



The phonesthetics of blends: A lexicographic study of cognitive blends in the OED

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Abstract

This preliminary study of 285 morphological and cognitive blends (attestation dates 1200-2012) aims to investigate the role of phonesthemes in the structuring of the English lexicon. A study of *OED* word origins shows a disparity between older (1200-1900) and recent blends (1903-2012). Sound symbolism plays an overriding role in over 50% of older blends, leading to a study of initial phonesthemes (i.e. consonant clusters). Several case studies of diachronic semantic shift attested in the *OED* point to the existence of multidirectional motivation ties. This preliminary study supports the psycholinguistic theory that 1) there is a structured secondary sound symbolism in English, and that 2) it is still productive today and may play a role in the creation of neologisms as well as ensuring their survival (see Bergen, 2010: 52). A more in-depth usage-based analysis using sophisticated measurement tools is the next step in the study.

Key words: cognitive blends; the *OED*; diachronic semantic shift; multidirectional remotivation; phonesthemes.

1. Introduction

Phonesthemes, i.e. 'sub-morphemic unit[s] that ha[ve] a predictable effect on the meaning of a word as a whole' (Otis & Sagi, 2008: 65) are having a moment thanks to novel cognitive and psycholinguistic perspectives (Bergen, 2004, 2010; Drellishak, 2006; Otis & Sagi, 2008). It has been suggested by Bauer (1983: 235) that the preservation of initial consonant clusters, in other words initial phonesthemes, plays a role in determining the structure of short blend outputs. This preliminary study seeks to determine if - and to what extent - blends have a phonesthetic structure. This paper attempts to provide answers to longstanding questions regarding the linguistic status of phonesthemes, such as:

A) Is there a correlation between phonesthetic structure and blend longevity? In other words, is there evidence of phonesthetic structure in both older and recent blends?

B) Is there lexicographic evidence of the existence of phonesthemes? Where do phonesthemes originate from, and how do they behave diachronically? Is phonesthetic attraction verifiable lexicographically?

Going against the grain of current empirical research in lexical semantics, the chosen methodology is a lexicographic study of 285 blends, selected from literature, including contested cognitive blends (a full list is provided in Appendix B)¹. A first step in answering A) consists in analysing the *OED*'s labelling of blends, and presenting the results to compare the structure of older and recent blends. With a view to answering B), a second step follows up by analysing phonesthetic reanalysis in older blends, before attempting to extrapolate potential remotivation in recent blends.

The structure of this paper follows 4 parts. Part 1 lays out the groundwork regarding the typology of morphological blends and argues for the crucial inclusion of cognitive blends² in light of the proposed relevance of phonestheme preservation in the blend output. Part 2 provides a brief discussion of the impact of the evidence of psycholinguistic reality of phonemes for the ongoing debate on the linguistic status of phonesthemes and presents the methodology for determining the role of phonesthemes in blend structure. Part 3 then presents the data compiled regarding the structure of blends in the *OED*, showing that over 50% of older blends are phonesthetic in structure, compared to barely 2% of recent blends. Several lexicographic case studies of diachronic shift in historical blends provide solid evidence of analogical remotivation of blends based on phonesthetic reanalysis. Extrapolation of the multidirectional motivation ties to novel cognitive blends provides predictions of potential future semantic shift. Part 4 concludes that this preliminary study shows evidence of multidirectional motivation in cognitive blends in the *OED*, and paves the way for further research into the role of phonesthetic reanalysis in the organisation of the lexicon.

¹ Choosing a lexicographic study over a corpus-driven study is motivated by constraints of time and of technique. The aim here is not to deliver an in-depth study but to consider the possibility of devising a way to test the theory of phonesthetic attraction, i.e. whether phonesthemes structure the lexicon. The question of how to measure this must be left to further study.

² A cognitive blend is defined as 'one word which delivers the concept of two base words' (Bat-El 2006: 66). The implication is that any ambiguity regarding definitive input words does not result in disqualification of the output as a blend.

2. Blend outputs

2.1. Brief typology of morphological blends

Blending is a word formation process akin to compounding and clipping. Blends are described morphologically as combining two input forms³ to produce a shorter output form. This means that segmental material from the source words is clipped to allow for a reduction of length of the output form. As Gries (2004: 416) points out, prototypical blends usually contain back-clipped source word 1 followed by foreclipped source word 2, leading to a portmanteau, an amalgam, or a telescoping of the two source words (henceforth abbreviated to 'sw') (see Quinion, 1996; Pound, 1914; Bauer, 1983).

Such canonical blends are words like *skort(s)* [1951] (skirt x short(s)), *glamping* [2008] (glamour x camping), *pleather* [1982] (plastic x leather), *prissy* [1842] (prim x sissy), *cankle* [2002] (calf x ankle) and of course the ubiquitous *spam* [1937] (spiced x ham), and *smog* [1884] (smoke x fog) which has spawned similar blends like *smaze* [1953] (smoke x haze) and *vog* [1987] (volcano x smog). Blends such as these tend to feature the clipping of an overlapping segment as in *glamping* where *-am* is shared by both source words, or *pleather* where *-l* is shared by both sw.

Another type of blend features one fully recognizable source word: either sw1 has it full form: *webzine* (web x magazine), *gaydar* [1988] (gay x radar), *tankini* [1985] (tank x bikini), *prisonscape* (prison x landscape), and *bromance* [2004] (bro x romance). Occasionally sw2 is full as in *cankle*, *frenemy* [1953] (friend x enemy). In some cases, both sw1 and sw2 are fully retrievable due to haplology (overlapping segment), as in *glamazon* [c1960] (glamour x amazon), *swaption* [1988] (swap x option), or *bacne* [2003] (back x acne).

There is also a third and fourth type of blend output. The third type involves analogical patterning, whereby the clipped sw2 becomes suffix-like, as in *walkathon* [1930] (walk x marathon), *telethon* [1930] (television x marathon), *talkathon* [1934] (talk x marathon), or *-athon*, *-alicious*, *-scape*, *-kini*, *-ercise*, *-moon*, *-aholic*, *umentary*, etc. These forms are called splinter compounds. Once a blend is formed, copycat blends occur naturally (see Bauer (1983: 104) and Benczes (2010: 232) on splinter formation; Lehrer, 2007; Miller, 2014; see Szymanek (2005: 431) on the relation between analogy and high productivity). Historically there is usually a first blend; *prisonscape* [1796] is cited as the first in a pattern of blending (*seascape* [1799], *cityscape* [1857], *moonscape* [1907] *manscape* [1927]). It is notable that splinters occurring in a prefix position do not appear to pose the same problems, as the output is still

³ Or occasionally more than two (as in *doodle* [1953 Wiki] (drawing x riddle x doodle), *contraption* [1825] (contrivance x trap x conception), *snooze* [1789] (sleep x nap x doze)), *flaunt* [1566] (fly, flout x vaunt).

viewed as a blend (*man-* as in *manorexia* [n/a] (*man* x *anorexia*), *faux-* as in *fauxmance* [2008] (*faux* x *romance*), *sham-* as in *shamateur* [1896] (*sham* x *amateur*), *mock* as in *mocktail* [1936] (*mock* x *cocktail*) etc.). As for the final type, these are double clipped words (*sitcom* [1964] (*situation* x *comedy*), *misper* [1994] (*missing* x *person*), *hazmat* [1980] (*hazardous* x *material*), *cyborg* [1960] (*cyber* x *organism*), etc.) which are generally viewed as non blends, and are therefore excluded here (see Plag 2003).

Blending appears limitlessly creative, but counterexamples (such as **brench* (Kelly, 1998) or **breakfunch* (Gries, 2004) rather than *brunch*) illustrate the existence of constraints. However, the nature of these constraints remains somewhat questionable. Gries (2004: 427) concludes that stress pattern preservation is overriding: 'similarity motivated preservation of one source word's stress pattern [is] considered more important than the recognizability-motivated preservation of letters and phonemes.' Miller (2014: 203) argues convincingly for the importance of metrical structure. At the heart of the issue lies 'the compositional transparency of the output' (Miller, 2014: 204). The length of the blend itself is a factor in this, as longer blends and shorter blends have different templates, see Miller (2014). Blends such as *smog*, *brunch* [1896] (*breakfast* x *lunch*), *bit* [1848] (*binary* x *digit*), *goon* (*gorilla* x *baboon*) (cited in Bat-El, 2006) retain very little material from their source words. The fact is that shorter blends tend to be more opaque. The consensus is that short monosyllabic blends preserve the onset of source word 1 and the rhyme of source word 2 (see Bat-El (2006: 69) and Gries (2004: 427)). Bat-El (2006: 69) argues that rhyme/coda preservation explains why *slosh* [1808] (*slop* x *slush*) is preferred over **slush* and *boost* [1815] (*boom* x *hoist*) is preferred over **boist*. Although this conclusion does not satisfactorily explain word order and switch point, it seems that the preservation of initial consonant clusters may be crucial in such short blends (see Bauer 1983: 235). I propose to test the hypothesis that the preservation of submorphemes, or more specifically phonesthemes, may account for preferred forms of blends.

2.2. Cognitive blends

Shorter blends such as *slosh* and *boost* exhibit little material from sw1 and sw2, and consequently are less transparent. The blend *motel* [1925] (*motor* x *hotel*) is recognizable thanks to the stress pattern of sw2. The retrievability of sw1 *motor* from the phoneme /m/ however is no doubt contextual and cultural. If one compares *motel* with the blend *moobs* [1990] (*man/male* x *boobs*) the retrievability of sw1 from the phoneme /m/ is entirely different, for semantic reasons (**motor boobs* would make no sense). *Meld* [1936] (*melt* x *weld*) is yet another example for a different interpretation of the [m] sound. This lack of transparency can affect recent creative blends, such as *vook* [2009] (*video* x *book*), *choup* [2007] (*chowder* x *soup*), *swacket* [n/a]

(sweater x jacket), or *wogging* [2008] (walk x jogging), but also long-term lexicalized historical blends, suggesting that the retrieval of source words is no longer needed for interpretation: *electrocution* [1889] (electric x execution), *dextrose* [1869] (dextrorotary x glucose), *bionics* [1960] (biology x electronics).

Despite many documented instances of creative short-lived blends (see Lehrer (2007) for recent formations, Bragdon (2008) for historical blends), some blends on the other hand have proven to be highly stable. Such historical blends include words such as *prance* [1380] (proud x dance), *splutter* [1677] (splatter x sputter), *flurry* [1698] (flaw x hurry), *swipe* [1829] (sweep x wipe). The nature of these blends is qualified as indefinite by Louise Pound (1914), because the source words are unclear, and even possibly multiple. The *OED* rarely confirms the blend status of these expressions. Instead, the labels provided range from onomatopoeic (*flurry*), echoic or imitative (*splutter*), alterations or variants (*swipe*), unknown origin (*prance*), to even arbitrary or 'factitious' (*snivelization* [1849] (snivel x civilization), *chortle* [1871] (chuckle x snort) and even *humongous* [1967] (huge x monstrous). Occasionally, the *OED* conjectures several origin hypotheses in the absence of unequivocal evidence. A case in point is the verb *flounder* [1592] (founder x blunder⁴). In view of its obscure etymology, the *OED* concedes that it may be an onomatopoeic blending of various earlier words, such as *flounder* and *blunder* 'and the various other verbs in *fl-* expressing impetuous and clumsy movement'. However, the *OED* shows no systematic differentiation between blends, onomatopoeic formations, analogical formations or alterations and variants. For instance the noun *glob* [1900] is given both as a potential blend (gob x blob) and as a possible clip of *globule*. The word *slosh* [1808], cited by Bat-El (2006) as a blend, is given as 'imitative' based on the noun *slush*⁵ [1642]. Equally, the adjective *boldacious* [1845] (bold x audacious) is not labelled blend, but rather a 'combination' of the adjectives *bold* and *audacious*. A further illustration is *contraption* [1825] (contrivance x trap x conception) which is called a popular formation based on *contrive* 'with some vague association with *trap*', or *doldrum* [1812] (dull x tantrum) which is viewed as a 'derivative' of *dold*, to be compared with *tantrum*.

The conclusion to be drawn here is the observation that the lexicographic use of the label 'blend' is problematic. In particular, the *OED* shows a degree of reluctance in using the label for non-specific blends, where source words are indefinite. Instead the *OED* resorts to referring to labels such as 'association', 'derivation', 'imitative', 'echoic', 'onomatopoeic blending', and so on.

In spite of the highly contested nature of these historical formations, this paper views blends as a cognitive formation. A cognitive blend can be defined as any word that can be interpreted as combining the meaning of two source words, as

⁴ See Pound (1914: 54)

⁵ *Slush* [1642], noun, is labelled in *OED* as being 'of doubtful origin: compare *sludge* n. and *slutch* n. (both from the 17th cent.) and the more recent *slosh* n'.

per Bat-El's (2006: 66) definition of a blend: 'one word that delivers the concept of its two base words'. The noun and adjective *greige* [1835] shows evidence of being interpreted as a blend of (grey x beige), in blatant contradiction with its etymological origins (from the French *grège*). The *OED* entry for *greige* states that the sense of the noun evolved around 1911 to 'a colour between beige and grey, similar to that of undyed or unbleached fabric'; the adjective *greige* also shows parallel semantic shift around 1925. A corpus SketchEngine co-occurrence analysis of *greige* confirms these findings, resulting in a high incidence of *greige* used in the sense 'greenish taupe', i.e. green/grey x beige. The *OED* accepts that words like *muppet* [1959] (marionette x puppet) and *slurb* [1962] (slum x suburb) are likely reanalysed as blends post attestation. This a posteriori reanalysis, also called folk etymology (see Fill (2004)), is in fact a sign of bidirectional motivation, whereby cognitive word associations motivate reanalysis as blends (see Umbreit (2010) on bidirectional motivation in N/V conversion pairs). It therefore makes sense to take into consideration all blends, both morphological blends and cognitive. The appendix of blends presented in this paper (Appendix B) provides the list of 285 blends compiled from the literature on blending (Pound, 1914; Plag, 2003; Gries 2004; Lehrer, 2007; Bragdon, 2008; Miller, 2014) and gives source words provided by said literature, regardless of *OED* labelling and lack of consensus.

3. Blends and phonesthemes

3.1. Psycholinguistic breakthrough into phonesthemes

One of the main concerns of critics of phonestheme theory is that phonesthemes are non-systematic and non-compositional. Since they are sporadic in nature (see Hock and Joseph 2009), they cannot be identified by traditional semantic analysis methods (i.e. listing of necessary conditions), making them nothing more than a conjecture. A second criticism levelled against phonesthemes is that they are not supported by etymological lineage. A third criticism is that the whole notion of phonesthemes is flawed as pertaining to a subjectivist mentalist approach to language. They are impressionistic and no clear definitive set of semantic features has been described to account for the sense of these sound clusters. (See Bottineau (2008) for a full account of the discussion).

In the face of such scepticism, recent cognitive and psycholinguistic research has by and large revolutionised the perspective on phonesthemes. Firstly, experimental research has shown the significance of phonesthemes in that they statistically occur more frequently than chance. Bergen's (2004) priming experiments, and further statistical studies (Otis & Sagi, 2008) have shown that phonesthemes indubitably affect lexical processing speed and reliability, thereby establishing them as

a subject worthy of study. Bergen (2004: 307) concludes that his findings show that '[p]honaesthemes are a testament to the diligence of the human ability to encode and use subtle statistical associations in the linguistic environment.' These results are supported by neurolinguistic science, and in particular the role of phonological neighbourhood density (Luce & Pisoni 1998) which acts as a facilitator of lexical access. Phonological word neighbours are defined as subsets forming minimal pairs, much like phonesthetic attraction networks. Martin (2007: 30) attributes the feedback loop process to the phonological neighbourhood effect.

Bergen (2004: 307) argues that phonesthemes have a snowballing effect, leading to a feedback loop of form-meaning pairings, i.e. bidirectional motivation. This accretional effect is thought, as suggested by Bergen (2004: 290), to eventually lead to the 'extension over time' of phonestheme clusters (also see Pinker (1997: 300), Miller (2014: 88⁶), Waugh (1994: 67)). These cognitive and psycholinguistic advances have been empirically validated by computational statistical research (Drellishak, 2006; Otis & Sagi, 2008; Boussidan et al, 2009; Abramova et al, 2013). Natural language processing techniques have been used successfully to more adequately and precisely analyse the semantic behaviour of target words using contextonyms, i.e. frequently occurring words in context. Such techniques have been used by Drellishak (2006) to test whether phonesthemes exhibit frequency patterns above significance levels, and to study the semantic content of the conjectured phonesthemes (see Abramova et al. 2013 on automatic labelling of phonesthemic senses, and Boussidan et al. 2009, for a statistical study of the semantics of phonesthemes).

As for the second criticism regarding lineage, the consensus on phonestheme requirements is actually that there should be no correlation between a phonestheme and a shared root. Bergen (2004) and Drellishak's (2006) definitions of phonesthemes are specifically based on this criterion. However, Otis and Sagi (2008: 36) argue that the meaning of phonesthemes is compatible with competing factors, lineage and reanalysis.

There are two possible factors that might explain the relationship between phonaesthemes and word meaning - the historical root of the words, and cognitive processes that relate phonetic and semantic similarity. Importantly, these hypotheses are not mutually exclusive. Otis and Sagi (2008: 36).

This position is backed by Boussidan et al (2009: 36), who note that some meaningful morpho-phonological clusters 'may have survived through generations and formed the basis for phonesthemes'. On the issue of phonestheme etyma, Bolinger (1965: 224) also took the view that while some phonesthemes may originate from a common root, further 'more or less accidental' resemblance continues to cause

⁶ Miller (2014: 88) argues that "[a]nalogy, then, is not a separate type of word formation but is rather the means by which word creation originates and spreads".

convergence.⁷ Anecdotal evidence of reanalysis is observed in Reay (2009: 897). Reay 2009 describes how phonesthemes can arise out of loan words, providing evidence that they override etymological motivation. The loan words *slalom* [1921] originates from Norwegian *slalåm*, < *sla* sloping + *låm* track, but is re-analysed as containing /sl/ sliding movement (already present it would seem in the cognate). The adjective *cushy* [1915] from Anglo-Indian, <Hindi *khūsh* pleasant is reanalysed as containing the submorpheme <cu>, injecting the notion of “comfortable, soft, cuddly” as in *cushion*. Reay's examples thereby show lexical evidence of Bergen's priming effect. Further promising research has examined the historical origins and development of phonesthemes (Philps, 2008a and 2008b), whereas further research focuses on co-occurrence patterns to study the semantic shift in phonesthetic words (Smith, forthcoming).

The third argument regarding the lack of consistency in phonesthemes is more delicate. Identifying an objective and universal value has shown to be challenging. One single sense of value does not necessarily hold for all words carrying a particular sound cluster. The reason for this, as argued by Bergen (2004: 290), is that phonesthemes are not compositional in nature, i.e. they do not follow traditional building-block rules. Furthermore, at the heart of the problem lies the theoretical foundation for sound symbolism. It has traditionally been suggested that meaning is notional (see Tournier 2007, Bolinger 1950), but new linguistic approaches have proposed that phonesthemes are triggers of modal mental representations or schemas (see Argoud (2008), (2010); Albrespit (2007), or sensori-motor subactions (Bottineau, 2008: 29). What is empirically crucial here is the fact that it appears that one phonestheme may be associated with not one but several mental schemas or associations. For instance Miller (2014: 200) explains that initial *sl-* has four associations - a) fluid motion, b) messy liquid, c) improper, d) violence. Each association is illustrated by a set of synonymous *sl-* words, each constituting a phonesthetic attraction set. Similarly, Bottineau (2008: 31) notes that /skr/ may have resulted from ‘two merging strains, *sk+r* (surface + agentivity: *scrub*, *scroll*, *scratch*) and the *scr-* onomatopœia (*screech*, *shrill*).’ Philps (2008a; 2008b) confirms that there are likely several offshoots, both related to historical etyma and to the evolving lexicon. Since this theoretical issue is complex and remains controversial, this paper will not enter into the debate here.

While these new perspectives can put to rest two of the main objections to phonesthemes, much remains to be uncovered about their linguistic status and semantics. Briefly put, do phonesthemes only exist in the mental lexicon? Is there lexical evidence that phonestheme constellations ‘giv[e] rise to the status of organ-

⁷ [T]he tracing of constellations is of special interest in English. The language is almost totally lacking in an orderly system of derivatives. Words like *comparable* and *impious* are turned so as to show no connection with cognates. [...] If the language is settling into a species of interrelationship, it is probably highly time. Bolinger (1965: 202).

izing structures in the lexicon, on the basis of their frequency', as claimed by Bergen (2004: 291)? Furthermore, how is phonesthetic attraction to be measured?

3.2. *Position, proposal and methodology*

As a non-morphemic word formation process, blending is undeniably difficult to pin down. This paper seeks to test lexicographically the hypothesis that phonesthemes play an organisational systemic role in the semantics of blends in English. The approach is lexicographic, based on a sample corpus of 285 blends dating from 1200 to 2012. With this in mind, a list of blends, including contested cognitive blends, have been compiled from existing literature (Pound, 1914; Lehrer, 2007; Bat-EL, 2006; Miller, 2014) and the *OED* (3rd edition). For each proposed blend, the first recorded date of attestation is noted, the conjectured (and sometimes contested) source words are given. This information is then cross-checked with the *OED*'s etymological information. A separation between 2 sub-corpora based on the date of first attestation of the blend was then made. The cut-off point to the modern era was set post 1900, motivated by two main reasons. Firstly, there are fewer older blends than recent blends for obvious reasons of availability of data, and also due to the obsolescence factor. Secondly, the modern age teems with creative morphological blends (see Ayto, 1999 ; Gries, 2004 ; Lehrer, 2007).

- **The first step** is to compare etymological status of blends with dates of first attestation. A classification of blends according to etymological status and dates is carried out. Observations regarding the status and nature of older blends and novel blends are then laid out.
- **The second step** is to test the theory of phonesthetic attraction on the corpus of older blends. To achieve this, I propose to track semantic shift in several case studies, and consider the evidence of phonesthetic reanalysis. On the basis of the results, predictions are then made regarding the phonesthetic reanalysis of novel blends.

4. Results and discussion

4.1. *Classification of blends*

The size of the corpus compiled is modest compared to other blend corpora (988 in Gries (2004), given the decision to use a lexicographic corpus as opposed to a usage-based corpus. The objective of this preliminary study explains this choice: the purpose is to test heuristically the theory that phonesthemes structure the lexicon.

The diachronic perspective also places a constraint on the blends that are selected, as they must be both non-obsolete and lexicalized (or of frequent use).

Figure 1 below shows the etymological treatment and labelling of the 285 blends in Appendix B. For each era (1200–1900 and 1903–2012), a percentage is given for each label or subtype provided by the *OED* or secondary sources: blend, onomatopoeic, arbitrary, alteration or variant, combining form, unlisted, unknown, loan.

There are two major differences between the data pertaining to older blends and that pertaining to recent or novel blends. Firstly, the overwhelming majority of blends 1200–1900 are sound symbolic compared to a very small number of recent blends. Conversely, an overwhelming majority of recent blends are labelled as unequivocal blends, while another large proportion are recent coinages that, unsurprisingly, remain unlisted in the *OED*,⁸ such as *vook* [2009] (*video x book*), *tottle* [n/a] (*top x bottle*). The data is presented contrastively in Figure 1 (blue represents 1200–1900 blends, red represents blends post 1900): it brings to the fore the major discrepancies between older and recent blends in terms of their lexicographical treatment in the *OED*.

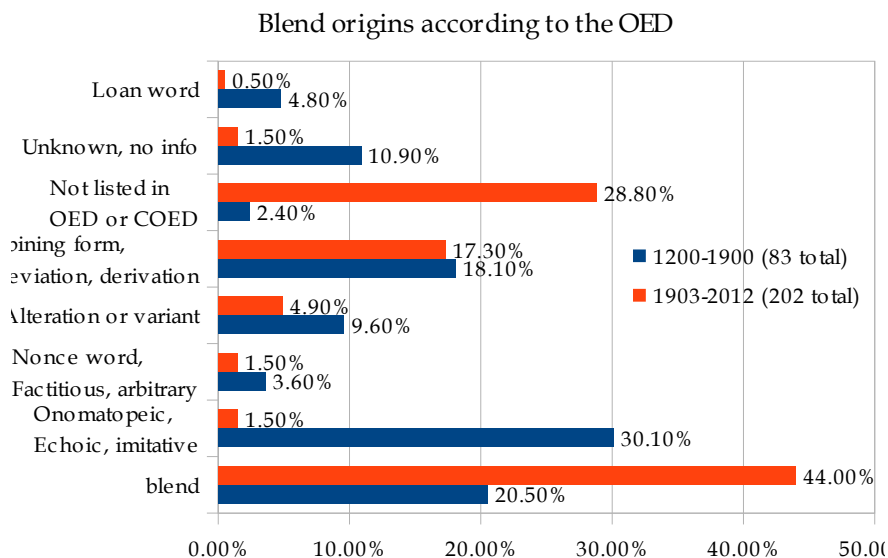


Figure 1. Comparative view of blend origins 1200–1900 vs 1903–2012.

⁸ See Appendix B for full list of blends.

As could be expected, the label blend is more readily used for recent blends (44%) than for older blends, which are very rarely acknowledged as such by the *OED*. The second major difference concerns sound symbolic forms: while 30% of older blends are labelled sound symbolic, a mere handful (1.5%) of recent blends are thought to be so. Other categories (“unlisted/unknown”) show some variation. There is one category that remains remarkably constant over time: a little under 20% are equated with compounds or derivation.

4.2. Blends 1200–1900

There are a total of 83 blends in the 1200–1900 subcorpus. Of these, I have identified 46 (55%) that can be analysed in terms of their sound symbolic structure. Appendix A gives [onset+rhyme] structure of monosyllables and disyllables (42 in total), following Bat-El (2006) and Gries (2004). Semantically and phonetically words, i.e. words belonging to the phonesthetic network, are also provided for each blend in a 4th column. The 4 remaining plurisyllabic words have not been listed (*flabbergast* [1772], *cantankerous* [1736], *blatterature* [1512], *snivelization* [1849]) as they are more complex and cannot be analysed by [onset+rhyme] structure alone.

The initial clusters occurring in the blends in Appendix A have been classified in Table 1 (below) in decreasing order of frequency (number of occurrences in the blend data). These clusters are cross-referenced with existing verified initial phonesthemes and their suggested core values in the final column, using both Tournier (2007) and Drellishak (2006).

Table 1. Frequency of initial phonesthemes in 42 out of 83 blends 1200–1900.

Initial C	Raw frequency	Blends	Core phonestheme semantics
fl-	8	<i>flaunt, flounder, flurry, flush, flare, frustrate, fluff, flimmer,</i>	Motion, repeated or fluid (Drellishak) surface flow (Tournier)
b-	4	<i>bumble, bash, boost, burble</i>	Dull impact (de Cuyper 2008: 113) sound of a voice, muted explosion (Tournier)
sm-	3	<i>smash, smarm, smog</i>	Insulting, pejorative term (Drellishak) Taintedness (Tournier)
sn-	3	<i>sniggle, snark, snooze</i>	Nose ; snobbish (Drellishak) region of the nose (Tournier)
squ-	3	<i>squish, squiggle, squirl</i>	Soft spongy compressed (Drellishak)

tw-	3	<i>twirl, twizzle, twiddle</i>	Turn; distort (Drellishak) Slight torsion (Tournier)
scr-	3	<i>scrouge, scrunch, scrumptious</i>	Sound, irregular movement (Drellishak) Confusion, messiness (Tournier)
bl-	2	<i>blotch, blurt</i>	Breathing, swelling (Tournier) blow swell inflate (Drellishak)
gl- ⁹	2	<i>glaze, glob</i>	Light; vision (Drellishak) Light reflection smooth surface (Tournier)
sw-	2	<i>swipe, swizzle</i>	Move rhythmically Drellishak To and fro oscillation (Tournier)
sl-	2	<i>slosh, slithy</i>	Slowness, sloth (Tournier) sl-attack and sl-sliding movement (Reay 2009)
gr-	1	<i>grumble</i>	Deep or complaining noise (Drellishak) grasping or grunting (Tournier)
br-	1	<i>brunch,</i>	Fracture (Tournier)
tr-	1	<i>trudge</i>	Walking (Tournier)
wh- /thw-	1	<i>whang, thwack</i>	N/a
qu-	1	<i>quag</i>	N/a
ch-	1	<i>chortle</i>	N/a
m-	1	<i>mimsy</i>	N/a

The most frequently occurring clusters in the sample (13 in total out of 17 onsets) coincide with established phonesthemes, as can be seen in Table 1. By far the most common in our corpus of blends is the *fl-* phonestheme, occurring a total of 8 times, followed by a whole range of double C clusters occurring 3 or 4 times. All the words in Table 1 carry plausible associations with the core phonesthetic meanings (to some degree). As Bauer (1983: 235) proposed, the preservation of initial clusters is a factor in the form of the blend, which Table 1 does not invalidate. However, is the initial phonestheme in the blend a preservation of the onset of *sw*1, or is the phonestheme triggered in the resulting blend?

Let us discuss the case of *flimmer* [1880] (flicker x glimmer). The verb combines two synonymic source words relating to light and carrying verified initial phonesthemes *fl-* and *gl-*. The attestation dates of *sw* 1 *flicker* [1000] and *sw*2 *glimmer*

⁹ Bolinger (1950: 131) identifies the form /gl/ 'as referring to 'visual phenomena'.

[1400] do not contradict the blend hypothesis. The *OED* entry for *flimmer* gives the sense 'To burn unsteadily; to flicker', noting usage is rare. A possible explanation is that it was historically dispreferred over earlier *glimmer* [1400] in the sense of faint flickering light. This may be related to the preference of cluster *gl-* specialising in reference to light, whereas *fl-* specialises in motion or repeated flow. It is noteworthy that *glimmer* [1400] underwent a semantic shift from the initial sense of 'To shine brightly; to glitter. Of the eyes: To flash', to [1483] to the 'weaker sense: To give a faint or intermittent light; to shine faintly'. *Flicker* [c1000] on the other hand initially had the literal sense of motion through air 'Of a bird: To flutter; to hover. occas. To flap the wings; to move by flapping the wings', and is only attested in [1608] as referring to intermittent light, which is arguably a metaphorical interpretation of the original meaning. On the other hand, some proposed blends carry initial phonesthemes which cannot be derived from the *sw1*, as with Lewis Carroll's *snark* [1879] possibly (snake x shark), referring to an imaginary creature combining the features of a snake and a shark. Although there seems to be no correlation between *sw1* *snake* and the *sn-* phonestheme, Carroll's *snark* could arguably be construed as having negative connotations directly linked to this onset. A possible cause for this, and a possible motivation in Carroll's coinage, is the analogy with the existing homonym *snark* v [1866], 'to snore, snort'; [1882] 'to find fault; nag'.

This is no undisputable proof of Bolinger's (1965: 243) theory that language shows an inevitable drift towards iconicity ('the accommodation of form to meaning and meaning to form'). Still, at the very least, the data in Table 1 show evidence of multidirectional motivation: the link between a word and its source is counterbalanced by analogical inferences. Finding systematic lexicographic evidence of phonesthetic reanalysis is a difficult task given the lack of unambiguous diachronic information available. Ultimately, individual case studies can do no more than pinpoint the complexity of word lineage, but a few selected case studies of phonesthetic networks may be able to show semantic evidence of analogical reanalysis based on phonesthetic attraction (see Hock and Joseph for the merits of this approach). From there, we hope that statistical semantic protocols can be devised to obtain more accurate data.

4.3. Using the OED to track semantic shift in cognitive blends

Measuring, quantifying or even documenting how phonesthemes affect semantic shift is a difficult task. If there is a mechanism of convergence towards a phonesthetic sense, one would expect semantic shift to occur under the influence of words belonging to a phonesthetic set or network (see Bergen 2004: 290). I thereby propose to trace lexicographic semantic shift in older blends presenting phonesthemes to observe whether phonesthetic reanalysis can be confirmed in case studies.

Let me at this point address the methodological issue of using a lexicographic source in spite of the current collocational corpus-based research. The *OED* remains a unique source of information regarding the lexicon, and presents the additional benefit of being less time-consuming than the corpus-based method. As this study intends itself a preliminary investigation, it does not warrant a full-blown usage-based study, which would require a time-consuming time-sliced historical corpus. I remain fully aware of the lexicographic bias of the *OED* but consider it to be acceptable as a tool for the purpose of this limited study (see Allan 2011).

The data collected from the *OED* shows that semantic shift is prevalent in blends such as *twiddle* [1547] (twist x fiddle), *flush* [1548] (flash/flare x blush), *bumble* [1532] (bungle x stumble) and *blotch* [1604] (blot x splotch). The *OED* entry for the verb *twiddle* shows that the sense 'twist' occurs much later (120 years or so) than the date of first attestation. Initially, the sense of *twiddle* was 'to be busy with trifles', possibly through analogy with slightly earlier *piddle* [1545] and *fiddle* [1377], thus suggesting an association between the form *-iddle* and the notion of idleness or unimportance, and possibly related to the fingers. Later *niddle* [1808] and *diddle* [1806] attest to this. The sense 'rotate or turn' arises in 1676, by analogy with *twirl* [1598] according to the *OED*. *Twirl* is of obscure origin, with the *OED* giving the verb as either an alteration or *tirl/ turl* [1543] meaning 'to rotate, spin' after *whirl* [1290] 'to circle', or an imitative form. Most importantly here, the transformation *tirl* to *twirl* introduces the *tw-* phonestheme for the first time, whereas *tirl* itself would be a metathetic transformation from *trill* [1386].

These words sharing phonetic and semantic material form a network as represented in Figure 2, which can be described as the semantic genealogy of *twiddle*. Semantic shift appears to involve connections being made between members of the network. All of these senses can be related to the semantic makeup of the verb *twiddle*.

Figure 2 represents the motivation between the senses of the verb *twiddle* on the left and the senses of related words belonging to the phonesthetic network. The closest words directly linked to *twiddle* are potential source words *twist*, *twirl* and *fiddle*. The phonesthetic network of the verb *twiddle* may be extended even further than the words represented in Figure 2 (see Reay 2006 for an attempt to represent the intricacies of phonesthetic networks).

Similarly, the semantic shift documented in the *OED* for the verb *flush* (not represented) shows signs of phonesthetic reanalysis, leading to multidirectional motivation. *Flush* has two distinct entries in the *OED* [1300] and [1548]. According to the *OED*, the meaning of *flush* is affected by the phonesthetic attraction of *flash* [1566], *blush* [1400], and *flare* (now obs) [1550]. These analogical ties are perceived as taking precedence over etymological connection with French *flux* or *fluiss-*, *fluir* to flow. Turning to the verb *bumble* [1532], a sound-meaning association is apparent with synonyms *bungle* [1530] and *jumble* [1529], all three notably attested around the same time period. The origins of the network are traced back in the *OED* to cognates in Danish, Swedish and Low German, all thought to be onomat-

opoeic according to the *OED*. Figure 3 shows the multidirectional ties linking *bumble* with each of the members of the synonym network.

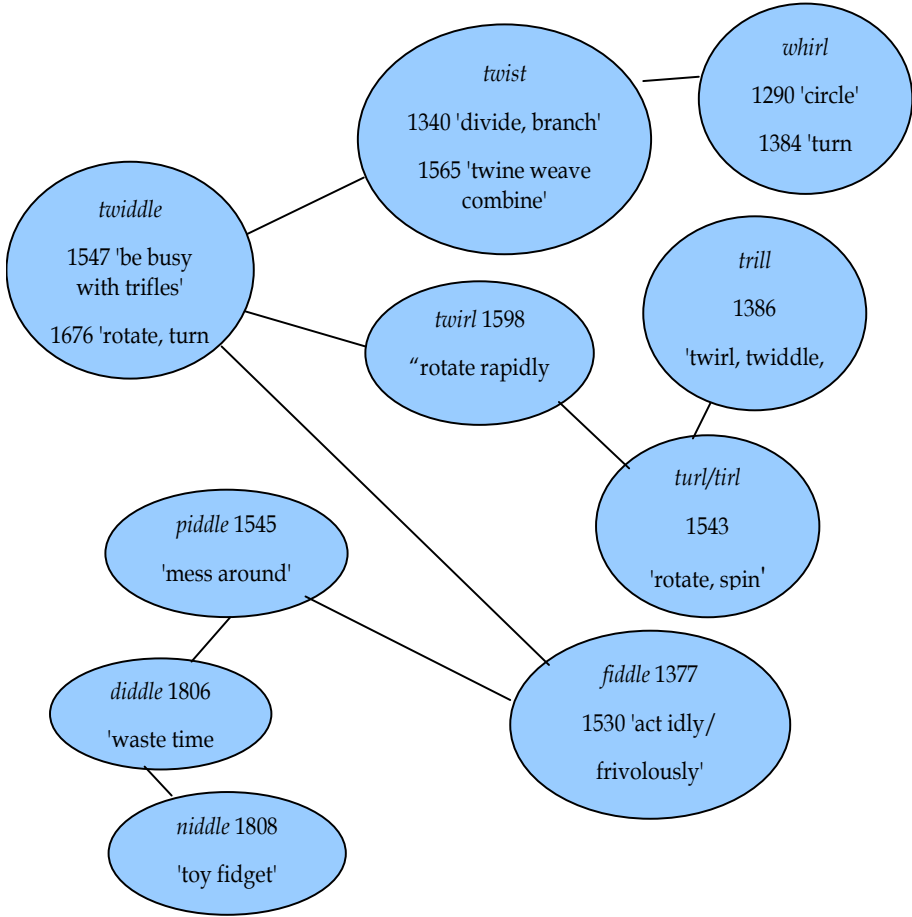


Figure 2. Phonesthetic network of *twiddle*.

As for the noun *blotch* [1604], the *OED* suggests the form originates from an alteration of the earlier *blot* [1400]. On further retracing the word lineage in the *OED*, *plot* is thought to have produced *blot* by modification of /p/ into /b/. It is possible, that this transformation of pl- into bl- might be motivated by the attraction of the bl- phonestheme, which has been validated empirically in Drellishak (2006), also

listed in Tournier (2007), and studied by Argoud 2008.¹⁰ The second change, the evolution from *-ot* to *-otch*, *-otch*, leads to motivational ties with the now obsolete sense of *botch* [1400], originally meaning ‘boil’. This conjecture is furthered by the fact that *blotch* is now the only word in the series or constellation (*blotch-blot-botch-plot*) to have retained the sense “boil”. Figure 4 shows the multidirectional ties between *blotch* and its synonym network.

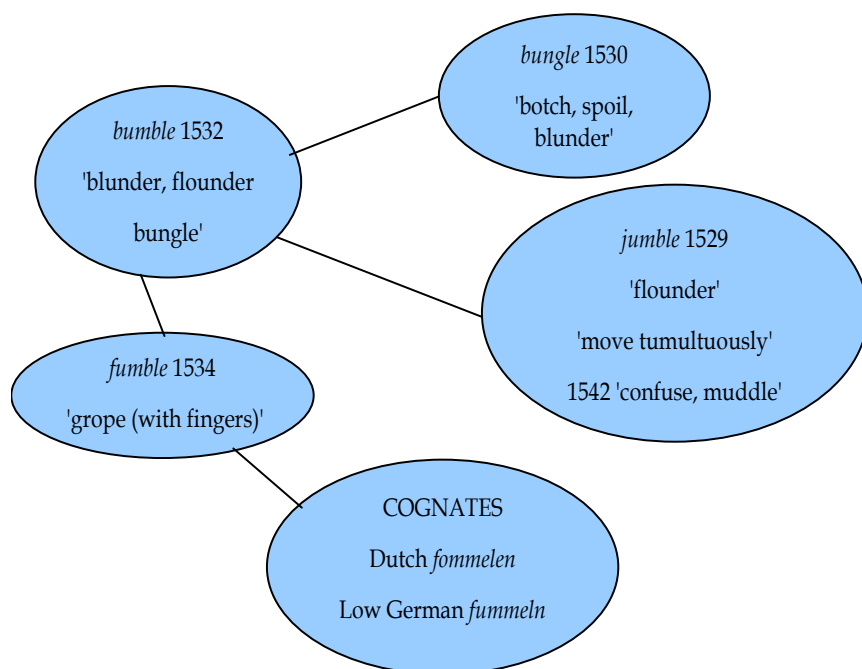


Figure 3. Phonesthetic network of *bumble*.

What these 4 case studies show is that lexicographic data indicates multidirectional motivation ties in the lexicon. The issue raised earlier with this method of enquiry is that the data is lexicographic rather than raw, and in that sense shows a possible bias on the part of the lexicographer rather than absolutely objective data. What can be said in spite of the flawed methodology is that there is evidence of retroactive semantic change can occur in an earlier word through association with a later form. For instance, the meaning of *fluster* [1422] (originally meaning ‘excite’) shifted around 1720, possibly under the influence of *flustrate* [1712] (in the sense ‘flurry, confuse’), itself said to originate from a blend of (*fluster* x *frustrate*). Under the effect of this synergy, the semantics of words within the network can adjust to

¹⁰ It is notable that /bl/ is even mentioned by the *OED* in the entry for the verb *blurt* [1611], given as onomatopoeic, ‘containing the *bl*-element’.

other members of the set. Thus there is increasing pressure of the phonestheme and increasing likelihood of further additions to the set. For instance, *smog* [1884] (smoke x fog) is likely affected by association with a strong phonesthetic network, with the sense ‘pertaining to dirt or soiling’. Interestingly, the source word *smoke* does not belong to the network, but the attraction *smear* v [c825]; *smudge* v [1430], *smut* [1587], *smirch* v [1495], *smatter* [1386] is overriding. The strength of the phonesthetic attraction of *sm-* network is further attested in the verb *smarm* v [1847] ‘of obscure origin’, according to the *OED*. The initial sense ‘to smear, bedaub’, later [1937] develops into the sense ‘to slick, smooth down’. This development of the sense ‘slick’ is consistent with a reanalysis as a blend of (smear x charm).

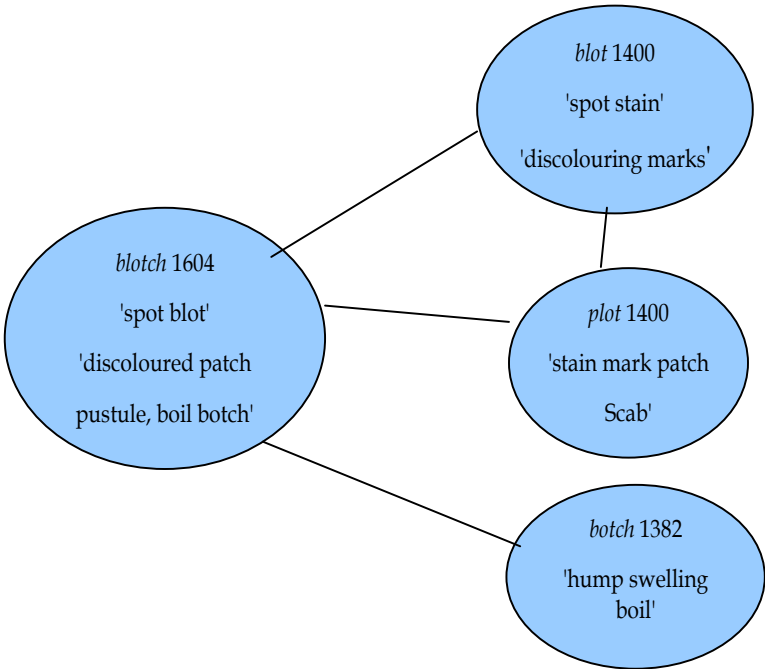


Figure 4. Phonesthetic network of *blotch*.

These lexicographic case studies attest to the sporadic existence of phonesthetic reanalysis in the lexicon. This is admittedly a far cry from providing unquestionable quantitative evidence of phonesthetic reanalysis in the English lexicon. However, as Hock and Joseph (2009) demonstrate, diachronic shift has been known to work through sporadic changes rather than frequent systematic change. Based on language change specialists such as Hock & Joseph (2009), Joseph (2007), Miller (2014, 2010), I contend that marginal sporadic change is a valid language change process.

These case studies based on the 1200–1900 blends corpus merely confirm the pertinence of such sporadic change. What remains is to develop a scientific objective methodology for quantifying the phenomenon in the lexicon.

4.4. *Extrapolating phonesthetic reanalysis in novel blends*

From the blend data available in our corpus (Figure 1), recent blends (1903–2012) are very marginally sound symbolic (1.5% out of 202 blends). And yet, on the basis of the attraction of sound symbolic networks, this does not preclude recent blends from undergoing similar sound-meaning feedback, or reanalysis. Remotivation (and multidirectional motivation) is a process of reanalysis or reinterpretation of a word (Fill, 2004: 1615). Loss of motivation is often a precursor to remotivation (Fill, 2004). In other words, when a word becomes less transparent semantically or/and morphologically (as is frequently the case for loan words), the likelihood of remotivation is greater.

In recent blends, the source words are generally still transparent and recoverable, which reduces the potential for remotivation. Nevertheless phonesthetic attraction may still play a role in semantic shift through reanalysis. A hypothesis based on the observations made concerning older blends is that sound symbolic clusters have a greater chance of being triggered if the length of the blend is one to two syllables (as in *smarm*, *smog*). In what follows, I will test the prediction for recent blend remotivation based on the corpus data.

Out of 202 recent formations, 39 (19.3%) are monosyllabic, including words with a final syllabic /l/ (*cankle*, *tottle*, *dongle*, *doodle*) and those with a verbal *-ing* (*wogging*, *sexting*, *vlogging*) or *-ed/-en* (*broasted*). These arguably have the strongest potential for sound symbolic ground (all the phonesthetic blends are monosyllables or disyllables). Disyllables are also good candidates for remotivation, but only those that do not contain two clear-cut word splinters making them interpretable as compounds (such as *tigon*, *sexploit*, *tweetheart*, *fanzine*, *twigloo*, *chillax*) which are excluded from the count. This leaves 10 words: *mingy*, *guppie*, *wussy*, *snuba*, *swaption*, *snitzzy*, *swacket*, *craisin*, *snazzy*, *manny*, bringing the total to 49 words out of 202 (24.3%). The principle of phonesthetic attraction allows for prediction of sound symbolism in novel blends. Naturally, there are other extralinguistic factors involved; so predicting the precise evolution of a form is impossible. However, it may be possible to assess the potential for phonesthetic reanalysis on the basis of the diachronic change undergone by many blends 1200–1900. 2 basic conditions must be verified for remotivation: first, there must be a recognizable phonesthetic structure to the blend. Secondly, there must be some semantic compatibility. Table 2 shows the main initial phonesthemes with their corresponding meanings below (from Tournier 2007 and Drellishak 2006; also Argoud 2008 and 2010) when appropriate), and lists the 23 recent blends containing frequent initial phonesthemes.

Table 2. Recent blends carrying recognizable initial phonesthemes.

Initial phonestheme	Core sense	Blends
sm	dirt	smaze smog smize
sk	cover	skort
b	dull sound	bonk
bl	container	blurb bluff bleep bling blang
dr	drag	droodle
sp	sharp rejection	spam spim
sl	sloth, slowness	slurb
sn	nose	snazzy, snuba, snitzy
spl	liquid sound	splog
fl	surface flow	flub
tw	torsion	twonk
gl	light, vision	glamping

It is far more complex to formulate predictions for words which do not present statistically frequent initial phonesthemes. This is the case for words like *tottle*, *cankle*, *droodle*, *vlog* or *vog*, which do not present a highly conspicuous initial phonestheme (see Table 3).

Table 3. Recent blends without clear initial phonesthemes.

t-	v/ vl-	m-	d-	cr-	w-
tottle	vog/vlog	mingy	dongle	craisin	wussy
		manny			

The predictions of analogical remotivation or transfer for the words in Table 3 are more a matter of conjecture. However, there does seem to be ground for some possible phonesthetic attraction, based on the rhyme rather than the onset. For instance, the blend *tottle* [*top+~~bottle~~*] may become assimilated with a network of words relating to motion and (in)stability (Miller 2014: 194) such as *totter* [c.1200], *titter* [a1618], *teeter* [1843], *didder* [c.1420], *dadder* [1483], *dodder* [c.1600], *topple* [1542] and *toddle* [1568]. It remains to be verified if a semantic transfer occurs over time, giving *tottle* the meaning of a bottle that tottles or topples rather than a bottle that stands on its top. In a blend like *cankle* (referring to fat ankles), there is little reso-

nance with a network of similar-sounding words in *-ankle* (*ankle*, *rankle*, possibly *cantankerous*). The verb *rankle* ('to fester') forms a minimal pair with the blend but apparently shares no common meaning and *ankle* is one of the source words of the blend. The association of an initial fortis velar /k/ followed by an open back vowel and ending with a /ŋk/ is suggestive of a pejorative force (Miller 2014). For Reay (2009: 896) 'the velar nasal /ŋ/ in final position denotes a resonant, long-lasting sound. This final nasal also illustrates the synesthetic qualities of many phonesthemes, namely, the ability to denote nonauditory experience'.

Finally, the noun *droodle* [1953] (*draw* x *doodle* x *riddle*) is a Trademark name created by Roger Pryce to refer to a form of riddle or word game based on doodles or drawings. A droodle is basically a doodle containing a riddle. The term belongs to the 29,2% recent blends unlisted in the *OED*. Its status as an actual blend is unclear, it appears to be a conceptual blend, or so called nonsense word according to Wikipedia. Figure 8 represents the multidirectional motivation ties of the noun *droodle* creating a phonesthetic network.

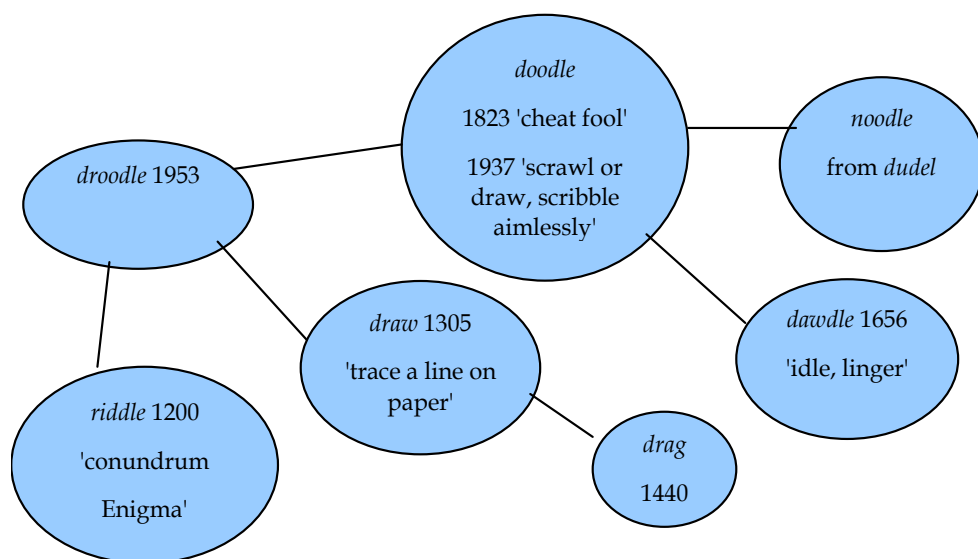


Figure 8. The phonesthetic network of *droodle*.

The *dr-* phonestheme in *draw* and *drag*, is identified as having the sense of 'pulling down, languid' according to Drellishak (2006: 42) (see also Miller, 2014). The second tie is connected to *-oodle/-awdle* rhyme (in *noodle*, *dawdle*), which is arguably stronger and more specific (conveying the idea of idleness), with a higher correlation between form and meaning. However, in view of the infrequency of the term,

no lexicographic evidence is available at this stage: out of 15 hits in the OEC, Sketch Engine results show significant co-occurrence with *riddle*, suggesting this connection significantly impacts on the meaning of the blend.

To conclude these case studies, it is quite clear that further study could benefit from a more wide-reaching corpus-analysis method.

5. Conclusion: multidirectional motivation in cognitive blends in the OED

This diachronic lexicographic study has provided some preliminary answers to several questions surrounding blends and phonesthemes. The data collected show there is difference between older blends (i.e. blends that have been in use for at least 100 years) and recent blends. The data show that older blends are more likely to be phonesthetically motivated than recent blends. This raises the possibility that longevity may be tied to phonesthetic structure, but no conclusive data is available. The present paper does however provide lexicographic evidence of multidirectional motivation ties in cognitive blends, attesting to the possible role of phonesthetic synonym networks in organising the lexicon. Collecting corpus-based data is the next step towards verifying this claim.

1) Do phonesthemes exist as organising structures in the lexicon? Uncertain, but there is diachronic evidence shows the sporadic existence of multidirectional motivation due to reanalysis of short indefinite blends.

2) Is phonesthetic attraction verifiable lexicographically? The blend reanalysis case studies do not disprove the theory, but do not provide conclusive data. What can be said is there is undeniable evidence of sporadic reanalysis based on sound-and-meaning pairings. This confirms the plausibility of Bergen's position that phonesthemes have the ability to 'systematize the lexicon' (Bergen, 2010: 52). However, more accurate tools are required to pursue the study and obtain more accurate measurements and data. If phonesthemes come about and evolve though context and usage - as suggested by the results - , then a context-based data-driven study is required (see Renouf 2013 who demonstrates statistical lexical methods in analysing word life-cycles).

3) Finally, and crucially, in order to pursue this study, how can one measure phonesthetic attraction? New statistical tools show promise for analysing semantic relatedness. Correspondence analysis (Glynn 2014a) and VSM (vector space models) (see Turney & Pantel 2010) show heuristic potential. As suggested by the results of this paper, frequency (which requires high numbers) may not be the ideal index for measuring phonestheme strength. Instead, the notion of semantic density, using VSM tools, may be able to represent and measure semantic relatedness

(Otis & Sagi, 2008 ; Boussidan et al, 2009), and therefore be ideal to test the theory of phonesthetic attraction.

The study of phonesthemes shows thought-provoking avenues of research. The availability of increasingly sophisticated language processing tools and methods (Glynn, 2010, 2014a, 2014b) shows great promise for answering longstanding questions, such as how phonesthemes come about, and how lexical iconicity is structured. The future directions for research opened by this article concern the semantics of phonesthemes, and in particular semantic attraction. Semantic shift can be tested via a diachronic study of a monomorphemes carrying a phonestheme (see Philps (2008a) and (2008b)). Smith (n.d.) focuses on documenting semantic shift in *fl*- monomorphemes in the *OED* to identify the sense(s) of the phonestheme *fl*-. A historically-sliced corpus-based study must also be developed to produce context-based diachronic data of semantic shift. At the heart of the matter is developing an adequate scientific method for tracking historical semantic change in order to test the phonesthetic hypothesis accurately.

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Appendix A: Phonesthetic network in 42 older blends classified by onset

BLEND	date	onset	rhyme/coda	synonym network
<i>bumble</i>	1532	b-	-umble	bungle, jumble, fumble
<i>bash</i>	1790	b-	-ash	beat bang dash, gash, gnash, hash, lash, pash, smash, clash
<i>boost v</i>	1815	b-	-oost	boom hoist, boist
<i>burble</i>	1300	b-	-urble	bubble purl murmur
<i>blotch</i>	1604	bl-	-otch	blast 1300 botch
<i>blurt</i>	1611	bl-	-urt	blow, blast, blash spurt, squirt.
<i>brunch</i>	1896	br-	-unch	breakfast lunch
<i>chortle</i>	1871	ch-	-ortle	chuckle snort
<i>flaunt</i>	1566	fl-	-aunt	fly, flout vaunt
<i>flounder</i>	1592	fl-	-ounder	blunder flounce 1542
<i>flurry</i>	1698	fl-	-urry	flaw hurry
<i>flush</i>	1300	fl-	-ush	fly, flutter rush
<i>flare</i>	1550	fl-	-are	flame glare
<i>flustrate</i>	1712	fl-	-ustrate	fluster, flurry frustrate
<i>fluff</i>	1790	fl-	-uff	flue puff,
<i>flimmer</i>	1880	fl-	-immer	flicker glimmer
<i>glaze</i>	1616	gl-	-aze	glance, glare, glimpse

<i>glob</i>	1900	gl-	-ob	glide, gleam
<i>grumble</i>	1608	gr-	-umble	groan, grunt mumble, rumble
<i>mimsy</i>	1871	m-	-imsy	flimsy
<i>prance</i>		pr-	-ance	prank, proud dance
<i>prissy</i>	1842	pr-	-issy	sissy
<i>quag</i>	1598	qu-	-ag	quake bog
<i>scrouge</i>	1755	scr-	-ouge	screw gouge
<i>scrunch</i>	1825	scr-	-unch	crunch
<i>scrumptious</i>	1836	scr-	-umptious	scrunch sumptuous
<i>slosh</i>	1808	sl-	-osh	slop slush
<i>slithy</i>	1871	sl-	-ithy	slide slime slink sleek
<i>smash</i>	1699	sm-	-ash	smack bash
<i>smarm</i>	1847	sm-	-arm	smear charm
<i>smog</i>	1884	sm-	-og	smear smut
<i>sniggle</i>	1815	sn-	-iggle	snicker giggle
<i>snark</i>	1876	sn-	-ark	snork, snark, snore
<i>snooze</i>	1789	sn-	-ooze	sleep nap doze
<i>splutter</i>	1677	spl-	-utter	sputter splash
<i>splatter</i>	1787	spl-	-atter	spatter splash
<i>squish</i>	1647	squ-	-ish	squash 1565, squeeze squiss
<i>squiggle</i>	1804	squ-	-iggle	wriggle squirm
<i>squirl</i>	1843	squ-	-irl	twirl whirl squirt squish
<i>swizzle</i>	1813	sw-	-izzle	swill guzzle

<i>swipe</i>	1829	sw-	-ipe	sweep wipe
<i>thwack</i>	1533	thw-	-ack	thack, thump thw-
<i>trudge</i>	1547	tr-	-udge	trot drudge
<i>twiddle</i>	1547	tw-	-iddle	twist fiddle, piddle
<i>twirl</i>	1598	tw-	-irl	twist whirl
<i>twizzle</i>	1825	tw-	-izzle ¹¹	twist fizzle, swizzle (-le suffix ¹²)
<i>whang</i>	1684	wh-	-ang	bang, whack

¹¹ Miller 2014: 'Anderson (1998: 128) discusses words in -izzle that "connote the sound of liquid on a surface": pizzle [1486] 'animal penis', mizzle [1490] 'fine misty rain', drizzle [1543], sizzle [1603], swizzle [1813], frizzle [1839] 'sputter while frying', fizzle [1859] 'sputter'.'

¹² 'Verbal formative with a frequentative or sometimes a diminutive sense.' The OED online, 2012.

Appendix B: List of 285 blends (cognitive and morphological) by date (all dates are from the *OED* unless specifically stated otherwise)

- scorn [1200] (scoff x spurn)
stumble [1325] (stop x tumble)
shatter [1330] (shake x shatter)
prance [1380] (prance x dance)
quaver [1439] (quake x waver)
blatterature [1512] (blabber / blather x literature)
clash [1522] (clap x dash)
bumble [1532] (bungle x stumble)
thwack [1533] (thrash x whack)
squench [1535] (slake x quench)
foist [1545/1570] (fist x hoist)
trudge [1547] (trot x drudge)
twiddle [1547] (twist x fiddle)
flush [1548] (flash/flare x blush)
flare [1550] (flame x glare)
flaunt [1566] (fly, flout x vaunt)
scurry [1580] (skirr, scour x hurry)
quag [1589] (quaking x bog)
flounder [1592] (founder x blunder)
twirl [1598] (tirl x whirl)
blotch [1604] (blot x splotch/botch)
grumble [1608] (grommeler/ grunt x rumble)
blurt [1611] (blow/blare x spurt)
glaze [1616] (gaze x glare)
squish [1647] (squirt x swish)
dumbfound [1653] (dumb x confound)
splutter [1677] (splash x sputter)
whang [1684] (whack x bang)
flurry [1698] (flaw x hurry)
smash [1699] (smack x bash) (note new sense 1708)
flustrat(ed) [1712] (fluster x frustrat(ed))
cantankerous [1736] (contentious x rankerous/cankerous)
scrouge [1755] (screw x gouge)
flabbergast [1772] (flabby/ flap x aghast)
splatter [1787] (splash x spatter)
snooze [1789] (sleep x nap x doze)
fluff [1790] (flue x puff)
bash [1790] (beat x dash)
prisonscape [1796] (prison x landscape)
squiggle [1804] (squirm x wriggle/wiggle)
slosh [1808] (slop x slush)
gerrymander [1812] (Gerry x salamander)
doldrums [1812] (dull x tantrums)
swizzle [1813/1847v] (swill x fizzle)
sniggle [1815] (snicker x giggle)
boost [1815] (boom x hoist)
plop [1821] (plunge x flop)
twizzle [1825] (twist x swizzle/ drizzle)
scrunch [1825] (squeeze x crunch)
contraption [1825] (contrivance x trap x conception)
swipe [1829] (sweep x wipe)
scrumptious [1836] (scrimp x delicious)
flummox [1837] (flump x hummock)
permafrost [1838] (permanent x frost)
prissy [1842] (prim x sissy)
burble [1843] (murmur x bubble)/ (bubble x purl)
squirrel [1843] (squiggle x twirl/whirl)
Eurasian [1844] (Europe x Asian)
bodacious [1845] (bold x audacious)
boldacious [1845] (bold x audacious)
squattocracy [1846] (squat x aristocracy)
smarm [1847] (smear x charm)
bit [1848] (binary x digit)
snivelization [1849] (snivel x civilization)
Oxbridge [1849] (Oxford x Cambridge)

- Camford [1850] (Cambridge x Oxford)
 dextrose [1869] (dextrorotary x glucose)
 slithy [1871] (slimy x lithe)
 mimsy [1871] (miserable x flimsy)
 chortle [1871] (chuckle x snort)
 snark [1876] (snake x shark)
 slangue [1879] (slang x language)
 flimmer [1880] (flicker x glimmer)
 penultimatum [1882] (penultimate x ultimatum)
 smog [1884 MW] (smoke x fog)
 electrocute [1889] (electric x execute)
 cattalo [1889] (cattle x buffalo)
 shamateur [1896] (sham x amateur)
 brunch [1896] (breakfast x lunch)
 happenstance [1897] (happen x circumstance)
 Amerindian [1899] (American x Indian)
 glob [1900] (blob x gob)
 canoodle [1900] (canoe x paddle)
 travelogue [1903] (travel x catalogue)
 plumcot [1903] (plum x apricot)
 tangelo [1904] (tangerine x pomelo)
 flub [1904 MW] (fluff x blub)
 dramedy [1905] (drama x comedy)
 Bakerloo [1906] (Baker street x Waterloo)
 blurb [1907] (blurt x burble)
 spork [1909] (spoon x fork)
 mingy [1911] (mean x stingy)
 Chunnel [1914] (Channel x tunnel)
 advertorial [1914] (advertisement x editorial)
 absotively [1914] (absolutely x positively)
 posilutely [1914] (positively x absolutely)
 rurban [1915] (rural x urban)
 scientifiction [1916] (science x fiction)
 umpteen [1918] (ump x teen)
 goon [1921] (gorilla x baboon)
 sexploitation [1924] (sexual x exploitation)
 sexpert [1924] (sex x expert)
 motel [1925] (motor x hotel)
 greige [1926] (grey x beige)
 tigon [1927] (tiger x lion)
 sexationalism [1927] (sex x sensationalism)
 palimony [1927] (pal x alimony)
 sexational [1928] (sex x sensational)
 ambisextrous [1929] (ambidextrous x sex)
 walkathon [1930] (walk x marathon)
 snazzy [1931] (snappy x jazzy)
 bonk [1931] (bang/ bump x conk)
 futz [1932] (fuck x putz)
 applelicious [1933] (apple x delicious)
 positron [1933] (positive x electron)
 Jacobethan [1933] (Jacobean x Elizabethan)
 mocktail [1936] (mock x cocktail)
 meld [1936] (melt x weld)
 guestimate [1936] (guess x estimate)
 spam [1937] (spiced x ham)
 liger [1938] (lion x tiger)
 celebutante [1939] (celebrity x debutante)
 tween [1941] (between x teen)
 icecapade [1941] (ice x escapade)
 happenchance [1941] (happenstance x chance)
 squillion [1943] (squeal ? x million)
 zillion [1944] (z x million)
 sheeple [1945] (sheep x people)
 transistor [1948] (transfer x resistor)
 ginormous [1948] (gigantic x enormous)
 dixiecrat [1948] (Dixie x democrat)
 fanzine [1949] (fan x magazine)
 coca-colonization [1950] (Coca-Cola x colonization)
 skort(s) [1951 Miller] (skirt x shorts)

- smaze [1953] (smoke x haze)
privilgentsia [1953] (privilege x intelligentsia)
Medicare [1953] (medical x care)
frenemy [1953] (friend x enemy)
bleep [1953] (blank x beep)
doodle [1953 Wiki] (drawing x riddle x doodle)
vodkatini [1955] (vodka x martini)
glitterati [1956] (glitter x literati)
muppet [1959] (marionnet x puppet)
motown [1959] (motor x town)
fantabulous [1959] (fantastic x fabulous)
sexploit [1960] (sex x exploit)
Breathalyz/ser [1960] (breath x analyser)
bionics [1960] (biology x electronics)
kidult [1960] (kid x adult)
glamazon [1960 COED] (glamour x amazon)
docudrama [1961] (documentary x drama)
slurb [1962] (slum x suburb)
quasar [1964] (quasi x stellar)
stoup [n/a in Miller 2014] (stew x soup)
stagflation [1965] (stagnation x inflation)
mockumentary [1965] (mock x documentary)
Spanglish [1967] (Spanish x English)
humongous [1967] (huge x monstrous)
dancercise [1967] (dance x exercise)
workaholic [1968] (work x alcoholic)
Nixonomics [1969] (Nixon x economics)
shoat [1969] (sheep x goat)
Reagonomics [1970] (Reagan x economics)
animatronics [1971] (animation x electronics)
phreak [1971] (phone x freak)
geep [1971] (goat x sheep)
blaxploitation [1972] (black x exploitation)
funtastic [1972 in Miller] (fun x fantastic)
televangelist [1973] (television x evangelist)
slumpflation [1974] (slump x inflation)
beefalo [1974] (beef x buffalo)
bling [1974 UD] (blast x ring)
wuss [1977] (wimp x puss)
fembot [1976] (female x robot)
Britpop [1977] (British x pop)
cineplex [1978] (cinema x complex)
affluenza [1979] (affluence x influenza)
docusoap [1979] (documentary x soap)
infotainment [1980] (information x entertainment)
twonk [n/a] (twat x plonker)
broasted [1980 COED] (broiled x roasted)
tanorexia [1980 COED] (tan x anorexia)
dongle [1981] (dangle x port)
strippagram [1981] (stripper x telegram)
informercial [1981] (information x commercial)
wussy [1981] (wuss x pussy)
pleather [1982] (plastic x leather)
camcorder [1982] (camera x recorder)
Swatch [1983] (Swiss x watch)
fuzzword [1983] (fuzz x buzzword)
shopaholic [1984] (shop x alcoholic)
guppie [1984] (gay x yuppie)
tankini [1985] (tank top x bikini)
Pictionary [n/a] (picture x dictionary)
phishing [1987??] (phreaking x fishing)
vog [1987 MW] (volcano x smog)
dallymony [1987 MW] (dalliance x alimony)
swaption [1988] (swap x option)
gaydar [1988] (gay x radar)
pluot [1988] (plum x apricot)

- snuba [1989??] (snorkel x snuba)
 emoticon [1990] (emotion x icon)
 malware [1990] (malicious x software)
 moobs [1990 COED] (man x boobs)
 carjacking [1991] (car x hijacking)
 babelicious [1991] (babe x delicious)
 trustafarian [1992] (trustfund x rastafarian)
 netizen [1993] (net x citizen)
 webzine [1994] (web x magazine)
 metrosexual [1994] (metropolitan x heterosexual)
 webliography [1995] (web x bibliography)
 twigloo [1995] (twig x igloo)
 hacktivist [1995] (hacker x activist)
 scratchiti [1995] (scratch x grafiti)
 bridezilla [1995] (bride x Godzilla)
 alcopop [1995] (alcoholic x pop)
 screenager [1996] (screen x teenager)
 adultescent [1996] (adult x adolescent)
 babymoon [1996?] (baby x honeymoon)
 webisode [n/a] (web x episode)
 webinar [1997] (web x seminar)
 intermercial [1997] (interlude x commercial)
 Californication [1997] (California x fornication)
 splurgundy [1998] (splurge x burgundy)
 blog [1999] (web x log)
 chillax [1999 MW] (chill x relax)
 treggings [2000 COED] (trouser x leggings)
 manbag [2000 COED] (man x handbag)
 jeggings [2000 COED] (jeans x leggings)
 Wikipedia [2001?] (wiki x encyclopedia)
 spim [2002?] (spam x I.M.)
 cankle [2002?] (calf x ankle)
 vlog [2002?] (video x blog)
 staycation [2003] (stay (at home) x vacation)
 Chrismukkah [2003 UD] (Christmas x Hannukah)
 intexticated [2003 UD] (intoxicated x texting)
 brifter [2003?] (brake x shift x lever)
 bacne [2003 UD] (back x acne)
 manscaping [2003 COED] (man x landscaping)
 bromance [2004 MW] (bro x romance)
 podcast [2004] (iPod x broadcast)
 splog [2005 CNET] (blog x spam)
 sexting [2005 Wiki] (sex x texting)
 geyliner [2005 UD] (guy x eyeliner)
 Fictionarium [2005?] (fiction x aquarium)
 manny [2006 UD] (male x nanny)
 freemium [2006 Wiki] (free x premium)
 snitzy [2007] (snazzy x ritzy)
 pob [2007?] (Posh x bob)
 trapede [2007 UD] (tramp x stampede)
 twitterati [n/a] (Twitter x literati)
 googleganger [2007 McM] (Google x doppleganger)
 manjoyment [2007 UD] (man x enjoyment)
 choup [2007?] (chowder x soup)
 fauxmance [2008] (faux x romance)
 showmance [2008] (show x romance)
 wogging [2008] (walk x jogging)
 glamping [2008 NYT] (glamour x camping)
 snowmageddon [2008 UD] (snow x armageddon)
 Groupon [2008 Wiki] (group x coupon)
 mancession [2009 NYT] (man x recession)
 vook [2009 NYT] (video x book)
 twincest [2009?] (twin x incest)
 recessionista [2010 COED] (recession x fashionista)

thinspiration [2011?] (thin x inspiration)

fitspiration [n/a] (fit x inspiration)

smize [2012?] (smile x eyes)

Grexit [2012?] (Greek x exit)

tweetheart [2010 COED] (tweet x sweetheart)

Frappuccino [n/a] (frappé x capuccino)

Craisin [n/a] (cranberry x raisin)

skinoe [n/a] (ski x canoe)

tottle [n/a] (tube x bottle)

swacket [n/a] (sweater x jacket)

snizzle [n/a] (snow x drizzle)

snausage [n/a] (snack x sausage)

sloppportunity [n/a] (sloppy x opportunity)

shoppportunity [n/a] (shop x opportunity)

manorexia [n/a] (man x anorexia)

limon [n/a] (lime x lemon)

hott [n/a] (hot x OTT)

clandestiny [n/a] (clandestine x destiny)

Brangelina [n/a] (Brad x Angelina)

Blairista [n/a] (Blair x Sandinista)

manscara [n/a] (man x mascara)