Flu-like pandemics and metaphor pre-covid: a corpus investigation

Taylor, Charlotte and Kidgell, Jasmin (2021) Flu-like pandemics and metaphor pre-covid: a corpus investigation. Discourse, Context and Media, 41. a100503 1-11. ISSN 2211-6958

This version is available from Sussex Research Online: http://sro.sussex.ac.uk/id/eprint/98921/

This document is made available in accordance with publisher policies and may differ from the published version or from the version of record. If you wish to cite this item you are advised to consult the publisher’s version. Please see the URL above for details on accessing the published version.

Copyright and reuse:
Sussex Research Online is a digital repository of the research output of the University.

Copyright and all moral rights to the version of the paper presented here belong to the individual author(s) and/or other copyright owners. To the extent reasonable and practicable, the material made available in SRO has been checked for eligibility before being made available.

Copies of full text items generally can be reproduced, displayed or performed and given to third parties in any format or medium for personal research or study, educational, or not-for-profit purposes without prior permission or charge, provided that the authors, title and full bibliographic details are credited, a hyperlink and/or URL is given for the original metadata page and the content is not changed in any way.
Influenza pandemics and metaphor pre-COVID: A corpus investigation

Keywords: metaphor; COVID; influenza; corpus linguistics; discourse analysis; corpus-assisted discourse studies; historical discourse

9834 words

Abstract

The use of metaphor in framing COVID-19 has already attracted considerable attention in both academic and public debate and we have seen extensive discussion of how this pandemic might be compared to past events, such as the so-called ‘Spanish flu’ of the 1910s. In this paper, we draw these two strands of metaphoric framing and historical comparison together by identifying the metaphorical framings of past influenza pandemics in media and political discourse in the UK over an extended period (1890-2009). The findings show remarkable continuity in the choice and proportion of conceptual metaphor across very different sociohistorical contexts. However, this does not correspond to entrenchment of the metaphors which continue to be creative and elaborated in many cases. In terms of variation over time, the analysis shows shifts in framing with greater focus on societal effects and reactions to influenza in later periods while the agency of the virus is reduced.

1. Introduction

Emerging research into discourses of COVID-19 has highlighted the importance of effective communication. For instance, recent work-in-progress indicates that empathetic messaging regarding COVID-19 correlates with better national health outcomes (Garikipati & Kambhampati 2020). In healthcare communication, understanding the implications of
language choice is vital because of the high-stakes nature of individual and mass communication. The importance of metaphor in particular is a consequence of its persuasive and framing role in discourse more generally. At the societal level of persuasion, Gillis’s (2020) paper on COVID metaphors notes that

To effect massive social change in a population within a short period of time, governments need various strategies, with coercion, persuasion and the inducing of intense, directed emotional responses being among them. While legislative measures clearly implement coercion, metaphor can work alongside such measures to help to persuade and induce a widespread emotional response in the population, perhaps most significantly, fear, but also, solidarity and even empathy (Gillis 2020: 2).

For instance, Sabucedo, Alzate and Hur (2020) argue against the use of war metaphors in public communication about COVID-19 on the basis that metaphors influence perception of reality and therefore behaviour. They go on to explain that “[t]here is no need to recall that the pandemic itself sparks anxiety and fear. Therefore, any images that the metaphor of war could evoke (suffering, shortages, etc.) will only further increase these negative emotions. Hence, prosocial behaviour could give way to selfish, irrational thoughts” (p. 619). Thus, a direct link between metaphor and audience response is anticipated. Similarly, Scherer et al. (2015) report that metaphor use can influence vaccination uptake, a key element in current approaches to COVID-19. At the individual level of experience of disease, Wicke & Bolognesi (2020) claim that “the framing power of metaphor is particularly relevant in health-related discourse, because it has been shown that it can impact patients’ general well-being”.

Furthermore, evidence of the perceived importance of metaphor in pandemic communication comes from the extensive meta-comment which has taken place in the media since the start of the COVID-19 pandemic, as illustrated in the following headlines from different UK broadsheet newspapers which all discuss war metaphors (and, as documented in the excellent #reframeCOVID initiative). These headlines show us the way that the communication around the pandemic and behavioural responses became a topic in its own right.

'Frontline': is it misleading to apply military metaphors to medicine?; If this is a ‘war’ against Covid-19, you don't have to be on the frontline to become a casualty (Guardian, April 2020, our italics)
Talk of 'beating Covid' was always nonsense; After immersing myself in the science, it's clear to me that phrases like 'all-out war' only scared the nation out of its wits (Times, November 2020, our italics)

We must be prepared to live with Covid-19; The Cabinet must change its disastrous wartime narrative and treat this crisis for what it really is (Telegraph, April 2020, our italics)

This paper offers a preliminary response to the ongoing COVID-19 pandemic by presenting an overview of metaphor use in previous public discourses of contagious respiratory disease pandemics. These diseases are often grouped together as influenza or flu-type diseases and, as Peterson (2021: 219) noted in the Lancet ‘COVID-19 is often compared to influenza. In the middle of a pandemic with a new coronavirus transmitted from the respiratory tract, it is obvious to look at previous influenza pandemics and seasonal influenza for comparison’. Similarly, Páez & Pérez (2020) discuss how ‘in the early stages of the COVID-19 pandemic, it was compared to the annual flu cycle in order to strip the drama from it’ and they interpret this as a way of ‘anchoring’ the new disease in known contexts. However, as emphasised in later-stage communication around COVID-19, the disease is caused by SARS-CoV-2 and not by an influenza virus and, as we know all too well at this point, has more lethal outcomes than recent influenza outbreaks. In this, it is most comparable to SARS (caused by SARS-CoV-1), another contagious respiratory disease. The aim of examining how previous pandemics were framed is twofold. First, we provide a point of reference for future research which will allow us to ‘denaturalise’ the ongoing discourse and show which metaphors are new, absent or largely unchanged in the COVID-19 discourse. In this, we are following the lead of other academic and scientific responses which have called for more interdisciplinary studies of historic pandemics (e.g. Simonsen et al. 2011). Second, we take a ‘long-distance’ view covering a period of over 100 years and argue that knowledge of past discourses is, in itself, valuable because it can tell us how discourses are shaped over time – an aspect of analysis which has, to date, received relatively little attention. More specifically, historical investigation may complement cognitive insights to allow us to understand metaphor more fully. As Nazar (2015) argues “the textual and immediate context can provide only a glimpse of the dynamics of metaphor use: the inclusion of the historical dimension can give us a richer picture of its adaptive nature” (see also Musolff 2010, *inter alia*).

The three research questions which are addressed in this study are the following:
• To what extent are metaphors of flu-like pandemics shared across time?
• How do metaphors of flu-like pandemics develop over time?
• What can this tell us about framing of these events?

2. Previous flu-like pandemics

Prior to COVID-19 there were multiple outbreaks of contagious respiratory diseases (here referred to as flu-like diseases for ease of reference) which fell into the category of pandemic. Important contextual differences which may have an impact on the framings are the extent to which the UK was affected (as that is where our data comes from), the extent to which different age groups were affected, and the contagiousness and severity of the virus. The flu-type pandemics included:

1847-1848. There is some dispute about whether this epidemic constituted a pandemic as it mainly affected Western Europe and was considered mild. However, it spread extensively (one Londoner in four got flu) and was perceived as a pandemic at the time (Patterson 1985: 578).

1889-1890. The so-called ‘Asiatic flu’ or ‘Russian flu’ caused approximately 125,000 deaths in the period 1890–1893 and is considered one of the first to be reported live as it spread (Honigsbaum 2011).

1918–1919. The ‘Spanish Flu’ (H1N1 virus) caused approximately 25 million deaths. It was first widely reported in Spain but may have originated in the U.S..

1957–1958. The ‘Asian Flu’ (H2N2 virus) caused more than 1 million deaths including an estimated 20,000 in the UK (Honigsbaum 2020: 1824).

1968. The ‘Hong Kong Flu’ or ‘Mao Flu’ (H3N2 virus), caused between one and four million deaths globally, including an estimated 30,000 in the UK with half the deaths among individuals younger than 65 years (Honigsbaum 2020: 1824).

2003. SARS (severe acute respiratory syndrome, SARS-CoV-1) was first identified in China and in the first nine months spread to 8,096 cases worldwide and caused 774 deaths (WHO 2004 report).

2009. The ‘swine flu’ (H1N1) virus broke out in Mexico and spread to 214 countries. The number of people affected is unclear but there were 18,449 laboratory-confirmed
deaths (WHO report 2010). Like the 1918 H1N1 virus, it does not disproportionately infect adults over 60.

2012+ MERS (Middle-East respiratory syndrome coronavirus (MERS-CoV) has been reported in 27 countries (83% of cases reported in Saudi Arabia) with 791 known deaths. It is estimated that 35% of patients with MERS-CoV have died (WHO 2018).

It should also be noted that names such as ‘Spanish flu’ may be commonly used to refer to these pandemics at the present time but the corpus data shows there is limited evidence of their use at the time of the pandemic, particularly in the earlier pandemics. As an empirical measure of this, in the Times newspaper archive just 0.26% of references to influenza are pre-modified by Russian in the 1890s, 1.6% of references to influenza are pre-modified by Spanish in the 1910s, 5.5% of references to influenza are pre-modified by Asian in the 1950s and 0.14% of references to flulinfuenza are pre-modified by Hong Kong and 0.20% pre-modified by Mao in the 1960s. As might be expected, given that we know history is continuously being re-written and re-named, this discrepancy is less marked in more recent time periods and if we take the occurrences of flu in the Times in the 2000-2009 period, 14% are pre-modified by swine, 14% by bird and 9% by avian.

3. Metaphor and pandemics
The underlying assumption in this paper is that metaphor has an important framing function. When a metaphor is chosen, it foregrounds certain aspects of similarity between two entities (e.g. experiencing a disease is like a war because it requires resilience from those affected) and backgrounds other aspects (e.g. experiencing a disease is not like a war because other people are not enemies). This foregrounding and backgrounding of features by the metaphor is an inherently evaluative process (e.g. as discussed in Partington et al. 2013) which interprets the phenomenon it describes. Thus, the selection of the metaphor promotes particular readings of a situation, or, in discourse terms, it may activate a particular frame or scenario (Musolff 2006). Within the same conceptual metaphor, we may have different frames, for instance MIGRANTS ARE WATER might suggest “migrants are a natural resource” or “migrants are a natural disaster” (Taylor 2021) and each of these can function to ‘logically’ suggest different reactions (e.g. exploit or stop). This means that we cannot assume a simple correspondence between the overarching metaphor and interpretation (see Semino, Demjén &
Demmen 2018). Furthermore, experimental work such as that by Thibodeau and Boroditsky (2011) and Hart (2018) indicates that readers of texts with metaphors advocate solutions in line with the metaphorical framing they were exposed to. The second key feature of metaphor is that it is a powerfully emotional tool (e.g. Citron et al. 2016) and, combined with the framing functions, this makes metaphor highly salient to discourse analysis. With reference to news discourse more specifically, Bednarek (2005) emphasises the importance of metaphor in construing an event as newsworthy (see Section 4.2).

As noted in Section 1, the role of metaphor in persuading and framing events is crucial to effective communication around public health events which a) require behavioural change from the public and b) will be used to measure the competence of governments. Previous research has identified a large number of metaphors for flu-like pandemics and these are summarised in Table 1 (the conceptual metaphor labels and lexicalisations are those given by the authors). As can be seen, several categories overlap and so lexicalisations may appear in different categories (e.g. wave as liquid, movement, natural disaster, storm, tsunami). This variation highlights the interpretative nature of categorising metaphor.

| Conceptual metaphor                  | Example lexicalisation                        | Disease                      | Studies                                |
|--------------------------------------|------------------------------------------------|------------------------------|----------------------------------------|
| ACTOR / DOER                         | acts, responsible for, underlined             | Influenza (1990-2010)        | Dobrić & Weder (2016)                  |
| BALANCE                              | controlled / uncontrolled, measures, regulations | SARS                        | Larson, Nerlich, & Wallis (2005)      |
| BATTLE                               | fighting, control, killed                     | H1N1                         | Angeli (2012)                          |
| CONTAINER / CONTROL                  | spread, spill, boil over, measures            | SARS                         | Wallis & Nerlich (2005)               |
| CRIMINAL / MURDERER                  | killer virus, attacked, killed                | Influenza (1990-2010)        | Dobrić & Weder (2016)                  |
| DISASTER IN GENERAL                  | break out, affect, ravages                   | SARS                         | Chiang & Duann (2007)                 |
| ENEMY / ADVERSARY / ATTACKER         | against, combat, host defense                 | Influenza (1990-2010)        | Dobrić & Weder (2016)                  |
| ENVIRONMENTAL DISASTER               | devastating, exploded, burning itself out    | Influenza (1990-2010)        | Dobrić & Weder (2016)                  |
| Term                        | Description                                                                 | Topic                | Author(s)                        |
|-----------------------------|------------------------------------------------------------------------------|----------------------|----------------------------------|
| Evil Spirit                 | get caught by                                                                 | SARS (sha)           | Chiang & Duann (2007)            |
| Evolving Organism          | slow to take hold, develop(s), died away                                     | Influenza (1990-2010)| Dobrić & Weder (2016)            |
| Family / Parent / Child    | allow the virus, daughter viruses, left a legacy                             | Influenza (1990-2010)| Dobrić & Weder (2016)            |
| House                      | bird flu's deadly knock is at our very door, enemy at the gate, the monster at our door | Avian flu            | Koteyko, Brown & Crawford (2008) |
| Journey                    | on our doorstep, arrive, reach                                               | Avian flu            | Koteyko, Brown & Crawford (2008), Rajandran (2020) |
| Killer                     | rampant, killer virus, claims victims                                       | SARS                 | Larson, Nerlich, & Wallis (2005), Wallis & Nerlich (2005) [discusses that the killer could be a criminal or a deadly animal] |
| Liquid / Water             | spread(s), wave, pools and patterns                                         | Influenza (1990-2010)| Dobrić & Weder (2016), Rajandran (2020) |
| Living Organism (H/B/P)    | -                                                                            | Swine flu            | Mundwiler (2013)                 |
| Message / Parcel           | transmitted, transmission, carried                                          | Influenza (1990-2010)| Dobrić & Weder (2016)            |
| Mystery                    | mysterious, elusive, mystery                                                | SARS, Avian flu      | Wallis & Nerlich (2005), Zhang, Mao & Wang (2015) |
| Natural Bioterrorist       | natural bio-terrorism                                                       | Avian flu            | Nerlich & Halliday (2007)        |
| Natural Disaster           | surge, peaking, rising                                                       | H1N1, Swine flu, SARS, Avian flu | Angeli (2012), Chiang & Duann (2007), Koteyko, Brown & Crawford (2008), Mundwiler (2013), Nerlich & Halliday (2007), Wallis & Nerlich (2005) |
| Object / Possession        | catch, get, pick up                                                         | Swine flu, SARS      | Mundwiler (2013), Wallis & Nerlich (2005), Larson, Nerlich, & Wallis (2005) |
| People Are Containers      | spread, widespread, take hold                                               | Swine flu            | Mundwiler (2013)                 |
| Physical Aggression        | killer, victim, launch                                                      | Swine flu            | Mundwiler (2013)                 |
| Physical Assault / Struggle| slams, hurt, hammered                                                       | SARS                 | Wallis & Nerlich (2005), Larson, Nerlich, & Wallis (2005) |
**Preparing for an Emergent Infectious Disease is Preparing for War**

| Category                  | Metaphor                                                                 | Disease   | Authors                                                                 |
|---------------------------|--------------------------------------------------------------------------|-----------|------------------------------------------------------------------------|
| **Prisoner / Fugitive**   | outbreak(s), break(s) out, binding                                       | Influenza (1990-2010) | Dobrić & Weder (2016)                                                |
| **Problem, Crisis or Disaster** | spreading, out of control, major problem                               | SARS      | Larson, Nerlich, & Wallis (2005), Wallis & Nerlich (2005)             |
| **Race**                  | slow greyhound                                                           | SARS, Avian flu | Zhang, Mao & Wang (2015), Nerlich & Halliday (2007)                  |
| **Science**               | mutation, complications                                                  | H1N1      | Angeli (2012)                                                          |
| **Traveller / Passenger** | moved, arrived, course of                                               | Influenza (1990-2010) | Dobrić & Weder (2016)                                               |
| **Victimizer**            | fear, panic, victims                                                    | Swine flu | Angeli (2012)                                                          |
| **Visitor**               | virus is travelling, a thief (unwanted visitor), arriving               | H1N1      | Angeli (2012)                                                          |
| **War**                   | war against, control room, fighters                                     | Swine flu, SARS (sha), Avian flu, | Angeli (2012), Chiang & Duann (2007), Koteyko, Brown & Crawford (2008), , Zhang, Mao & Wang (2015), Rajandran (2020), Fernández-Pedemonte, Casillo & Jorge-Artigau (2020) MILITARY metaphors: Craig (2020), Larson, Nerlich, & Wallis (2005), Wallis & Nerlich (2005), Gillis (2020) |
| **Weather**               | an atmosphere of                                                         | SARS (sha) | Chiang & Duann (2007)                                                 |

Table 1. Summary of metaphors identified in previous research on flu-like pandemics/epidemics

Table 1 shows both the range of metaphors identified and concentration of attention around certain conceptualisations with various kinds of NATURAL DISASTER and WAR receiving much attention. Many of these framings can also be seen in the rapidly growing body of work that is emerging on framings of COVID-19 across different media (e.g. newspapers, Twitter) and political (e.g. press briefings, public broadcasts) discourses, and cultural contexts (e.g. China, Indonesia, Malaysia, Singapore, Turkey, UK, USA). To date, these include metaphors of
COVID-19 as war (Adam 2020; Bates 2020; Chapman & Miller 2020; Rajandran 2020; Wicke & Bolognesi 2020), storm (Wicke & Bolognesi 2020), tsunami (Wicke & Bolognesi 2020), monster, (Wicke & Bolognesi 2020), movement Craig (2020), direction (Rajandran 2020), friend/companion (Adam 2020), race (Gui 2021), challenge (Gui 2021).

The war metaphors in COVID-19 communication have attracted most attention due to both the pervasiveness of the metaphor - Wicke & Bolognesi (2020) find 5% of tweets about COVID contain war lexis - and the implications. The metaphor has been strongly criticised because it might make sufferers feel guilty or weak, as documented in other disease contexts such as cancer (e.g. Sontag 1979), may naturalise the sacrifice of ‘frontline’ staff (Walker 2020) and may not be effective in transmitting messages about refraining from actions (Hendricks et al 2019, cited in Gillis 2020). Furthermore, it could increase divisions in society, as discussed in Fernández-Pedemonte et al. (2020: 156) who claim that “[o]ne of the discursive consequences of using the metaphor of war consists of referencing subjects that are related to violence instead of protection. As a consequence, what starts out as a war against the virus quickly transforms to a war between different subjects whether it be countries or enterprises”. In addition, Gillis (2020) points out that use of war metaphors may have an impact on democratic systems because legislative decisions cannot be easily questioned. However, the use of the war metaphor should also be considered in a wider context. Previous research has also shown that war metaphors are common in public discourse (Wicke & Bolognesi 2020 cite research from Karlberg and Buell which found 17% of articles in Time Magazine published 1981-2000 contained at least one war metaphor). Flusberg et al. (2018) also highlight their explanatory power and fit with news values of ‘negativity’ and ‘urgency’:

war metaphors are commonplace in public discourse in part because they tap into basic and widely shared schematic knowledge that efficiently structures our ability to reason about any situation involving opposing sides (at any level of abstraction). What’s more, the vivid emotional valence associated with war can quickly activate a sense of urgency and anxiety (Flusberg et al 2018: 11)

Semino (2020) addresses the potential issues with war metaphors in COVID-19 discourses and uses the findings from the #ReframeCovid initiative to show alternative metaphors, concluding that fire metaphors are particularly appropriate and versatile for public communication about COVID-19.
What the research presented here can show is how these war metaphors are part of an existing frame for communicating pandemics and what alternatives are offered in past discourses.

4. Methodology
4.1 Long-distance diachronic corpus-assisted discourse analysis

This study combines corpus linguistics and discourse analysis (e.g. as discussed in Baker 2006; Partington et al. 2013; Mautner 2016) with the analysis of metaphor (e.g. as recently applied in Charteris-Black 2017) for the investigation of historical corpora (following McEnery & Baker 2017). As Semino, Demjen, Hardie et al. (2018) point out “corpus data and methods are particularly well suited […] because patterns of discourse meaning, including metaphor use, are established incrementally via the accumulation of multiple individual instances of use” (p. 27). Thus, we can see patterns which may not be obvious to ‘the naked eye’ and access much larger quantities of data than could be identified from a traditional reading.

The use of historical data presents a set of challenges as well as affordances. First, the use of corpora derived from OCR (optical character recognition) scans means the quality of files can be problematic. Second, there is the issue of how we can meaningfully compare texts from 1890 with those from one hundred years later. This is where metaphor analysis can make an important contribution. If we understand metaphor to be broadly defined as bringing together “different areas of experience and knowledge so that a particular topic is cognitively and communicatively presented in terms of another topic” (Musolff 2016: 7) we can use metaphor as a key for comparison. In so doing, we necessarily abstract out from the lexical level and therefore historical language changes do not present a barrier to identifying continuity in the underlying concept. For example, the influenza is war metaphor could be lexicalised using terms such as smite, scourge or combat at different points in time.

Furthermore, in taking two datasets (Times and Hansard) we had to develop ways of handling the different contexts of production and quantities of data (see also Wilkinson 2019), as discussed in Section 4.3.

4.2 Corpora

The two corpora used in this study provide a continuous and complete record of one newspaper and parliamentary debate over the time period analysed. They are:
Times Online. This corpus was created at University of Lancaster, using the OCR files made available by the British Library and includes all articles published in the UK-based Times newspaper 1785-2011. The current size is c.10.5 billion words and it was analysed using CQPWeb (Hardie 2012).

Hansard. The version used here is Davies (2015) which includes all UK parliamentary debates from 1803-2005 (c.1.6 billion words).

The combination of newspaper and parliamentary discourse were chosen because, when viewed together, they can give a measure of public discourse and, in most cases, what were considered publicly acceptable framings at the time of production. Media and political discourse are closely bound up in “symbiotic relations maintained between political discourse and the media in and through which political information, political beliefs and political opinions are transmitted and shaped” (Fetzer & Weizman 2006: 143). However, that is not to underestimate differences between the two discourse types. Key points to note for the purposes of this paper are the way that parliamentary debate necessarily includes (some) opposing voices, and shifts in power balances will make certain ideological frames dominant in certain time periods. In the newspaper context, changes in proprietor and editor will also lead to shifts in stance in different time periods, but there is a relatively unified voice per newspaper at any one point in time.

The concepts of newsworthiness and news values (Galtung and Ruge (1965) may also give insight into the discursive framings of phenomena in the press. As Bednarek and Caple (2012) argue, newsworthiness “is construed and established through discourse”, that is to say that news values are not reflecting realities ‘out there’ but are constructed to persuade the audience of the salience of what they are reading, i.e. that this is ‘news’ (see Fruttaldo & Venuti 2017). In Bednarek & Caple (2017) newsworthiness is understood to be construed through the news values of: “Negativity (and conflict), Impact (consequence, significance, relevance), Superlativeness (size, scale, scope), Proximity (geographical, cultural nearness), Timeliness (recency, currency), Unexpectedness (and unusuality), Eliteness (prominence, elite status), Personalization, Consonance (expectedness, typicality), and Aesthetics (visuals only)” (p.53, our italics). Furthermore, a clear link between news values and metaphor is mapped out in Bednarek (2005: 24) who states that “conceptual metaphors seem to be particularly important for establishing construals of ‘newsworthy’ events in news stories in that they provide a conceptual-metaphoric representation of the world. This function has been
rather neglected in linguistic studies on metaphors and certainly seems to deserve further attention in systematic textual analyses”.

4.3 Process of analysis
In the first phase we identified the frequency of mention of *grippe, flu, influenza* and SARS, as shown in Figure 1. These terms were chosen because they were the most commonly used throughout the time period to refer to flu-like infectious respiratory diseases (the term *flue* was excluded because it was only used in a very limited extent in the nineteenth century and created too much interference due to its homonymy and *MERS* was excluded as it falls outside the time periods covered here). The investigation of the frequency revealed three important findings.

![Figure 1](image)

**Figure 1.** Relative frequency of mention of *grippe/flu/influenza/SARS*

First, the peaks of discussion do not fully align with our knowledge of when influenza peaked: for instance, the pandemic of 1969 (so-called *Hong Kong flu*) does not appear as a large spike. Second, although Times and Hansard frequencies are similar, there are some divergences, such as the absence of a peak in the 1950s (the time of the *Asian flu*) in Hansard. Third, there are clear peaks for the Times data in 1892, 1918, 1957 and 2003/2009 and these are matched by peaks in Hansard in 1891, 1919 and 2000. On this basis, the following decades were chosen for more detailed investigation: 1890-1899, 1910-1919, 1950-1959 and 2000-2009 [only to 2005 for Hansard due to data availability]. These time periods offer the
opportunity to examine metaphor at distinct points in the past and are based on frequency of mention which is taken as an indication of topicality or newsworthiness (though see Marchi 2018 on the issues and implications of time period selections).

All concordance lines and collocates for grippe, flu, influenza, SARS were downloaded from Hansard and the Times for the four decades. This led to a total of 2,345 lines from Hansard and 24,138 lines from the Times. The tenfold difference in size necessitated a difference in approach for the two sets of data as discussed below. The process was the following:

i) To triangulate the coding process, both researchers worked on the same set of concordance lines (Hansard 1890s) and identified possible metaphors relating to influenza (consulting the OED for earlier meanings of lexical items). Although the broad approach followed the Pragglejaz group (2007), it is not a straightforward process and any items that were considered borderline were marked as ‘unclear’ so they could be revisited and/or excluded. This means that some metaphors may have been missed, but we can be confident in the repeatability of the coding (i.e. it removes grey areas). The concordance lines were coded for conceptual metaphor and lexicalisation. For instance, in the utterance *many people had drunk rum to arm themselves against influenza* the use of *arm* and the possible invocation of a WAR or ENEMY metaphor were noted. The two researchers then compared findings to agree and standardise coding for future samples.

ii) The coding was extended across all Hansard (2,345 lines) and a sample of 150 concordance lines for the Times decades (600 lines) and compared again. As noted above, a slightly different measure had to be used for the Times because of the tenfold difference in size.

iii) The collocates of the influenza node items were calculated for the Times data (using loglikelihood and a 5L/R span). They were scanned to identify possible indicators of metaphor. The aim of this stage was to triangulate the findings from the sampling of concordance lines.

iv) The findings from the sampled concordance lines and the collocates were used to highlight concordance lines (using the conditional formatting function in Excel) which might involve conceptual metaphors and these were subsequently manually coded. In this stage, the second author did the bulk of the coding and the first author read random samples for each period to verify the data (a statistical intercoder test was not used although this would be useful in future work).
Stage (iv) was especially important because we cannot assume that a sample of 150 lines would give reliable information either regarding the range of metaphors (the smaller the sample, the smaller the range is likely to appear) or the relative frequency of occurrence of metaphors. The following section summarises the main patterns of metaphor which were identified. The patterns of co-occurrence are illustrated with reference to collocates and concordance lines. The standard KWIC concordance view is used to illustrate patterns of co-occurrence, and sentence examples from the concordances are used where more context is required.

5 Metaphors of flu-like diseases
5.3 Overview
The analysis showed that metaphors for which influenza, flu, SARS and grippe were the target were unequally distributed with a relatively small number accounting for most use. Two metaphors which emerged strongly in phase (ii) of the process were actor (7%-10% of influenza metaphors in Hansard and 10%-22% in the Times sample, lexicalised with expressions like owing to, attributed to, persisted) and object (20%-40% in Hansard and 14%-30% in the Times sample, lexicalised with expressions like have and got). However, it is probable that they were dominant because they are underspecified, once again raising the difficulties of metaphor interpretation. It is likely object encompasses various framings from possession to problem. Similarly, in actor metaphors, the virus is given agency but this does not in itself constitute a metaphor. Rather, it is an indicator of personification of the virus which may be activated in multiple metaphors (e.g. influenza is an enemy, influenza is a traveller, discussed below). Therefore, we have focussed on those metaphors which were frequently used and were distinctly lexicalised, as shown in Figure 2.
As can be seen, there is a high degree of similarity across the Hansard and Times corpora with ENEMY/WAR metaphors and CONTAINER metaphors accounting for at least 75% of the metaphors in all time periods. There was rather more variation across time within the Hansard data which may be due to the smaller size of the data or the greater influence of different political groups on the discourse at different points in time.

5.2 WAR and ENEMY

The WAR/ENEMY frames were present in both datasets throughout the time period. In both cases, the relative frequency drops in the most recent period as the CONTAINER metaphor takes up a greater proportion, and the LIVING ENTITY metaphor grows stronger in the Times. Thus, it appears that the metaphor which has proved to be most controversial with reference to COVID framings (see Section 2), was actually in decline in relative terms.

The use of the WAR/ENEMY metaphor in parliamentary discourse is highly conventionalised from the start of the period (71% of WAR/ENEMY metaphors include attack of in Hansard 1890). In contrast to what we might expect regarding the progressive conventionalisation of the metaphor, it continues to be creative with new lexicalisations (e.g. combat takes up 11% of occurrences in 2000 but is not noted before then). There is no clear diachronic trend in terms of the agency of influenza in the WAR/ENEMY metaphors; in the 1890s and 1950s, influenza is the aggressor in most of the metaphors while in the 1910s and 2000s the proportion is more balanced across agent/beneficiary roles.
Similar trends are observed in the Times data, with more diverse lexicalisation developing over time. This can be seen in Table 2 which shows the most frequent lexicalisations of the WAR/ENEMY metaphor in each of the four time periods (the items listed here were derived from close reading of each concordance line, not collocate lists). Table 2 shows that attack of occurs in the majority of concordance lines containing WAR/ENEMY metaphors in the first three decades investigated (79%, 62%, 63%). However, there is a clear change in 2000-2009 when attack of fades from use and no single lexical item takes such a dominant role (kill is the most frequent at 28%).

|       | 1890   | 1910   | 1950   | 2000   |
|-------|--------|--------|--------|--------|
| attack of | 78.74  | attack of | 62.57  | attack of | 63.32  | kill    | 27.72  |
| attacked | 12.30  | against  | 12.66  | defence  | 15.22  | against | 24.09  |
| victim   | 5.40   | war     | 7.26   | against  | 14.53  | hit     | 17.16  |
| against  | 4.83   | attacks  | 6.33   | victim   | 12.11  | threat  | 13.20  |
| seize    | 4.37   | victim   | 6.33   | beat     | 5.88   | victim  | 12.54  |
| attacks  | 2.53   | attacked | 4.10   | strike   | 3.46   | protect | 12.43  |
| defend   | 1.49   | ravage   | 4.10   | war      | 3.46   | fight   | 6.82   |
| ravage   | 1.26   | protect  | 2.61   | threat   | 3.46   | war     | 6.05   |
| threat   | 1.03   | scourge  | 2.05   | protect  | 3.11   | struck  | 4.95   |
| war      | 0.92   | fight    | 2.05   | hit      | 3.11   | combat  | 4.73   |

Table 2. Most frequent lexicalisations of ENEMY/WAR metaphors in the Times data

In the 1890s data for Times and Hansard, the metaphor is one of ENEMY rather than WAR, and at times, this enemy is a rather unearthly one, as seen in examples (2) and (3). In (2), the visitor who carries off victims has echoes of a grim reaper figure and in (3) the influenza is portrayed as a fiend, a devil or evil spirit.

(2) The town of St. Petersburg was visited by an epidemic of influenza which carried off 40,000 victims (1892)

(3) Even in this isle of the blest, -of which Mrs. David gives such a fascinating description; the influenza fiend runs riot (1899)

The main signal of a MILITARY frame is lexicalised with against (occurred in 5% of ENEMY metaphors) or defence (0.5%), both illustrated in (4) but overall the MILITARY frame is a minor pattern in both datasets.

(4) If it were hereafter established, the chief defence against influenza would probably be the employment of parasite-destroying remedies in the form of eye lotions. (Times 1891)
Predominantly, the 1890s framing presents influenza as an enemy who attacks leaving victims. Lexicalisations such as ravage and seize fulfil news values (as discussed in Section 4.2) of ‘negativity’ in addition to ‘superlativeness’ and ‘unexpectedness’ respectively. There is little indication of a counterpart as might be expected in a military battle frame; this is a one-sided assault.

The Times patterns continue into the 1910s with relatively little change although increased diversification can be observed. Although attack of occurs in 63% of the enemy/war metaphors, against occurs in 13% suggesting a shift in the frame towards representing action against the disease and fight occurs in 2% of the metaphors. The increased war framing may be influenced by the context of the First World War which also increases the news value of ‘superlativeness’ communicated by the metaphor. It is worth noting that these dramatic frames occur in headlines as in example (5) and adverts as in (6) both of which have attention-grabbing functions. However, the main frame is still that of an unaccountable, unfair, enemy.

(5) INFLUENZA AS DEADLY AS WAR (Times 1919)

(6) Colds, chills, influenza desperately endeavour to break down our resistance and pierce the line of defence. Unless you are properly nourished, these enemies will find out your "weak spot" Therefore strengthen your whole defensive line with Bovril (Times 1914)

As seen in Table 2, against (14%) and defence (15%) both increase further in the Times 1950s and so the military framing of the enemy becomes stronger. Reflecting this shift, fiend (occurring in 3% and 10% of metaphors in 1890 and 1910) is no longer used. The focus on response and attribution of agency in the war to an ‘us’ group may reflect medical progress as the first official vaccine was tested in the 1940s and this is seen in the data, as in (7).

(7) The Army has ordered immediate inoculation against influenza of all United Nations troops in Korea and of all troops in the United States at ports of embarkation for the Far East and Europe (Times 1953)

The Times 2000s data shows the development of the war/enemy metaphor as the lexicalisations change significantly from the three previous decades (as shown in Table 2). The increase in use of protect continues the growth in focus on what is done to rather than by the influenza. However, items such as threat, hit, victim and kill show that the effects are still salient in the metaphorical framing. The lexical item kill now occupies the first position in the relative weighting of the lexicalisations in the Times. It was also used more frequently in
Hansard 2000 than any other period but still in a smaller proportion, reflecting the less dramatic style. In most cases, the metaphor is unelaborated, as shown in (8) although the form killer is used for newsworthy headlines, as in (9).

(8) The first-known victim in France of H5N1, the strain of avian flu that kills human beings, the duck probably caught the illness in one of the countries already reported to be affected (Times 2006)

(9) Killer bird flu virus lands in Britain (2006)

Instances such as (9) show that although there has been a shift to a military frame, there are still traces of the non-human enemy frame ready for re-activation.

5.3 TRAVELLER / VISITOR

The TRAVELLER or (UNWANTED) VISITOR metaphor provides another personification of the virus and is attested in all time periods. It was consistently underused in the Hansard data (no more than four occurrences in any one period) while it occupied a more significant weighting in the Times data, as seen from Figure 2. In terms of change, it has gently declined across the time period (accounting for 5% of metaphors in 1890s, 4% in 1910s, 3% in 1950s). Across all time periods the metaphor is lexicalised in a range of forms, the two most frequent forms in each time period were appear*, visit (1890s), visit*, appear* (1910s), mov*, reach* (1950s), reach*, appear* (2000s), as illustrated in (10) and (11). The metaphor was also found in elaborated forms in the later data, as shown in (12).

(10) Influenza has made its appearance among the troops in the Devouport garrison (Times 1890)

(11) The horrors of war were nothing to the influenza epidemic which had visited the whole earth. (Times 1919)

(12) British bookings also took a dive in the New Year after claims that bird flu had reached "the gates of Europe" (2006)

Although this is a personification metaphor, it largely removes aggressive intent from the flu viruses, in contrast with the ENEMY metaphor. That is not to say the dangers are underplayed, as seen in (11), but the virus moves and visits and this is presented as an unmarked occurrence to which no logical response is suggested through the metaphor.
5.4 Race
This was a minor pattern in the Times data and did not occur in the Hansard data, as Figure 2 shows. In the 1890s and 1910s data the form *run its course* dominated, as in example (13). In these framings, the disease is again shown as a natural phenomenon that is outside control.

(13) The *influenza* seems to be **running its natural course**, and it was stated that the Prime Minister would not be in town for a week (Times 1898)

The second pattern, which is present in all four time periods, personifies the virus in a race against medical professionals, as shown in (14). More data might show that this *race* is a hunt and so part of an *animal* or *enemy* metaphor, as suggested in example (15).

(14) Doctors in many districts of greater London are finding it hard to **keep pace with influenza** and other winter ailments, it was stated yesterday (Times 1959)

(15) While the fine weather lasted the *influenza* epidemic was **gradually losing ground**. To those who have been attacked by it the great danger is from a chill (Times 1891)

5.5 Living Entity
This semantic grouping is one of the borderline cases for metaphor, because viruses are considered living entities by many virologists although they do not possess the kind of agency that is commonly attributed through this metaphor. This semantic set was not present in the Hansard data. In the Times data, the primary lexicalisation was the highly conventionalised *catch*. The only other elements are *reproduce* (1890s), *prey* (1910s), *rampant* (1910s) until the 2000s when viruses become framed far more often as living entities with the most frequent forms being to *mutate* (27% of lexicalisations) and *evolve* (4%). These later forms are less likely to be metaphorical and, correspondingly, they reduce the agency given to the virus (consider *prey* vs *evolve*). A subset in the 2000s data which may overlap with *enemy* or *supernatural* domains is *deadly* (3%), *dangerous, vicious, venom* all of which emphasise danger.

5.6 Water
The *water* metaphor was lexicalised through *wave, rise, surge, subside, reservoir, ebb, pool, wake, subside*. In terms of discourse framing, this presents the infection as a natural ongoing phenomenon. There was little indication of disaster frames evoked in *water* metaphors in any of the time periods so it did not seem to fulfil the news value of ‘superlativeness’.
was consistency over time in the use of *wave* to indicate multiple infections as illustrated in the concordance lines in Figure 3.

Figure 3. Concordance lines from Hansard 1910s showing *wave* and *influenza* as recurring

This framing presents the infection as a natural recurrence in which human agency has no role. The same pattern is also noted with *surge* and *flu/influenza* (not SARS) in the Times 2000s data which is modified by *another* and *seasonal*. In terms of change, there is an increase in proportion of usage taken up by *rising* over time (possibly as statistical counts of people infected become more readily available) and *reservoir* only enters in the 2000s.

5.7 FIRE

As Figure 2 shows, the (out of control) FIRE metaphors were underused in Hansard compared to the Times perhaps reflecting the need for more dramatic news values to be communicated in the newspaper. Furthermore, we can see that FIRE metaphors account for a greater proportion of metaphor use in the earlier time periods in the Times. In the first three time periods, the FIRE metaphor was lexicalised with *raging, raged, rages*. These frame the virus in dramatic terms as beyond control and unpredictable, fulfilling news values of negativity, impact and superlativeness. There was also a strong pattern for the virus described in these terms to be elsewhere, as illustrated in Figure 4 (geographical references marked in bold).
This preference for using the *raging* lexicalisation of the FIRE metaphor to describe disease located away from the reader’s deictic centre is consistent through the time period indicating it is a signal of ‘distant suffering’ (Joye 2010).

One change in the metaphor is increased lexicalisation in Times 2000 including elaborations, as in example (16).

(16) The *flu* crisis had **ignited** a **smouldering** issue: underfunding. (Times 2000)

Thus, we have the opposite of the oft-described processes of conventionalisation; in this case the metaphor becomes more diverse over time.

5.8 CONTAINER

There was consistency in both the presence of CONTAINER metaphors (it was the second most frequent metaphor in five of the eight datasets) and the limited lexicalisation (*outbreak* or *break out* accounted for over 94% of occurrences in all time periods). This metaphor again emphasises the centrality of control in conceptualising influenza. Despite the heavy conventionalisation, the metaphor was still elaborated in the most recent periods, as illustrated in (17).

(17) "It is following a predictable path - it isn’t **out of control**, but *flu* viruses cannot be **put back in their box** once they are out," he said (Times 2009)

The CONTAINER metaphors may overlap with WATER metaphors (e.g. where water is the substance that cannot be contained, as discussed in Charteris-Black 2006 in relation to
representations of immigration) or activate personification (e.g. FLU IS A FUGITIVE in break out).

5.9 WEIGHT
Metaphors of WEIGHT occurred as a minor pattern through the period although this has not been noted in previous research. The metaphor was lexicalised through descriptions like heavy and heavily, as well as references to pressure, force, strain and burden. In the Times 2000 data, the most common recipients of the WEIGHT are the health services, as illustrated in example (18).

(18) With newspaper headlines screaming that the NHS is buckling under the strain of the winter flu epidemic, and intensive care units around Britain being forced to turn patients away [...] (Times 2000)

This pattern may also be traced in the 1950s data. However, as would be expected, it is not the case for the two earlier datasets which pre-date the NHS, and where the WEIGHT is measured in human life.

(19) The deaths from influenza were heavy (Times 1919)

A minor pattern running through the entire period was that of a financial burden as in (20).

(20) In addition to the war claims we had in 1918 to bear the additional strain of an influenza epidemic (Times 1919)

The metaphors of WEIGHT and, in particular, their use in relation to health services pre-figures the discourse of COVID in the UK where from March 2020 the government framed the disease in terms of a burden on the NHS, as for instance in (21).

(21) But the more effectively we can work together to comply with the very best scientific advice, which is what has actuated this Government throughout the crisis—which is what has guided this Government throughout the crisis—the better our chances of relieving the burden on the NHS (Johnson speaking in the House of Commons, March 2020)

This metaphor has not received extensive attention to date and represents an avenue for future research.
6 Conclusions
In this paper we have offered the first comprehensive and empirical overview of metaphors of flu-like pandemics over an extended time period. The paper tracks metaphor usage across four time periods from the 1890s to the 2000s. Although these periods were selected because a) they reflect known pandemics and b) the data showed increased public interest, we cannot assume that any societal event is entirely comparable. These four periods correspond to different cultures with differing medical knowledge and healthcare infrastructures. At the most basic level, the number of deaths from infectious disease was markedly different. And yet, the findings show that there is considerable continuity in the metaphors used to frame flu-like pandemics over the time period with all early metaphor groups appearing in the latest time period. The inter-related ENEMY/WAR metaphors consistently account for a large proportion of the metaphorical framings and CONTAINER metaphors consistently occupy a substantial space across the data.

However, there are also changes within and across the metaphors indicating shifts in how the pandemics are understood. The ENEMY/WAR metaphor appears to be in decline in the four time periods investigated here. Furthermore, the lexicalisations shift over time indicating a change in focus from the enemy as an unpredictable attacker to a more militarised frame in which opposition to the influenza is foregrounded. Indeed, this seemed to be a pattern across the metaphors: CONTAINER metaphors, which focus on attempts to control the virus, increase and so do WEIGHT metaphors, which focus on effects. Correspondingly, TRAVELLER metaphors, which personify the virus and give it agency without legitimating a particular response, decline over the time period with the exception of Times 2000.

In considering both parliamentary and media discourse, we see that there is substantial consensus and yet the overall selection of metaphors in the parliamentary data indicates a more measured approach which is not driven by news values of ‘superlativeness’. In the Hansard data, attention increasingly focusses on the virus as something to be contained and the WATER metaphor, which removes agency from the virus and may suggest inevitability (at least in the form of wave), is more common. One potential effect of this ‘inevitability’ framing could be to reduce accountability of the government.

In terms of the development of metaphors, we highlight the way in which continued presence of the metaphor does not necessarily signal entrenchment in conventionalisation. Croft and Cruse (2004) explain that:
Once a metaphor takes hold in a speech community and gets repeated sufficiently often, its character changes. First, its meaning becomes circumscribed relative to the freshly coined metaphor, becoming more determinate; second, it begins to be laid down as an item in the mental lexicon; third, it begins a process of semantic drift, which can weaken or obscure its metaphorical origins. [...] As time passes [...] the sense of the expression’s metaphorical nature fades and eventually disappears. (Croft and Cruse 2004: 204-205)

This is a classic explanation of the processes of conventionalisation for a lexical metaphor and yet what we have seen in this ‘long-distance’ study is that the same conceptual metaphor can be increasingly richly lexicalised. Furthermore, those metaphors which are highly restrictive in lexicalisations (such as CONTAINER) were not more diverse in earlier periods studied here.

A key contribution is that this study has shown the relative weighting of different metaphors over the time period. This is particularly important because it can help highlight which metaphors are increasingly used to interpret the phenomenon and counters the potential for the particularly dramatic or controversial nature of some metaphors leading to their presence being over-estimated. This work on relative weighting presents a baseline for future work on metaphor in pandemic communication, and in particular that on COVID-19 discourses. What future research will be able to tell us is whether COVID discourses represent a continuation of the patterns shown here or whether the severity of the pandemic and lack of ‘defence’ in the form of a vaccine will trigger a revisiting of older frames or creation of entirely new frames. There is little evidence for the latter at the time of writing, but we are still in relatively early stages with research ongoing. As seen in Section 3, what seems to be emerging is that WAR metaphors, which were in decline, have been key to communicating COVID-19 across cultures and media forms – with some highly problematic entailments. However, in many cases it is unclear whether the WAR metaphors are the most common as well as the most controversial and further research is needed here. Further research will also allow for a comparison of the arc of reporting for different pandemics and show whether the relative distribution of metaphor types correlates with phases of the virus (e.g. first identification, occurrence of infection close to speaker/reader, vaccine development, infection waning).
References

Adam, M. (2020, December). An enemy to fight or someone to live with, how COVID-19 is metaphorically described in Indonesian Media discourse. *2nd English Linguistics and Literature (ELLIT) National Seminar Proceedings* 1(2): 60-71.

Angeli, E.L. 2012. Metaphors in the rhetoric of pandemic flu: Electronic media coverage of H1N1 and swine flu. *Journal of Technical Writing and Communication*, 42(3): 203-222.

Baker, P. 2006. *Using Corpora in Discourse Analysis*. Continuum.

Bates, B.R., 2020. The (In) Appropriateness of the WAR Metaphor in Response to SARS-CoV-2: A Rapid Analysis of Donald J. Trump’s Rhetoric. *Frontiers in Communication* 5.

Bednarek, M.A. 2005. Construing the world: conceptual metaphors and event construals in news stories. *Metaphorik de* 9:1-27.

Bednarek, M. and Caple, H. 2012. ‘Value added’: language, image and news values. *Discourse, Context & Media* 1(2): 103-113.

Bednarek, M. and Caple, H. 2017. *The Discourse of News Values: How News Organisations Create Newsworthiness*. Oxford University Press.

Chapman, C. M., & Miller, D. S. 2020. From metaphor to militarized response: the social implications of “we are at war with COVID-19”–crisis, disasters, and pandemics yet to come. *International Journal of Sociology and Social Policy* 40(9/10): 1107-1124.

Charteris-Black, J. 2006. Britain as a container: Immigration metaphors in the 2005 election campaign. *Discourse & Society*, 17(5): 563-581.

Charteris-Black, J. 2017. *Fire metaphors: Discourses of awe and authority*. Bloomsbury Publishing.

Chiang, W.Y. and Duann, R.F. 2007. Conceptual metaphors for SARS: ‘war’ between whom?. *Discourse & Society*, 18(5): 579-602.

Citron, F.M., Güsten, J., Michaelis, N. and Goldberg, A.E. 2016. Conventional metaphors in longer passages evoke affective brain response. *NeuroImage*, 139: 218-230.
Craig, D. 2020. Pandemic and its metaphors: Sontag revisited in the COVID-19 era. European Journal of Cultural Studies, doi:10.1177/1367549420938403

Croft, W. and Cruse, D.A., (2004). Cognitive Linguistics. Cambridge University Press.

Davies, Mark. (2015) Hansard Corpus. Part of the SAMUELS project. Available online at https://www.hansard-corpus.org/.

Dobrić, N. and Weder, F. 2016. Media conceptualizing illnesses—the case of the flu. Continuum, 30(1): 126-142.

Fernández-Pedemonte, D., Casillo, F. and Jorge-Artigau, A.I. 2020. Communicating COVID-19: Metaphors We “Survive” By. Trípodos, 2(47): 145-160.

Fetzer, A. and Weizman, E., 2006. Political discourse as mediated and public discourse. Journal of Pragmatics, 38(2): 143-153.

Flusberg, S.J., Matlock T., Thibodeau P.H. 2018. War metaphors in public discourse. Metaphor and Symbol 33(1): 1–18.

Fruttaldo, A., & Venuti, M (2017) A cross-cultural discursive approach to news values in the press in the US, the UK and Italy: The case of the supreme court ruling on same-sex marriage. ESP Across Cultures 14: 42–57.

Garikipati, S., & Khambhampati, U. 2020. Leading the Fight against the Pandemic: Does Gender really matter?. Centre for Economics and Policy Research (COVID Economics). doi:10.2139/ssrn.3617953

Gillis, M. 2020. Ventilators, missiles, doctors, troops…the justification of legislative responses to COVID-19 through military metaphors, Law and Humanities, DOI: 10.1080/17521483.2020.1801950

Gui. L. 2021 Media framing of fighting COVID-19 in China. Sociology of Health and Illness (Early View) DOI: 10.1111/1467-9566.13271.

Hardie, A. 2012. CQPweb – combining power, flexibility and usability in a corpus analysis tool. International Journal of Corpus Linguistics, 17(3): 380-409.

Hart, C. 2018. ‘Riots engulfed the city’: An experimental study investigating the legitimating effects of fire metaphors in discourses of disorder. Discourse & Society, 29(3): 279-298.
Hendricks, R., Z. Demjén, E. Semino and L. Boroditsky. 2019. Emotional Implications of Metaphor: Consequences of Metaphor Framing for Mindset about Cancer. *Metaphor and Symbol* 33(4): 267-279.

Honigsbaum, M. 2011. The ‘Russian’ influenza in the UK: Lessons learned, opportunities missed. *Vaccine* 29(2): B11-B15.

Honigsbaum, M. 2020. Revisiting the 1957 and 1968 influenza pandemics. *The Lancet* 395(10240): 1824-1826.

Joye S. 2010. News discourses on distant suffering: a Critical Discourse Analysis of the 2003 SARS outbreak. *Discourse & Society*. 21(5): 586-601.

Koteyko, N., Brown, B. and Crawford, P. 2008. The dead parrot and the dying swan: The role of metaphor scenarios in UK press coverage of avian flu in the UK in 2005–2006. *Metaphor and Symbol*, 23(4): 242-261.

Larson, B. M., Nerlich, B., & Wallis, P. 2005. Metaphors and biorisks: The war on infectious diseases and invasive species. *Science Communication*, 26(3): 243-268.

Marchi, A. 2018. Time boxes: epistemological, methodological and practical impact of diachronic segmentation. In C. Taylor and A. Marchi (Eds.), *Corpus Approaches to Discourse: A Critical Review* (pp. 174-196). Routledge.

Mautner, G. 2016. ‘Checks and balances: how corpus linguistics can contribute to CDA’. In R. Wodak & M. Meyer (Eds.). *Methods of Critical Discourse Studies* (3rd edition) (pp.154-179). Sage.

McEnery, A., & Baker, H. 2017. *Corpus Linguistics and 17th-Century Prostitution*. Bloomsbury.

Mundwiler, V. 2013. ‘Catch it, bin it, kill it’. On the metaphorical conceptualisation of the 2009 swine flu pandemic in British media texts. *Metaphorik.de*, 24: 37-63.

Musolff, A. 2006. Metaphor scenarios in public discourse. *Metaphor and symbol*, 21(1): 23-38.

Musolff, A. 2010. Metaphor in discourse history. In M. E. Winters, H. Tissari & K. Allan (Eds.). *Historical cognitive linguistics* (pp. 70–90). Berlin/New York: De Gruyter Mouton.
Musolff, A. 2016. Political Metaphor Analysis: Discourse and scenarios. Bloomsbury Publishing.

Nazar, L. 2015. Metaphor in language, discourse, and history: Gieldan and paien in the medieval English religious use of the MORAL ACCOUNTING metaphor. Metaphor and the Social World, 5(1): 42-59.

Nerlich, B. & Halliday, C. 2007. Avian flu: The creation of expectations in the interplay between science and the media. Sociology of Health & Illness, 29(1): 46-65.

Páez, D., & Pérez, J.A. 2020. Social representations of COVID-19 (Representaciones sociales del COVID-19). International Journal of Social Psychology 35(3): 600-610.

Partington, A., Duguid, A., & Taylor, C. 2013. Patterns and Meanings in Discourse: Theory and Practice in Corpus-Assisted Discourse Studies. John Benjamins.

Patterson, K.D. 1985. Pandemic and epidemic influenza, 1830–1848. Social science & medicine, 21(5): 571-580.

Peterson, E. 2021. COVID-19 is not influenza. The Lancet, 9(3): 219-220.

Pragglejaz Group. 2007. MIP: A method for identifying metaphorically used words in discourse. Metaphor and Symbol, 22(1): 1-39.

Rajandran, K. 2020. ‘A Long Battle Ahead’: Malaysian and Singaporean Prime Ministers Employ War Metaphors for COVID-19. GEMA Online® Journal of Language Studies, 20(3): 261-267

Sabucedo, J.M., Alzate, M. and Hur, D. 2020. COVID-19 and the metaphor of war. International Journal of Social Psychology, 35(3): 1-7.

Scherer, A. M., Scherer, L. D., & Fagerlin, A. 2015. Getting ahead of illness. Medical Decision Making, 35(1), 37–45.

Semino, E. 2020. ‘Not soldiers but fire-fighters’ – Metaphors and Covid-19. Health Communication 36(1): 50-58.

Semino, E., Demjén, Z. and Demmen, J. 2018. An integrated approach to metaphor and framing in cognition, discourse, and practice, with an application to metaphors for cancer. Applied linguistics, 39(5): 625-645.
Semino, E., Z. Demjen, A. Hardie, S. Payne & P. Rayson. 2018. *Metaphor, Cancer and the End of Life*. Routledge.

Simonsen, L., Viboud, C., Chowell, G., Andreasen, V., Olson, D.R., Parekh, V., Mølbak, K. and Miller, M.A. 2011. The need for interdisciplinary studies of historic pandemics. *Vaccine*, 29(2): B1-B5.

Sontag S. 1979. *Illness as Metaphor*. London: Allen Lane.

Taylor, C. 2021. Metaphors of migration over time. *Discourse & Society* 32(4).

Thibodeau, P. H., & Boroditsky, L. 2011. Metaphors we think with: The role of metaphor in reasoning. *PLoS ONE*, 6(2), e16782.

Walker, I. F. 2020. Beyond the military metaphor: Comparing antimicrobial resistance and the COVID-19 pandemic in the United Kingdom. *Medicine Anthropology Theory* 7(2): 261–272

Wallis, P. and B. Nerlich. 2005. Disease Metaphors in New Epidemics: The UK Media Framing of the 2003 SARS Epidemic, *Social Science & Medicine*, 60: 2629-2639, 2005.

WHO. 2004. *Summary of probable SARS cases with onset of illness from 1 November 2002 to 31 July 2003* https://www.who.int/csr/SARS/country/table2004_04_21/en/ [accessed 20 October 2020]

WHO. 2010. *Pandemic (H1N1) 2009 - update 112* https://www.who.int/csr/don/2010_08_06/en/ [accessed 20 October 2020]

WHO. 2012 *H5N1 influenza* https://www.who.int/news-room/q-a-detail/h5n1-influenza [accessed 20 October 2020]

WHO. 2018. *WHO MERS Global Summary and Assessment of Risk*. August 2018 https://www.who.int/publications/i/item/who-mers-cov-global-summary-and-risk-assessment---august-2018 [accessed 20 October 2020]

Wicke, P. and Bolognesi, M.M. 2020. Framing COVID-19: How we conceptualize and discuss the pandemic on Twitter. *arXiv* [preprint arXiv:2004.06986]
Wilkinson M. 2019. ‘Bisexual oysters’: A diachronic corpus-based critical discourse analysis of bisexual representation in The Times between 1957 and 2017. *Discourse & Communication*, 13(2): 249-267.

Zhang, W, Mao, H & Wang, S. 2015. An Analysis of Metaphors and Frames in Official Media Reports of Public Health Emergencies. *Journal of Fujian Normal University* 2:100-108.
Appendix 1. List of root lexicalisations used to identify possible metaphors in extended Times concordance lines.

| Metaphor         | lexicalisations                                               |
|------------------|----------------------------------------------------------------|
| LIVING ENTITY    | catch caught mutate evolve venom deadly prey                  |
| FIRE             | raging raged wildfire ignite explosion                        |
| ENEMY / WAR      | smitten attack massacre threat scourge enemy conquer against strike struck risk stricken striken challenged kill hit tackle battle combat defeat victim task force expel seize invade grip underground undermine off-guard assault slow beat ravage succumb havoc seize drive drove (out) onslaught fight defence surveillance protect Supernatural enemy: fiend curse devil terrors haunt |
| CONTAINER        | outbreak break broke restraint check contain halt control confine |
| WATER            | wave rise rising surge spring upsurge ebb                     |
| TRAVELLER        | visit arrive come originate move ride reach leave leap appear circulate host |
| WEIGHT           | pressure heavy heavily strain burden                           |
| RACE             | run competitors comeback pace speed beat overtake             |

NB All lines were manually checked and coded after this stage.

---

\[i\] https://sites.google.com/view/reframecovid/initiative [accessed 20 October 2020]

\[ii\] Avian Influenza or bird-flu (H5N1) is not listed here because it is not classified as a pandemic (WHO 2012).

\[iii\] As seen in Table 1, kill and killer have both been extensively discussed as realising metaphors of violence, although variously assigned to MONSTER, CRIMINAL and ENEMY metaphors (e.g. Larson, Nerlich, & Wallis 2005, Wallis & Nerlich 2005, Angeli 2012, Dobrić & Weder 2016). While a virus may lead to a person's death, it does not have the personal agency associated with kill which is why is classified as metaphorical.

\[iv\] Against was included as a separate entry because it did not always co-occur with other items such as defence but close reading of each occurrence showed it still has a more basic meaning of being in opposition which can activate the ENEMY metaphor.

\[v\] Where more than one lexicalisation of a metaphor occurs in the same utterance, it was, of course, only counted as one metaphor.

\[vi\] We excluded spread which was included in previous research because, following the Pragglejaz method, we could not find evidence of it being a WATER metaphor.