statuS Quaestionis
language text culture

Elisa Mattiello
University of Pisa

Covidiot, *Elbow Bump*, and *Frontliner*: Language Change in the *Covid-19* Era

Abstract

This paper investigates Covid-19 vocabulary from the morphological and semantic viewpoints. It explores a set of Covid-related words and phrases used in the news during the pandemic either as new lexemes or as novel meanings. First, a collection of new words selected from dictionaries and word lists in the web and checked in two British newspapers – *The Guardian* and *The Independent* – are described in terms of the word-formation and semantic processes forming them. Second, through a quantitative analysis conducted in the *Coronavirus Corpus*, the new words are classified either as neologisms and neosemanticisms that are going to be institutionalised and become a permanent part of the English vocabulary, or as nonce words that are destined to pass away once the pandemic is over. Third, through a qualitative analysis of the collocations with the term *Covid-19* in the corpus, the new meanings associated with Covid lexicon are investigated. In particular, the main metaphorical associations are studied, resulting in three primary domains that are relevant to the pandemic: namely, 'War', 'Fire', and 'Disaster'. The paper shows (1) the importance of a specialised corpus for the study of language change through a widespread phenomenon such as Covid-19; and, more generally, (2) the contribution of digital transformation to the development of lexicography and lexicology.

1. *Introduction*

When a global phenomenon such as the Coronavirus 2019 outbreak occurs, different countries are involved with innovation at all levels: social, cultural, economic, and also linguistic. Linguistic innovation is a vast area of research, as it encompasses language change at various levels and is studied in several subfields of linguistics: namely, historical linguistics, sociolinguistics, and

evolutionary linguistics. The various processes and mechanisms of language change, including lexicalisation, grammaticalisation, and lexical or semantic change, have been investigated and conceptualised in a variety of ways (see Hopper and Traugott 1993; Labov 1994; Brinton and Traugott 2005; Traugott and Trousdale 2010; Bybee 2015 inter alia). On the one hand, lexical change results in the dynamic expansion of the lexicon through the coinage of new lexical items (Arndt-Lappe et al. 2018). On the other hand, semantic change includes processes such as narrowing, broadening, or metaphorisation, which modulate word meaning (Blank 1997). Both lexical and semantic change ultimately result in neology.

The term 'neology' commonly refers to the coinage of new words into a language or to the introduction of new senses for established words. However, as observed by Kinne (1996, 347), there are different types of new words going under the label of 'lexical innovation'. For instance, Kinne (1996, 343-47) distinguishes 'occasionalism' from 'neologism' (G. *Okkasionalismus* vs. *Neologismus*), and, within the latter category, he further differentiates 'new lexeme' (G. *Neulexem*) from 'new meaning' (G. *Neusemem*, *Neubedeutung*, or *Neosemantismus*).

This paper explores language change in the Covid-19 era, with a focus on both new lexemes (e.g., *covidiot*, a blend from *covid* + *idiot*) and new meanings (e.g., *elbow bump* 'a gesture of greeting used as an alternative to a handshake'; *frontliner* 'a healthcare worker'), which are currently entering the English lexicon. It investigates the entire spectrum of new words that are connected with the Covid-19 pandemic, ranging from derived words to compounds, blends, abbreviations, and even to phrases. It analyses them by using corpus linguistics tools in order to differentiate between those that have a chance of being institutionalised (i.e. recognised) and those that are ephemeral creations coined on the spur of the moment or having a textual function (see neologisms, occasionalisms, and neosemanticisms in Chanpira 1966; Herberg 1988; Christofidou 1994; Kinne 1996).[1]

By conducting a corpus-based analysis in the *Coronavirus Corpus* (2020–2021, henceforth CVC-20), the paper investigates a collection of new words

1 Cf. the term 'occasionalism', i.e. a word created by an author for a specific occasion in a literary text, in Chanpira (1966), Christofidou (1994), and Kinne (1996). In this paper an occasionalism will be considered a formation created for a specific text or occasion, while a single instance in the historical record or in a corpus will be called 'hapax legomenon'.

drawn from two online newspapers – *The Guardian* and *The Independent* – with the aims to: (1) identify the main processes and mechanisms of lexical and semantic change during the Covid-19 pandemic and (2) discriminate between proper neologisms and nonce words/occasionalisms (Mattiello 2017) in terms of frequency and productivity vs. nonceness and ludicity. As a more general goal, the analysis aims at showing the impact of digital transformation on innovation and creativity in language use, as well as on institutionalisation and vocabulary development. In particular, by exploring communication about the Covid-19 pandemic in the media, this paper wishes to examine the impact of the crisis on language development in terms of novel words and phrases that are employed in the news to inform, give advice, clarify concepts, and disseminate scientific knowledge to laymen and stakeholders.

The paper is organised as follows. Section 2 considers new words in the framework of linguistic innovation, word-formation, and lexical and semantic change. It outlines the theoretical aspects involved in the categorisation of new words as either neologisms or nonce formations, and discusses the role of neology for the study of lexical expansion. Section 3 explains the methodology for the selection and analysis of the data set. Section 4 examines the set of Covid-19 terms selected, both quantitatively and qualitatively, and conducts a corpus linguistics investigation of some relevant collocations that encourage an interpretation in metaphorical terms. Section 5 draws some conclusions on the usefulness of a topic-specific corpus such as CVC-20 to show (1) the institutionalisation of new Covid-related words and, more generally, (2) the contribution of digital transformation to the development of lexicography and lexicology.

2. *Theoretical Background*

2.1 *Language Change*

Linguistic innovation involves an array of types of language change at all levels of linguistic structure, which have mainly been the object of the analysis of historical linguistics (Weinreich, Labov and Herzog 1968; Labov 1994, 2001, 2010).

In more recent times, Bybee (2015) has offered a guide to the various types of change, as well as to the mechanisms behind each type. By examining the

general patterns of change at all levels of linguistic structure, she has brought together the latest findings on the processes of sound change (i.e. assimilation, reduction, lenition, fortition, etc.), analogical change (i.e. proportional analysis, productivity, extension, morphological reanalysis), syntactic change (i.e. the creation and change of constructions), as well as lexical and semantic change. The nuclear chapters of her work also analyse the interplay between the various levels (e.g., the interaction of sound change with grammar), and identify shared or similar mechanisms existing, for example, between grammaticalisation and syntactic change or between grammaticalisation and semantic change (especially specialisation, meaning change, metaphor).

By distinguishing between the internal and the external sources of change, Bybee (2015) reaffirms the role of the principal mechanisms in relation to some of the main theoretical accounts, such as Generative Theory (Aronoff 1976; Scalise 1986), Naturalness Theory (Dressler et al. 1987), and language acquisition vs. language use, as well as language contact (Weinreich 1963). Thus, for example, Bybee (2015) argues against the autonomy and abruptness of syntactic change in the generative framework. She also emphasises the key role of frequency in understanding what is linguistically natural (or unmarked) in the Naturalness Theory. Dealing with the ties between language change and language contact, she finally highlights the selective agency of contact-induced language change that does not appear sufficiently universal to produce structural convergence.

In the chapter devoted to lexical change, Bybee (2015, 188–208) claims that new words come either from internal resources, such as compounding and derivation, or from external resources, such as borrowing (and often adaptation) of words from other languages.

Another crucial volume collecting contributions on linguistic innovation is Arndt-Lappe et al. (2018), where the editors discuss fundamental aspects of dynamic processes in the lexicon, including historical processes of change as well as recent and ongoing changes. They argue that the creation of new lexical units has been studied in different research frameworks. On the one hand, approaches directed at system-internal morphological processes concentrate on morphological productivity. On the other, approaches integrating system-external factors related to the historical background of the innovations identify types of lexical innovation and describe them in the context of lexical change. Another manifestation of lexical change is lexical semantic change, i.e. how words are perceived as new when their meaning changes.

2.2 *Semantic change*

Traditional approaches to semantic change typically focus on the effects of meaning change and list types of change such as metaphorical and metonymic extension or amelioration and pejoration. The main areas of research that have received particular attention are the development of lexical meaning and that of grammatical meaning, as discussed in Blank (1997).

The main focus of interest on semantic change from the early twentieth century onwards has been on changes in sense, as with the word *epic*, which originally meant 'relating to the epic genre' (e.g., *epic novel*), but has been used since the 1980s with the new meaning 'impressive' (e.g., *your haircut is epic*). Linguists distinguish semantic change from changes in lexis or vocabulary development, although these two concepts partially overlap (Nevalainen 1999).

In the last century, much work was done on classifying types of semantic change (see, e.g., Bloomfield 1933; Ullmann 1957, 1962), the most important being:

- Metaphorisation: conceptualising one thing in terms of another, based on similarity. For example, the metaphor *time is money* brings together concepts from two different conceptual domains – 'time' and 'money' – and allows understanding and experiencing the former in terms of the latter, based on their similarity (e.g., importance, necessity, etc.) (Lakoff and Johnson 1980, 3–5).
- Metonymisation: association, usually in terms of contiguity. For instance, in the sentence *the ham sandwich is waiting for the bill*, the 'ham sandwich' stands for 'the restaurant customer' (Ruiz de Mendoza Ibáñez 1997, 282). Many traditional examples of metonymic shift involve part for whole (often called 'synecdoche'), as in *suits* for 'businessmen'.
- Amelioration: association of a term with positive meaning, such as late 13th century *nice* 'foolish, ignorant, frivolous, senseless' (from Old French *nice* ' simple, stupid, silly, foolish') → 'agreeable, delightful' [1769] → 'kind, thoughtful' [1830] (*Online Etymology Dictionary*).
- Pejoration: association of a term with negative meaning, such as *awful* 'worthy of awe' → 'extremely bad'; *conceit* 'idea, opinion' → 'overestimation of one's qualities'.
- Specialisation: restriction of meaning, as in Old English *hund* 'dog in general' → *hound* 'species of dog'.

– Generalisation: extension of meaning, as in *business* 'state of being much occupied or engaged' [mid-14th century] → 'a person's work, occupation' [late 14th century] → 'trade, commercial engagements collectively' [1727] (*Online Etymology Dictionary*).

Recently, studies on semantic change have adopted a cognitive perspective by focusing on pragmatic factors for change in the course of speech. Attention has been paid to the contributions of cognitive processes, such as analogical thinking, and mechanisms of change, such as subjectification/intersubjectification, metonymisation, and metaphorisation (Traugott 2017).

2.3 *Metaphor*

There are both theoretical accounts and empirical evidence of the role of metaphors as crucial cognitive as well as communicative tools. In particular, the role that conceptual metaphor plays in the complex dynamics of interpersonal communication and the interplay that it holds with frames, image schemas, and metonymy have been recently explored by Baicchi (2015) inter alia.

Conceptual metaphor theory (Lakoff and Johnson 1980) posits the existence of conceptual metaphors, i.e. sets of correspondences (or mappings) across different conceptual domains whereby a 'target' domain (e.g., ARGUMENT) is understood in terms of a 'source' domain (e.g., WAR). From this perspective, a metaphorical expression such as "I attacked every weak point in his *argument*" is a linguistic realisation of the conceptual metaphor ARGUMENT IS WAR.

Target domains tend to correspond to relatively complex, abstract, and sensitive experiences (such as life, love, death, illness), whereas source domains tend to correspond to relatively simpler and more accessible experiences (such as motion, war, people, and animals). Illness, including deadly diseases such as cancer, is the kind of sensitive experience that tends to be talked about and conceptualised through metaphor (Demjén and Semino 2017; Semino et al. 2018).

Crucially, metaphors are not neutral ways of communicating, as each source domain chosen to represent reality highlights some aspects of the target and backgrounds others, facilitating different evaluations and inferences (Lakoff and Johnson 1980). Hence, as recently observed by Semino (2021, 51),

It is [...] not surprising that a new virus, causing illness and death throughout the world, and requiring urgent and radical responses from governments and citizens, would often be talked about through metaphors.

2.4 *Lexical Expansion and New Words*

In the Introduction to their volume, Arndt-Lappe et al. (2018, 2–10) mainly argue that lexical expansion is at the crossroads of three main aspects: (1) lexical innovation and conventionalisation, (2) productivity and its interplay with speaker creativity, and (3) the role of ludicity in lexical innovation. These three closely interwoven aspects can be addressed when discussing neology and distinguishing different types of new words.

A new word is commonly defined as "a form or the use of a form not recorded in general dictionaries" (Algeo 1991, 2). This definition includes both words having a novel shape and words having a novel use. When novelty lies in the form of a word, the new lexeme can be considered a neologism. When it lies in the novel use of an existing form, the new meaning (or new usage) can be labelled neosemanticism. The abbreviated word *Covid-19* (← *COrona VIrus Disease 2019*), for instance, is a new headword entry of the *Oxford English Dictionary* (OED), which considers it a proper neologism of the English language with the sense 'an acute disease in humans caused by a coronavirus, which is characterised mainly by fever and cough and is capable of progressing to pneumonia, respiratory and renal failure, blood coagulation abnormalities, and death'. The conventionalisation of this neologism is confirmed by its recurrent use as a modifier in the compounds *Covid-19 case*, *Covid-19 test*, and *Covid-19 virus*, all recorded in the OED.

By contrast, a complex word displaying new meaning (or neosemanticism) is *elbow bump*, originally referring to 'a blow with or to the elbow', but later also used in the novel sense of 'a gesture (usually of greeting or farewell) in which two people lightly tap their elbows together as an alternative to a handshake or embrace' (OED). From the semantic viewpoint, it has undergone semantic specialisation and at the same time an amelioration process.

Overall, neologisms and neosemanticisms are candidates for inclusion in dictionaries, whereas those new words which do not enter general dictionaries are considered nonce words. A nonce word is "one coined for a particular use

and unlikely to become a permanent part of the vocabulary" (Algeo 1991, 3). It is generally coined to cover some immediate need, such as economising, filling in a lexical/conceptual gap, or creating a stylistic/textual effect.

A nonce word that has been recently formed within English is *Coronials* ('the generation born between December 2020 and March 2021, as a result of the enforced quarantining of their parents due to the COVID-19 pandemic', ← *Corona* and *Millennials*), whose usage is recorded in the *Urban Dictionary* (UD, 17/03/20), but not in the OED.

With reference to the new words related to the pandemic, the following research questions will be addressed in this paper:

1. How has the Covid-19 pandemic affected the English vocabulary in terms of both new lexemes and novel meanings?
2. Which new words have a chance of becoming neologisms of English and which of them are destined to remain nonce words?
3. What do recurrent collocations in a topic-specific corpus reveal about the figurative use of language to describe global problems such as the pandemic?

To address these questions, a quantitative and qualitative analysis of the CVC-20 will be conducted. The details of the dataset collection and of the corpus-based analysis are provided in Section 3.

3. *Methods*

The primary sources for the dataset were either online dictionaries, such as the OED, especially the "New words list April 2020" and the *Urban Dictionary* (UD), or glossaries. In particular, data were drawn from the Covid-related word lists "'Riding the 'ronacoaster': An A–Z of new terms we've learnt during the pandemic" (Cockburn 2020), "Coronavirus COVID-19 vocabulary" (EnglishCLUB), and "#CORONASPEAK – the language of Covid-19 goes viral" (Thorne 2020).

Then the actual use of the selected data was checked in two British newspapers – *The Guardian* (2020-2021) and *The Independent* (2020-2021) – freely available online.[2] Cross-checking data was useful not only to verify the actual

2 They are accessible at https://www.theguardian.com/international and https://www.independent.co.uk/, respectively. The choice of two quality newspapers, rather than tabloids,

use of the new words in context, but also to realise their frequency in the news and to find out other related words/phrases to consider for the analysis.

The dataset finally consisted of 94 new words and/or phrases, which were first classified from the morphological and semantic viewpoints (Section 4.1) and then searched in the *Coronavirus Corpus* (CVC-20) (Section 4.2) in October 2021, when the corpus size was 1,201 million words. This corpus is part of the Brigham Young University Corpora and has been purposely designed to record the social, cultural, and economic impact of the Coronavirus in 2020 and beyond. Hence, in order to investigate the pandemic from the linguistic viewpoint, the CVC-20 was interrogated for frequencies and collocations.

Through a quantitative analysis of the corpus, the new words' frequencies were investigated. This investigation allowed us to distinguish the words into high-, medium-, and low-frequency. On the basis of this distinction, words were then classified as either true neologisms or nonce words/occasionalisms.

Through a qualitative analysis of the key collocations with the term *Covid-19* in the corpus, it was possible to determine some recurrent domains for metaphorical use of language. These domains were then explored in more detail in order to identify correspondences between the source and the target domain. The exploration of figurative language in Covid-19 discourse has helped draw some conclusions on the relevance of metaphors to describe new, urgent, and very serious problems such as the Covid-19 epidemic.

4. *Analysis*

4.1 *Morphological and Semantic Classification*

From the morphological viewpoint, we can observe that the new words coined in the pandemic cover a wide spectrum of word-formation processes,[3] including:

---

is motivated by the recognition and institutionalisation of the new terms. Their frequency in two widely-spread newspapers like *The Guardian* and *The Independent* is indeed symptomatic of the acceptance by a vast audience.

3 The percentages in brackets show the frequency of the word-formation process involved.

– Compounding (41.6%): noun compounds are especially relevant in our data. They include novel combinations such as *Wuhan shake* 'touching elbows or tapping feet rather than shaking hands' (UD), which has been coined by analogy with *handshake* (see Mattiello 2017).

(1) *Wuhan shake*: People in China developing new ways to greet each other amid coronavirus fears. (*The Independent*, 02/03/2020)

– Blending (18.7%): many novel blends have *Covid* as their first source word. An instance of this is *covidiot*, an overlapping blend from *covid* and *idiot*, which refers to 'someone who ignores the warnings regarding public health or safety' (UD).

(2) Trump dubbed '*Covidiot* in chief' after telling Americans not to be afraid of coronavirus. (*The Independent*, 06/10/2020)

– Derivation (14.6%): among derived words, the prefix *anti-* is especially productive, as it indicates attitudes of protest against public health measures (e.g., *anti-lockdown*, *anti-vaccine*, *anti-vax*, *anti-mask*).

(3) *Anti-lockdown, anti-vaccine* and *anti-mask* protesters crowd London's Trafalgar Square. (*The Independent*, 29/08/2020)

– Abbreviation (12.5%): although *Covid-19* is the most frequent shortening to indicate the virus, other clippings are used. One of them is the informal *Rona*, an abbreviation which deletes both the beginning and the end of (Co)*rona*(virus).

(4) Under the tagline "Spread love, not *Rona*", restaurants that are part of the local Gates Hospitality Group are offering a 10 per cent discount for residents who have the first dose. (*The Independent*, 27/01/2021)

– Conversion (3.1%): the most common direction of the conversions formed during the pandemic is N → V, which occurs, for instance, in the denominal verb *to self-quarantine* 'to isolate oneself in order to avoid transmitting an infectious disease', obtained from the respective noun, with no overt marker.

(5) Schoolchildren told to *self-quarantine* for 14 days as precaution. (*The Guardian*, 25/02/2020)

– Phrases (5.2%): some combinations are not strict compounds, but phrases, such as the verb phrases *test negative* and *test positive* coined to refer to cases in which 'you do not have' or 'you have the infection'.

(6) Tom Fletcher and Strictly partner *test positive* for Covid. (*The Guardian*, 26/09/2021)

As for the words' semantics, the processes intervening in Covid-19 vocabulary primarily include:

– Metaphor: a common association is with the 'Disaster' domain, as when the noun *tsunami* is used to refer to 'the pandemic', hence often combined with the modifier *Covid*.

(7) Fears of Covid '*tsunami*' in Fiji after outbreak found to be Indian variant. (*The Guardian*, 28/04/2021)

Less significant processes are:

– Specialisation: an instance of a compound that has undergone specialisation is *face covering*, formerly used for 'any of various types of mask worn to protect or conceal the face' [1732], but recently revived with the meaning 'mask designed to prevent transmission of Covid-19' [2020][4].

(8) England's medical chief gives three situations in which it would be important to wear *face covering*. (*The Guardian*, 05/07/2021)

– Amelioration: the process of amelioration is illustrated by the compound *elbow bump*, which has extended its meaning from 'a blow with or to the elbow' [1902] to 'a gesture of greeting used in order to reduce the risk of spreading or catching Covid-19' [2020].

(9) *Elbow-bumps* and footshakes: the new coronavirus etiquette. (*The Guardian*, 03/03/2020)

– Pejoration: the opposite process is instead exemplified by *droplets*, which originally had a more general meaning of 'minute drops' [1616], but has

4 The years in square brackets indicate the first attestation of the new word or meaning in the OED.

recently acquired a more negative connotation indicating 'the spray produced when people cough or sneeze, and which can spread diseases like COVID-19' [2020].

(10) The Covid-19 coronavirus outbreak is a new illness and scientists are still assessing how it spreads from person to person, but similar viruses tend to spread via cough and sneeze *droplets*. (*The Guardian*, 02/03/2020)

This variety of morphological and semantic processes intervening in the coinage of new words and in their use with new meaning is symptomatic of the creativity of speakers and journalists when a novel phenomenon such as the coronavirus occurs.

4.2 *Corpus-Based Analysis*

As announced, the analysis in CVC-20 will be both quantitative (i.e. for the new words' frequency) and qualitative (i.e. for collocations and metaphors).

4.2.1 *Quantitative Analysis*

The quantitative search of the data in our collection in CVC-20 has allowed us to classify Covid-related terms into three groups on the basis of their frequency.

The words/phrases that exhibit a high frequency (i.e. occurring more than 1,000 times in the corpus) can be classified as proper neologisms used to (occ. = occurrences):

- explain public health measures for reducing contagion (e.g., *lockdown* 'the imposition of an isolation state as a public health measure against coronavirus' 552,983 occ.; *social distancing* 'the action of maintaining a certain physical distance from people, in order to avoid catching or transmitting an infectious disease' 262,606 occ.);
- explain how contagion happens and how it can be tracked (e.g., *test positive* 'after taking a test for the Covid-19 infection, have the infection' 27,395 occ.; *superspreader* 'an individual infected with a (pathogenic) microorganism who transmits it to an unusually large number of other individuals' 2,721 occ.);
- call the virus (e.g., *Covid-19* 3,139,008 occ.; *Coronavirus* 2,056,604 occ.);

– describe attitudes towards the pandemic and health measures (e.g., *panic buying* 'the action of buying large quantities of a commodity in sudden alarm at an anticipated shortage' 5,613 occ.; *anti-vaccine* 2,619 occ.);
– outline post-pandemic and post-vaccine future (e.g., *second wave* 'the second wave in a succession of related events, phases, movements, such as the Covid-19 infection' 67,909 occ.; *herd immunity* 'resistance to the spread of a contagious disease within a population that results if a sufficiently high proportion of individuals are immune to the disease' 29,921 occ.);
– portray the role and actions of health workers in coping with the pandemic (e.g., *flatten the curve* 'to take measures designed to reduce the rate at which infection spreads during an epidemic' 8,462 occ.).

The words in this set will probably become a permanent part of the English vocabulary as their use is established. 79% of these words, such as *lockdown*, *PPE* 'personal protective (or protection) equipment', and *social distancing*, are also found in the OED, while others, such as *anti-mask* or *green pass*, are not found in the OED, but attested in the newspapers investigated.

The second set of words/phrases includes medium-frequency instances (between 100 and 1,000 occurrences). Medium-frequency neologisms and neosemanticisms are used to:

– describe attitudes during or towards the pandemic and public health measures (e.g., *anti-vax*(*x*) 856 occ.; *Zoombombing* 'the act of raiding a Zoom call, by posting pornography or otherwise offensive content' 286 occ.; *quarantini* 'the drink that people consume during a quarantine lockdown' 159 occ., ← *quarantine* + *Martini*);
– call the virus (e.g., *Rona* 832 occ.; *C-19* 618 occ.);
– explain public health measures for reducing contagion (e.g., *social bubble* 'a group consisting of a restricted number of people whose members are, under public health measures, permitted to be in close physical proximity' 591 occ.; *smart working* 'remote working' 125 occ.);
– portray the role of health workers (e.g., *clap for carers* 'a national applause for health workers helping in the fight against coronavirus' 560 occ.);
– outline post-pandemic future (*maskne* 'acne produced by wearing face masks' 465 occ.← *facemask* + *acne*; *unlockdown* 'the process of relaxing or ending social and physical restrictions' 105 occ.);

– explain how contagion happens (e.g., *index patient* 'an individual believed to be the source of the Covid-19 outbreak' 345 occ.).

Of these, only 27% are also found in the OED (e.g., *anti-vax*, *social bubble*, *index patient*), but their use is attested in the news, which indicates that they have a chance of becoming recognised in the English vocabulary. By contrast, many of the words occurring in the corpus (73%), such as *maskne*, *quarantini*, and *Zoombombing*, are not attested in the OED but only in the news.

Finally, low-frequency Covid-19 vocabulary (under 100 occurrences) includes words that for the most part are not attested in dictionaries. Indeed, of our examples, only *front-liner,* 'an employee who provides a service regarded as vital within the community, such as a health-care worker' (67 occ.), and *social recession,* 'a period of widespread deterioration in the quality of life among members of a community' (42 occ.), are included in the OED.

Most of them are nonce words (e.g., *covexit* 'an exit strategy permitting relaxing of confinement and economic recovery following coronavirus-related restrictions' 7 occ.; *Covidivorce* 'a divorce resulting from the covid house arrest where the parties realise that a parting of the ways might be best' 6 occ.), or even hapax legomena, i.e. once-only attestations (e.g., *lockstalgia* 'the notion that we may look back fondly upon the period of confinement' ← *lockdown* and *nostalgia*; *upperwear* 'clothing selected for display above the waist only').

It is interesting to note that many low-frequency words consist of blends, which are attested in journalism, but not in dictionaries. This suggests that reporters often recur to the blending process to coin new words because of their humorous effects, jocularity, and attractiveness (see "ludicity" in Arndt-Lappe et al. 2018), yet they often remain mere occasionalisms.

4.2.2 *Qualitative Analysis*

For the qualitative analysis, CVC-20 noun collocates with the neologism Covid-19 have been searched.[5] The search has given the following results, listed by the Mutual Information (MI) score, i.e. the strength of association between the neologism and its collocates:

5 The collocation window includes four words before (-4) and four words after (+4) the searched term *Covid-19*.

April (11.92), Africa (11.48), January (10.70), Australia (10.51), Europe (10.41), UK (10.05), India (9.83), us (8.06), March (5.52), China (4.73), *hotspot* (4.44), *taskforce* (3.78), complication (3.76), occasion (3.75), *fight* (3.39), *spread* (3.38), wake (3.23), impact (3.14), variant (3.14), dashboard (3.10), resurgence (3.06), vaccine (3.06), Pfizer (3.05), vaccination (3.04), onset (2.98), checkpoint (2.97), outbreak (2.91), patient (2.85), case (2.80), fallout (2.74), response (2.69), crisis (2.60), diagnosis (2.59), symptom (2.58), pandemic (2.53), *wave* (2.49), protocol (2.47), hospitalization (2.46), surge (2.39), treatment (2.37), *battle* (2.32), transmission (2.32), death (2.30), infection (2.30), spike (2.29), disease (2.24), test (2.23), era (2.22), exposure (2.18), midst (2.18), relief (2.18), disruption (2.16), fatality (2.14), handling (2.14), dose (2.13), task (2.13), mortality (2.13), containment (2.12), illness (2.02), testing (1.95), antibody (1.94), effect (1.90), restriction (1.86), toll (1.85), potential (1.84), strain (1.76), victim (1.70), tally (1.63), context (1.59), prevention (1.58), shutdown (1.55), *threat* (1.55), kit (1.54), situation (1.47), risk (1.45), cluster (1.41), result (1.41), number (1.37), rise (1.37), recovery (1.34), epidemic (1.34), precaution (1.34), *epicenter* (1.33), total (1.32), update (1.31), *frontline* (1.30), lockdown (1.29), screening (1.29), challenge (1.25), force (1.25), immunity (1.18), trial (1.15), uncertainty (1.14), Coronavirus (1.12), fund (1.12), emergency (1.07), candidate (1.07), regulation (1.06), concern (1.04), consequence (1.04), sample (1. 03)

A few of these nouns suggest a condition of alarm (e.g., *complication*, *impact*, *resurgence*, *crisis*, *death*, etc.), while others are well-known medical terms used in scientific texts (e.g., *vaccine*, *patient*, *diagnosis*, *symptom*, *hospitalization*, *treatment*, *disease*, etc.). However, still other collocations found in the corpus (indicated in italics above) encourage an interpretation in metaphorical terms. In particular, they trigger correspondences between the PANDEMIC and other conceptual domains, namely WAR (e.g., *taskforce*, *fight*, *battle*, *threat*, *frontline*), FIRE (e.g., *hotspot*, *spread*), and DISASTER (e.g., *wave*, *epicenter*, *threat*). In Section 4.2.3, these three domains will be explored closely in order to find out more precise correspondences.

4.2.3 *Metaphors*

According to many scholars, the 'problem' scenario can be exploited metaphorically to talk about a whole range of global and physical problems, such as climate change (Atanasova and Koteyko 2017; Flusberg, Matlock and Thibodeau 2017), cancer (Semino et al. 2018), and other serious illnesses (Sontag 1989).

Recently, Semino (2021, 51) has noted that, since these problems can be "fought" and hopefully "defeated", 'War' metaphors are particularly ger-

mane to describe them. Similarly, Craig (2020) and Wicke and Bolognesi (2020) have suggested that the new, urgent, and very serious problem of the Covid-19 pandemic has been talked about through metaphors of wars, fights, and battles.

From a close reading of corpus data, it is possible to draw a series of correspondences between the conceptual domains of WAR and PANDEMIC, including the following:

- THE VIRUS IS AN ENEMY/AN INVADER
- THE VIRUS IS A THREAT
- TREATMENT FOR THE VIRUS IS FIGHT
- HEALTH PROFESSIONALS ARE AN ARMY
- HEALTH PROFESSIONALS ARE HEROES
- SICK/DEAD PEOPLE ARE CASUALTIES
- ELIMINATING THE VIRUS IS VICTORY

A sample of illustrative examples can better show these correspondences:

(11) Thanks to the leadership of President Trump and the courage and compassion of the American people, our public health system is far stronger than it was four months ago, and we are *winning* the *fight* against the invisible *enemy*.
(12) The virus will become a persistent *menace* at least on par with the yearly flu – a *threat* that, though seemingly routine, strains health-care systems, businesses, and schools every winter.
(13) Europe *battling* second wave of COVID-19 as hospitals *struggle* to keep up.
(14) This is the least we can do to help our *frontliners conquer* and *defeat* COVID-19.
(15) People all over Southeast Michigan stood outside to watch the seven F/A-18 hornets flying through the air to honor healthcare workers and all of our *frontline* COVID-19 *heroes* during the pandemic.
(16) Amongst the key areas of concern is the high number of COVID-19 *casualties* – 29 deaths were reported on Friday, taking the tally to 539 deaths.
(17) Africa and China *fought* side by side until the *victory* against the virus was *won*.

Examples (11)–(17) demonstrate that the virus is described either as a dangerous invisible "enemy" who "menaces" our lives or as a "threat" for hospitals, businesses, schools, and the entire health-care system. People and institutions are "fighting" against the virus and "struggling" to "defeat" it. Health professionals, in particular, are described as "frontline heroes", who sacrifice their own lives for

the daily "battle" against coronavirus. A very encouraging metaphor is that of their "victory against the virus", when the "fight" is "won".

Another related set of correspondences involves the FIRE domain. As Semino (2021) has observed, 'Fire' metaphors clearly apply to a highly contagious and widespread virus such as Covid-19, as the following correspondences demonstrate:

- THE VIRUS IS FIRE
- CONTAGION IS SPREADING
- INFECTED PEOPLE ARE FUEL/OXIGEN
- SICK PEOPLE ARE BURNING TREES
- QUARANTINE IS FIRE LINE
- EPIDEMIC CLUSTERS ARE HOTSPOTS
- SNEEZING/COUGHING ARE SPARKS
- HEALTH PROFESSIONALS ARE FIREFIGHTERS
- ELIMINATING THE VIRUS IS EXTINGUISHING FLAMES

Even if these metaphors are less common than the previous ones, many examples can illustrate the above-mentioned correspondences:

(18) Do not just let this *fire burn*. Isolate the sick and quarantine their contacts.
(19) The COVID-19 *fire* didn't gain much *oxygen*, Kindrachuk said, so there wasn't much initial *spread*.
(20) Think of COVID-19 as a *fire* burning in a forest. All of us are *trees*. The Ro is the *wind speed*. The higher it is, the faster the *fire* tears through the forest. But just like a *forest fire*, COVID-19 needs *fuel* to keep going. We're the *fuel*.
(21) The annual tournament, held this year between March 11 and 14, has now become one of the *hotspots* for the COVID-19 outbreak in Canada...
(22) These invisible *sparks* cause others to catch *fire* and in turn breathe out *embers* until we truly catch *fire* – and get sick.
(23) That's when we call in the *firefighters* – our medical workers.
(24) Coronavirus is a *fire in retreat*; but it is not defeated. We must *extinguish* every *spark, quench* every *ember*.

Like "fire burning in a forest", the virus "spreads" everywhere creating dangerous "hotspots", such as public events, clinics and care homes. In (18)–(24) infected people are described as "burning trees", "fuel" or "oxygen" which feed the virus. The Covid-19 "fire" is especially dangerous because its "sparks" are

invisible, and can cause other "fire to burn". In order to defeat the "fire", we must "extinguish every spark, quench every ember", and this can be done with the help of medical workers, who play the role of "firefighters". The metaphor of the virus as a "fire in retreat" is very encouraging and helps citizens with their decision to get vaccinated.

Less encouraging metaphors are those falling in the DISASTER domain. 'Disaster' metaphors are versatile and applicable to a threatening and deadly virus such as Covid-19, which has caused many victims worldwide. The following correspondences, in particular, focus on the mapping between Covid-19 and a *tsunami wave*:

- THE VIRUS IS A TSUNAMI (WAVE)
- THE VIRUS ORIGIN IS THE EPICENTER
- SPREADING IS INUNDATING
- COUNTRIES HIT BY THE VIRUS ARE SHORES
- THE VIRUS IMPACT IS DESTRUCTION

A set of examples taken from the corpus illustrate these correspondences:

(25) Hawaii is under a COVID-19 *tsunami* warning. The *threat* is imminent. Prevention is our most powerful tool and must be our first priority.
(26) With Europe becoming the new *epicenter* of the deadly COVID-19, which has killed more than 5,000 people in Europe, the football leagues are unlikely to return any time soon.
(27) What we are witnessing is not just a second wave but a Covid-19 *tsunami* that is *engulfing* us.
(28) In a life-and-death struggle, a deadly war of attrition is in full progress between man and microbe as the Covid-19 *tsunami wave* turns our major cities into *islands* of death and desolation.
(29) India's investment bankers are set for their most rewarding year as local initial public offerings head for an all-time high despite the *devastation* brought about by a deadly Covid-19 *wave*.
(30) The world is watching a *catastrophe* unfolding in India, a COVID-19 *tsunami* has struck the country, the official figures is nowhere near the real *tragedy*, insiders affirm.

Like a deadly wave, Covid-19 is described in (25)–(30) as an imminent "threat", a "tsunami that is engulfing us". Every time there is a new "epicenter" and new victims. The consequences of the pandemic are a complete disaster: a "catastrophe", a real "tragedy", a "devastation". Needless to say, these depictions are so violent, brutal, and vicious that they only suggest hopelessness and despair.

5. *Concluding Remarks*

This study has shown that language change in the Covid-19 era basically consists of lexical innovation or new words. In particular, the study has identified Covid-related neologisms (*Covid-19, anti-vaccine, Zoombombing, maskne*), neosemanticisms (*lockdown, social isolation*), and nonce words (*locktail, upperwear*). Most of them are obtained through word-formation processes such as compounding (*Wuhan shake*) or blending (*covidiot*). Others are specifications of existing words whose meaning has undergone specialisation (*face covering*) or amelioration (*elbow bump*).

More specifically, the corpus-based quantitative analysis has helped distinguish between new words having a chance of becoming a permanent part of the English lexicon (high- and medium-frequency vocabulary), such as *anti-mask, green pass, maskne*, *quarantini*, and *Zoombombing*, and words destined to remain nonce formations (low-frequency vocabulary), such as *covidivorce*, or hapaxes, such as *upperwear*. Thus, the quantitative analysis has shown that, besides the terms already recorded in the OED, such as *Coronavirus* or *lockdown*, high- or medium-frequency words still have a chance of becoming established neologisms.

Furthermore, the qualitative analysis of the collocations with the term *Covid-19* has demonstrated that new meanings emerging during the pandemic have mainly modulated language in terms of metaphorisation (the 'virus' is described as *enemy* or *fire*). Among the three domains explored, 'War' and 'Fire' metaphors have turned out to be more encouraging, while 'Disaster' metaphors are less reassuring and can contribute to feed alarm and despair.

In general, this study has shown the usefulness of a topic-specific corpus such as CVC-20 and of corpus linguistic tools to show: (1) the institutionalisation of new vocabulary, covering the wide spectrum of word-formation processes; (2) how productivity and creativity affect vocabulary expansion, e.g., by means of new compounds and novel blends; (3) how language can use conventional metaphors to communicate about a new global phenomenon such as the Coronavirus pandemic; and, finally, (4) the contribution of digital transformation to the development of lexicography and lexicology.

Bibliography

Algeo, John. 1991. *Fifty Years among the New Words: A Dictionary of Neologisms, 1941–1991*. Cambridge: Cambridge University Press.

Arndt-Lappe, Sabine, Braun, Angelika, Moulin, Claudine, and Winter-Froemel, Esme. 2018. *Expanding the Lexicon: Linguistic Innovation, Morphological Productivity, and Ludicity*. Berlin and Boston: De Gruyter.

Aronoff, Mark. 1976. *Word Formation in Generative Grammar*. Cambridge: The MIT Press.

Atanasova, Dimitrinka, and Koteyko, Nelya. 2017. "Metaphors in Guardian Online and Mail Online Opinion-page Content on Climate Change: War, Religion, and Politics." *Environmental Communication* 11, no. 4: 452–69.

Baicchi, Annalisa. 2015. "Conceptual Metaphor in the Complex Dynamics of Illocutionary Meaning." *Review of Cognitive Linguistics* 13, no. 1: 106–39. https://doi.org/10.1075/rcl.13.1.05bai

Blank, Andreas. 1997. *Prinzipien des lexikalischen Bedeutungswandels am Beispiel der romanischen Sprachen*. Tübingen: Niemeyer.

Bloomfield, Leonard. 1933. *Language*. New York: Allen and Unwin.

Brinton, Laurel J., and Traugott, Elizabeth Closs. 2005. *Lexicalization and Language Change*. Cambridge: Cambridge University Press.

Bybee, Joan. 2015. *Language Change*. Cambridge: Cambridge University Press.

Chanpira, Erik Iossifovič. 1966. "Ob okkazional'nom slove i okkazional'nom slovoobrazovanii [On the occasionalistic word and on occasionalistic word formation]." In *Razvitie slovoobrazovanija sov-remennogo russkovo jazyka*, edited by Elena A. Zemskaja and Dmitrij N. Šmelev, 153–66. Moscow: Nauka.

Christofidou, Anastasia. 1994. *Okkasionalismen in poetischen Texten*. Tübingen: Narr.

Cockburn, Harry. 2020. "'Riding the 'Ronacoaster': An A–Z of New terms we've Learnt during the Pandemic." *The Independent*. https://www.independent.co.uk/news/uk/home-news/coronavirus-glossary-covid-terms-dictionary-2020-b1766827.html (accessed: 22/08/2021).

Craig, David. 2020. "Pandemic and its Metaphors: Sontag Revisited in the COVID-19 Era." *European Journal of Cultural Studies* 23, no. 6: 1025–32.

CVC-20: *The Coronavirus Corpus*. 2020–2021. https://www.english-corpora.org/corona/ (accessed: 05/10/2021).

Demjén, Zsofia, and Semino, Elena. 2017. "Using Metaphor in Healthcare: Physical Health." In *The Routledge Handbook of Metaphor and Language*, edited by Elena Semino and Zsofia Demjén, 385–99. London: Routledge.

Dressler, Wolfgang U., Mayerthaler, Willi, Panagl, Oswald, and Wurzel, Wolfgang U. 1987. *Leitmotifs in Natural Morphology*. Amsterdam and Philadelphia: John Benjamins.

EnglishCLUB. 2021. https://www.englishclub.com/vocabulary/coronavirus-covid19.php (accessed: 10/03/2021).

Flusberg, Stephen J., Matlock, Teenie, and Thibodeau, Paul H. 2017. "Metaphors for the War (or Race) against Climate Change." *Environmental Communication* 11, no. 6: 769–83.

Herberg, Dieter. 1988. "*Neologismen–lexikologisch und lexikographisch betrachtet*." *Sprachpflege* 37, no. 8: 10–112.

Hopper, Paul J., and Traugott, Elizabeth Closs. 1993. *Grammaticalization*. Cambridge: Cambridge University Press.

Kinne, Michael. 1996. "Neologismus und Neologismen Lexikographie im Deutschen." *Deutsche Sprache* 24, no. 4: 327–58.

Labov, William. 1994. *Principles of Linguistic Change, Vol. 1, Internal Factors*. Oxford: Wiley-Blackwell.

Labov, William. 2001. *Principles of Linguistic Change, Vol. 2, Social Factors*. Oxford: Wiley-Blackwell.

Labov, William. 2010. *Principles of Linguistic Change, Vol. 3, Cognitive and Cultural Factors*. Oxford: Wiley-Blackwell.

Lakoff, George, and Johnson, Mark. 1980. *Metaphors We Live By*. Chicago: University of Chicago Press.

Mattiello, Elisa. 2017. *Analogy in Word-formation. A Study of English Neologisms and Occasionalisms*. Berlin and Boston: De Gruyter.

Nevalainen, Terttu. 1999. "Early Modern English Lexis and Semantics." In *The Cambridge History of the English Language, Vol. III: 1476–1776*, edited by Roger Lass, 332–458. Cambridge: Cambridge University Press.

New Words List April 2020. 2021. https://public.oed.com/updates/new-words-list-april-2020/ (accessed: 10/03/2021).

OED: *Oxford English Dictionary* Online. 2024. Oxford: Oxford University Press. https://www.oed.com/ (accessed: 15/08/2020).

Online Etymology Dictionary. 2001–2024. https://www.etymonline.com/ (accessed: 05/10/2021).

Ruiz de Mendoza Ibáñez, Francisco José. 1997. "Metaphor, Metonymy and Conceptual Interaction." *Atlantis: Revista de la Asociación Española de Estudios Anglo-Norteamericanos* 19, no. 1: 281–95.

Scalise, Sergio. 1986. *Generative Morphology*. Berlin and Boston: De Gruyter Mouton.

Semino, Elena, Demjén, Zsófia, Hardie, Andrew, Payne, Sheila, and Rayson, Paul. 2018. *Metaphor, Cancer and the End of Life. A Corpus-based Study*. New York: Routledge.

Semino, Elena. 2021. "'Not Soldiers but Fire-fighters' – Metaphors and Covid-19." *Health Communication* 36, no. 1: 50–8. https://doi.org/10.1080/10410236.2020.1844989.

Sontag, Susan. 1989. *Illness as Metaphor and AIDS and its Metaphors*. New York: Doubleday.

The Guardian. 2020–2021. https://www.theguardian.com/international (accessed: 28/02/2021).

The Independent. 2020–2021. https://www.independent.co.uk/ (accessed: 28/02/2021).

Thorne, Tony. 2020. "#CORONASPEAK—The Language of Covid-19 Goes Viral." http://www.language-and-innovation.com/2020/04 /15/coronaspeak-part-2-the-language-of-covid-19-goes-viral/ (accessed: 15/08/2020).

Traugott, Elizabeth Closs, and Trousdale, Graeme. 2010. *Gradience, Gradualness and Grammaticalization*. Amsterdam and Philadelphia: John Benjamins.

Traugott, Elizabeth Closs. 2017. "Semantic Change." *Oxford Research Encyclopedias. Linguistics*. https://doi.org/10.1093/acrefore/9780199384655.013.323.

Ullmann, Stephen. 1957. *Principles of Semantics*. 2nd ed. Oxford: Blackwell.

Ullmann, Stephen. 1962. *Semantics: An Introduction to the Science of Meaning*. Oxford: Blackwell.

UD: *Urban Dictionary*. 1999–2021. http://www.urbandictionary.com/ (accessed: 28/02/2021).

Weinreich, Uriel, Labov, William, and Herzog, Marvin I. 1968. "Empirical Foundations for a Theory of Language Change." In *Directions for Historical Linguistics*, edited by Winfred P. Lehmann and Yakov Malkiel, 95–195. Austin: University of Texas Press.

Weinreich, Uriel. 1963. *Languages in Contact. Findings and Problems*. The Hague: Mouton.

Wicke, Philipp, and Bolognesi, Marianna M. 2020. "Framing COVID-19: How we Conceptualize and Discuss the Pandemic on Twitter." *PLOS ONE* 15, no. 9: e0240010. https://doi.org/10.1371/journal.pone.0240010.

Elisa Mattiello is Associate Professor of English Language and Linguistics at the Department of Philology, Literature and Linguistics (University of Pisa). She holds a Ph.D. in English Linguistics from the same University, where she teaches courses of English linguistics and ESP. Her research focuses on English word-formation and lexicology, with particular attention to the creative mechanisms that are used to coin new words in English. In these areas, she has published extensively in leading journals and volumes. She also authored the monographs *An Introduction to English Slang* (Polimetrica, 2008), *Extra-grammatical Morphology in English* (De Gruyter, 2013), *Analogy in Word-formation* (De Gruyter, 2017), *Linguistic Innovation in the Covid-19 Pandemic* (Cambridge Scholars Publishing, 2022), and *Transitional Morphology* (Cambridge University Press, 2022). She serves as reviewer for numerous international journals and is currently a member of the Editorial Boards of the International Journal of English Linguistics, International Journal of Language and Linguistics, and Cambridge Scholars Publishing.