised.

3.3 Repetition at the phrase level

The lexicon contains not only morphemes or word-like vocabulary items but also certain word sequences when these are idioms, i.e. not compositionally transparent.

⁶ Phonologically, these prefixes behave like compound stems, as they bear compound accent.

In the following discussion on the ban of exact adjacent repetition, I will consider idiomatic constructions that involve overabundant repetition of phonological material and compare them to other word sequences involving repetitions.

- (27) N+P+N construction
Tag für Tag ‘day by day’
Mund-zu-Mund-[Propaganda] ‘word-of-mouth [recommendation]’
Jahr um Jahr ‘year by year’
Stein auf Stein lit.: ‘stone on stone’
Seit an Seit ‘side by side’
Hand in Hand ‘hand in hand’
- (28) Frozen coordinations
Hegen und pflegen ‘to nourish and cherish’
schalten und walten ‘to have carte blanche’
mit Sack und Pack ‘with bag and baggage’
fix und foxi ‘to be tuckered out’

Both (27) and (28) abide by the law in (1). The twin nouns in (27) are separated by a preposition, thwarting adjacency of the repeated elements. The preposition is sometimes variable and semantically opaque: note that *Tag für Tag*, *Tag um Tag* are synonymous variants, irrespective of the difference concerning the preposition. Despite its semantic weakness, the preposition cannot be omitted in these constructions. I therefore argue that, apart from signalling the sequential meaning inherent in these N+P+N constructions, the preposition is a kind of epenthesis, fulfilling the phonological requirement (viz. the law in (1)) for these constructions to become lexical items.

The idiomatic co-ordinating constructions (28), also called frozen binomials because their word order is fixed, are likewise lexicalised (Müller 1997). In contrast to the cases in (27), the corresponding stems in (28) are “dizyotic twins”, as it were. The stems involved may be near-synonymous and near-homophonous but, crucially, not identical. Conceivable idioms with identical stems are illicit (**hegen und hegen*), or at least pragmatically not equivalent to the constructions in (28) – in spite of the formal and semantic similarity. In the phrasemes (28), the coordinating *und* ‘and’ thwarts adjacency of the corresponding stems; one may therefore argue that the phonological alternation of the stems is not called for to avoid exact adjacent repetition. However, it is possible to string the stems together as part of a list without the intervening *und* while retaining the idiomatic character of the construction (29). The coordinating *und* is therefore not considered a necessary part of the idiomatic expression. Without *und*, the corresponding stems are adjacent – the phonological difference between them is therefore crucial for upholding the law in (1).

- (29) a. *...echte Oldtimer, die wir [...] hegen, pflegen und bewahren.*
 ‘real vintage cars that we nourish, cherish and conserve’
 b. *...als die IT-Abteilung noch schalten, walten und horten konnte*
 ... when the IT department used to have carte blanche and was able to hoard stuff’
 c. *Klinikumzug mit Sack, Pack und Patienten*
 ‘relocation of the hospital with bag and baggage and patients’

Splitting the corresponding conjuncts with other material yields infelicitous or clearly less well-formed phrases. The stems are therefore considered locally connected; the same holds for (27), see Jackendoff (2008) or Müller (2016).

- (30) a. ??wir **hegen** die Beziehung und **pflegen** sie
 ‘we nourish the relation and cherish it’
 b. ??**schalten** und autoritär **walten**
 ‘to to control and to prevail authoritatively’
 c. ??mit **Sack** und schwerem **Pack**
 ‘with bag and heavy baggage’

Compare (27) and (28) with another construction involving corresponding stems, viz. the *X-and-X* construction (Finkbeiner 2012). These items present with identical words that are usually separated by *und* (31).

- (31) X-and-X-construction (example taken from Finkbeiner 2012)
 A: *Schade dass die so teuer sind.*
 It’s a shame they are so expensive.
 B: *Naja, **teuer und teuer** – wenn die Qualität stimmt, dann finde ich den Preis okay.*
 Well, expensive and expensive – if the quality is good, the price is fine with me.

For our concern, it is important that, as in the case of (28), one may forego the co-ordinating *und* when the list of conjuncts is expanded, as in the constructed example in (32). In this case, which presupposes at least three degrees of *blau* ‘blue’, the identical words are strung together without intervening material.

- (32) X-and-X-construction with three conjuncts (constructed)
 A: *Ich kann blaue Pullover nicht ausstehen.*
 ‘I can’t stand blue pullovers.’

B: *Naja, blau, blau und blau – solange es nicht zu blass ist, finde ich es ok.*

Well, blue, blue, and blue – if it is not too pale, it is fine with me.

As elaborated in Finkbeiner (2012), the meaning of (31) (and (32), for that matter) is not lexically fixed but highly context-dependent. According to Finkbeiner (2012), their meaning corresponds to the proposition (33) in which the context-dependency is explicit.

- (33) Meaning of the X-and-X construction Finkbeiner (2012)
 The meaning of X in situation A differs from the meaning of X in situation B [and both differ from the meaning of X in situation C].

Correspondingly, while coordinating constructions like *hegen und pflegen* (28) are lexicalised, constructions like *teuer und teuer* (31) are not. Therefore, as the constructions in (32) do not represent lexical items, the adjacency of identical words in (32) does not pose a problem for the law in (1).

4 Summary, discussion, and conclusion

Table 1 summarises all instances of repetitious phonological structure discussed in this paper, listed by phonological level. The columns juxtapose instances of exact adjacent repetitions on the one hand, and, on the other hand, repetitions that avoid adjacency of identical phonological material, either i) by degemination, or ii) by intervening material, or iii) by phonological alteration (rhyme, ablaut, umlaut). All cases listed in the right column of Table 1, i.e. the cases avoiding exact adjacent repetition, are lexical items or at least open to lexicalisation. Conversely, most cases in the left column are not listed in the lexicon. The only exception are abbreviations (alphabetisms for which stronger constraints must be assumed that prevent the application of (1)) and the few idiosyncratic forms (loans, onomatopoeias, and ideophones) discussed in Section 3.1.1. These exceptions, it seems, are rather well-defined. The synopsis in Table 1 thus corroborates the general validity of the law in (1) (repeated here for the reader's convenience).

- (1) DO NOT REPEAT: Lexical items must not contain exact adjacent repetitions of phonological material (segments, syllables, feet, phonological words).

The scope of this phonotactic constraint, i.e. the fact that it holds across all relevant levels of the prosodic hierarchy, has hitherto gone unnoticed. Before concluding, I will briefly discuss two cases of linguistic repetition avoidance beyond phonology.

Phonological level	Exact adjacent repetition	Degemination, non-identical or non-adjacent repetition
Segment	<p>potential geminates with +<i>bar</i>, +<i>los</i>, +<i>tum</i> <i>Schrifttum</i> [ʃʁɪft:um]</p> <p>non-lexicalised compounds <i>Schalt+technik</i> [ʃalt:ɛçnik]</p>	<p>degemination in the context of +<i>lein</i> <i>Vogel+lein</i> [føgəlam]</p> <p>lexicalised compounds <i>Hand+tasche</i> [hantaʃə]</p> <p>assimilated loan words <i>Spaghetti</i> [ʃpageti]</p>
Syllable	<p>strong inflection of comparative adjectives ending in /r/ <i>lecker+er+er</i> [lɛ.kɐ.ʁɐ.ʁɐ]</p>	<p>truncation+doubling stress-related segmental difference <i>Johannes>Jojo</i> [jo:jo]</p>
Foot	<p>loans, ideophones <i>Bonbon, Couscous, plemplem</i></p> <p>abbreviations <i>BBC, DDR, FKK</i></p>	<p>rhyme/ablaut-reduplication <i>Schickimicki, Wirrwarr</i></p> <p>reduplication with umlaut <i>tagtäglich, wortwörtlich</i></p>
p-word	<p>ICC <i>Reisreis</i> etc.</p> <p>X-and-X construction <i>teuer und teuer</i> etc.</p> <p>unbounded repetition <i>vorvorvorgestern</i> <i>sehr sehr schön</i></p>	<p>“Self-compound” <i>Kindeskind, Helfershelfer</i></p> <p>frozen co-ordination, N-P-N construction <i>hegen und pflegen</i> <i>Tag für Tag</i></p>

4.1 Repetition avoidance beyond phonology

Repetition avoidance in language is not unique to the lexical phonological domain. Instead, repetition avoidance is observable in other domains such as syntax and the grammar of discourse.

In order to illustrate this point, I will briefly mention two examples. In doing so, I will reframe repetition avoidance as preference for alternation. With regard to the syntactic domain, a bird's eye view on sentence structure suggests that lexical and functional words preferably alternate (34). While this alternation between lexical and functional words is certainly not always perfect (34-c), it is relatively difficult (though not impossible (35)) to construct sentences in which more than two function words cluster together without interspersed lexical words (or vice versa).

(34) Some perfectly normal sentences

- a. John_{Lex} has_{Func} cancelled_{Lex} his_{Func} subscription_{Lex} to_{Func} Netflix_{Lex}.
- b. German ... dass_{Func} Hans_{Lex} ein_{Func} Ingenieur_{Lex} ist_{Func}.
 ... that Hans a engineer is.
 '... that Hans is an engineer.'
- c. German ... dass_{Func} Hans_{Lex} seine_{Func} Frau_{Lex} liebte_{Lex}.
 ... that Hans his wife loved
 '... that Hans loved his wife.'

(35) A somewhat exceptional word sequence (*German*)

- ... dass_{Func} der_{Func}, der_{Func} die_{Func} ...
- ... COMP DEMONSTR.PRN, REL.PRN DET ...
- '... that the one who the ...'

On the level of discourse structure, the preference for alternation (or identity avoidance) manifests itself in a phenomenon called 'repeated name penalty' (Gordon et al. 1993). By way of a reading experiment, Gordon et al. (1993) have shown that repeated reference to a discourse entity with the same name or the same definite description (36-a) leads to enhanced processing costs compared to conditions in which a discourse entity, once it is introduced, is referred to via pronouns (36-b).

- (36) a. #Rita is a branch manager of a bank. Rita loves her work and Rita wants to become the director of the bank.
- b. ✓ Rita is a branch manager of a bank. She loves her work and wants to become the director of the bank.

Whether the suggested commonalities between phonology, syntax and discourse regarding repetition avoidance indicate the workings of a common abstract principle is a contentious issue and beyond the scope of this paper. In any case, as the examples

(35) and (36-a) show, repetition avoidance (or preference for alternation) in syntax and discourse appears to be far less consistent compared to phonology. While for syntax and discourse, repetition avoidance might be a tendency, DO NOT REPEAT (1) is a valid generalisation in the phonology of German.

4.2 Conclusion

All languages need to counterbalance the necessary re-use of their elementary vocabulary of phonemes, morphemes, and words with the imperative to avoid redundancy. The (hopefully representative and near-exhaustive) list of repetitive phenomena offered here suggests that German avoids redundancy in the lexicon by rather strictly prohibiting exact adjacent repetition of phonological material. The only cases that may override (1) appear to be abbreviations (*BBC*, *DDR*), onomatopoeias (*Wauwau*), and ideophones (*ballaballa*). In all other cases, the ban on exact adjacent repetition holds, and it does so across all levels of the phonological hierarchy.

References

- Berent, Iris & Joseph Shimron. 2003. Co-occurrence restrictions on identical consonants in the Hebrew lexicon: are they due to similarity? *Journal of Linguistics* 39(1). 31–55.
- Brugmann, Karl. 1917. Gleichklangvermeidung in der lautgesetzlichen Entwicklung und in der Wortbildung. *Indogermanische Forschungen* 38. 117–128.
- Brysbaert, Marc, Sara Speybroeck & Dieter Vanderelst. 2009. Is there room for the BBC in the mental lexicon? On the recognition of acronyms. *The Quarterly Journal of Experimental Psychology* 62(9). 1832–1842.
- Drake, Derek. 2013. *Variation and change in Northern Bavarian quantity*. Madison, WI: The University of Wisconsin-Madison dissertation.
- Fanselow, Gisbert & Caroline Féry. 2002. Ineffability in grammar. In Gisbert Fanselow & Caroline Féry (eds.), *Resolving conflicts in grammars: Optimality theory in syntax, morphology, and phonology*, 265–307. Hamburg: Helmut Buske Verlag.
- Finkbeiner, Rita. 2012. Naja, normal und normal. Zur Syntax, Semantik und Pragmatik der x-und-x-Konstruktion im Deutschen. *Zeitschrift für Sprachwissenschaft* 31(1). 1–42.
- Finkbeiner, Rita. 2014. Identical constituent compounds in German. *Word Structure* 7(2). 182–213.

- Fleischer, Jürg & Stephan Schmid. 2006. Zurich German. *Journal of the International Phonetic Association* 36(2). 243–253.
- Freywald, Ulrike. 2015. Total reduplication as a productive process in German. *Studies in Language* 39(4). 905–945.
- Ghameshi, Jila, Ray Jackendoff, Nicole Rosen & Kevin Russell. 2004. Contrastive focus reduplication in english (the salad-salad paper). *Natural Language & Linguistic Theory* 22(2). 307–357.
- Gordon, P. C., Barbara J. Grosz & Laura A. Gilliom. 1993. Pronouns, names and the centering of attention in discourse. *Cognitive Science* 17(3). 311–348.
- Görner, Rüdiger. 2015. *Ästhetik der Wiederholung: Versuch über ein literarisches Formprinzip*. Göttingen: Wallstein.
- Günther, Hartmut. 1981. N+N: Untersuchungen zur Produktivität eines deutschen Wortbildungstyps. In Leonhard Lipka & Hartmut Günther (eds.), *Wortbildung*, 258–280. Darmstadt: Wissenschaftliche Buchgesellschaft.
- Hohenhaus, Peter. 2004. Identical constituent compounding—a corpus-based study. *Folia Linguistica* 38(3-4). 297–331.
- Horn, Laurence. 1993. Economy and redundancy in a dualistic model of natural language. In Susanna Shore & Maria Vilkuna (eds.), *SKY 1993. Yearbook of the Linguistics Association of Finland*, 33–72. Helsinki: Suomen kielitieteellinen yhdistys.
- Horn, Laurence. 2018. The lexical clone: Pragmatics, prototypes, productivity. In Rita Finkbeiner & Ulrike Freywald (eds.), *Exact repetition in grammar and discourse*, 233–264. Berlin: De Gruyter.
- Jackendoff, Ray. 2008. ‘Construction after Construction’ and its theoretical challenges. *Language* 84(1). 8–28.
- Jakobson, Roman. 1960. Closing statement: Linguistics and poetics. In Thomas Sebeok (ed.), *Style in language*, 350–377. Cambridge, MA: MIT Press.
- Kanwisher, Nancy G. 1987. Repetition blindness: Type recognition without token individuation. *Cognition* 27(2). 117–143.
- Kentner, Gerrit. 2017. On the emergence of reduplication in German morphophonology. *Zeitschrift für Sprachwissenschaft* 36(2). 233–277.
- Kloeke, WUS van Lessen. 1982. *Deutsche Phonologie und Morphologie: Merkmale und Markiertheit*, vol. 117. Walter de Gruyter.
- Kotzor, Sandra, Benjamin J Molineaux, Elanor Banks & Aditi Lahiri. 2016. “Fake” gemination in suffixed words and compounds in English and German. *The Journal of the Acoustical Society of America* 140(1). 356–367.
- Kraehenmann, Astrid. 2001. Swiss German stops: geminates all over the word. *Phonology* 18(1). 109–145.
- Mattiello, Elisa. 2013. *Extra-grammatical morphology in English: Abbreviations, blends, reduplicatives, and related phenomena*. Berlin: Walter de Gruyter.

- McCarthy, John J. 1986. OCP effects: Gemination and antigemination. *Linguistic Inquiry* 17(2). 207–263.
- Müller, Gereon. 1997. Beschränkungen für Binomialbildung im Deutschen: Ein Beitrag zur Interaktion von Phraseologie und Grammatik. *Zeitschrift für Sprachwissenschaft* 16(2). 5–51.
- Müller, Gereon. 2016. Predicate doubling by phonological copying. In Katja Barnickel, Matías Guzmán Naranjo, Johannes Hein, Sampson Korsah, Andrew Murphy, Ludger Paschen, Zorica Puškar & Joanna Zaleska (eds.), *Linguistische Arbeitsberichte* 93, 127–148. Leipzig: Universität Leipzig.
- Pozdniakov, Konstantin & Guillaume Segerer. 2007. Similar place avoidance: A statistical universal. *Linguistic Typology* 11(2). 307–348.
- Ridouane, Rachid. 2010. Geminares at the junction of phonetics and phonology. *Laboratory Phonology* 10. 61–90.
- Saba Kirchner, Jesse. 2010. *Minimal reduplication*. CA: University of California Santa Cruz dissertation.
- Schein, Barry & Donca Steriade. 1986. On geminares. *Linguistic Inquiry* 17(4). 691–744.
- Schindler, Wolfgang. 1991. Reduplizierende Wortbildung im Deutschen. *Zeitschrift für Phonetik, Sprachwissenschaft und Kommunikationsforschung* 44(5). 597–613.
- Stolz, Thomas, Cornelia Stroh & Aina Urdze. 2011. *Total reduplication: The areal linguistics of a potential universal*. Berlin: Akademie Verlag.
- Suzuki, Keiichiro. 1998. *A typological investigation of dissimilation*. Tucson, AZ: University of Arizona dissertation.
- Walter, Mary Ann. 2007. *Repetition avoidance in human language*. Cambridge, MA: Massachusetts Institute of Technology dissertation.
- Yip, Moira. 1988. The obligatory contour principle and phonological rules: A loss of identity. *Linguistic Inquiry* 19(1). 65–100.