

# Something old, something new, something borrowed, something taboo: Interaction and creativity in humour

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## 2 ABSTRACT

3 In this paper we treat humorous situations as a series of events underpinned by topoi, principles  
4 of reasoning recognised within a socio-cultural community. We claim that humorous effect in  
5 jokes and other discourse is often created by the juxtaposition of topoi evoked. A prerequisite for  
6 this is that there is a shift where the interpreter of the discourse updates their information state  
7 with regard to a second topos being evoked.

8 This view of humour is consistent with an incremental analysis of dialogue, and we therefore  
9 argue that interaction is central both for humour creation and interpretation.

10 We point out some different ways in which topoi are juxtaposed in humorous dialogues as  
11 well as in jokes published in social media or in joke books, and take jokes from the coronavirus  
12 pandemic as an example because this makes lots of new topoi available and therefore offers the  
13 opportunity of creating novel jokes based on the juxtaposition of the new and existing topoi.

14 We explore how the mechanisms of inference in dialogue can be applied to humour through the  
15 four elements from our title: old (existing), new (not previously existing), borrowed (associated  
16 with a different situation) and taboo (inappropriate in the context).

17 **Keywords:** humour, coronavirus pandemic, dialogue, creativity, enthymematic reasoning, interaction

## 1 INTRODUCTION

18 The title of this paper is, we think, mildly humorous. We claim that the humour involves taking something  
19 known (the advice to brides to wear or carry *something old, something new, something borrowed, something*  
20 *blue*) and transposing it from one type of situation to another. In this case, that is from the type of situation  
21 where a wedding is taking place to the type of situation where humour is being analysed. In the process the  
22 old phrase has been slightly modified to make it fit better with the new situation type, though preserving  
23 the rhyming pattern of the original. The creation of new humour often reuses something pre-existing in this  
24 way and something about the mapping from one situation type to another creates the humorous effect. In  
25 order to study this, we take advantage of the novel situation types created by the coronavirus pandemic and  
26 examine jokes that have appeared related to it. Many, if not all, of them involve some kind of reuse in this

27 manner. We argue that much or all of human creativity, ranging from creativity in the arts to the creation of  
28 novel sentences in everyday speech, makes use of well-known components that others will recognise and  
29 adapts them to a new situation.

30 A central aspect of our approach to humour is that it involves interaction. It involves an agent performing  
31 an action (linguistic or otherwise) which another agent will find funny. Normally what we call *humour*  
32 concerns actions which we intend to be experienced as funny, although of course it is possible to perform  
33 actions which are unintentionally funny. The kind of humour which is found in text, such as jokes in joke  
34 books, are special forms of this interactive process, just as literary texts are special forms of dialogue where  
35 the author is addressing the reader of the text.<sup>1</sup> We thus believe that the basic notion of humour is to be  
36 revealed in the interactive process of humour which then can be recognised in such texts. Rather than  
37 studying humorous texts, as a large part of the literature on humour does (see section 2.1), we highlight the  
38 need to study the interactive process itself in order to understand the foundations of humour.

39 Analysing humour in terms of humorous activity (linguistic or otherwise) involving interaction between  
40 agents makes it natural to suppose that much (or perhaps all) of humour is context dependent. The mental  
41 state of the addressee also plays an important role in whether they will find it funny, including their previous  
42 knowledge and beliefs but also their tracking of the humorous action as it unfolds and the inferences that  
43 they may draw or conclusions they can surmise based on what has happened so far. Such reasoning takes  
44 time (measured in milliseconds). Once we think of humour in terms of action in this way we can begin to  
45 see why timing is such a crucial ingredient in genres like farce or stand-up comedy.

46 A possible objection that might be raised to this view of humour as interaction is that it is possible for a  
47 single person to find things funny without interacting with another person. We regard this in the same way  
48 as we regard talking (or thinking) to yourself. The basic strategy is interactive even if the “other” agent is  
49 the agent carrying out the original action.

50 In order to account for creativity in humour in this setting we need a theory of humour that is modular in  
51 the sense that we can describe a humorous exchange or a joke in terms of several elements building up an  
52 amusing situation rather than as two clashing scripts each representing different prototypes of situations.  
53 We suggest treating humorous situations as a series of events underpinned by *topoi*, principles of reasoning  
54 recognised within a socio-cultural community. Thinking of events generating humorous effects in terms of  
55 *topoi* rather than scripts makes possible a more fine grained analysis suitable also for humorous interactions  
56 occurring in spontaneous situations not strongly associated with particular scripts (unlike jokes). We argue  
57 that such situations, where interlocutors involved in dialogue create humorous effects by juxtaposing  
58 contrasting *topoi* or evoking *topoi* which relate in an unexpected way with the situation at hand, are the  
59 origin of the scripted situation types often drawn on in jokes.

60 The remainder of the paper proceeds as follows. In section 2 we motivate our dialogical approach to  
61 humour and in section 2.1 compare it to existing theories of humour. In section 2.2 we introduce the notions  
62 of *topoi* and *enthymemes* which are central to our analysis. Section 2.3 describes and motivates our main  
63 source of data: instances of humour about the 2020 coronavirus pandemic. In section 3 we present our  
64 central argument for humorous creativity by discussing each of the elements in our title – something old,  
65 something new, something borrowed and something taboo – in turn. We put these elements together in  
66 section 4 to create our own coronavirus joke and discuss our findings and provide directions for future  
67 work in section 5.

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<sup>1</sup> It has been claimed that text in general is dialogical in nature (e.g., Voloshinov and Bakhtin, 1986). We do not take a stand on this here, but argue only the weaker position that at least written jokes have a dialogical and interactive nature.

## 2 HUMOROUS INTERACTION

68 Many theories of humour, which we discuss further in Section 2.1, focus exclusively on written versions of  
69 jokes with an idealised non-present audience. However, in reality, humour is always based in an interactive  
70 context, and, we argue, the cognitive and social mechanisms managing dialogue processes like turn taking,  
71 repair, grounding and contextual enrichment, are also the mechanisms that allow us to produce and interpret  
72 both linguistic and non-linguistic humorous events.

73 The dialogicity of jokes and other humorous events is reflected in the emphasis on the sequential structure  
74 of jokes in many studies of humour (see for example Suls, 1972; Ritchie, 2018). At each increment<sup>2</sup> there  
75 is a potential for participants in a humorous exchange to interpret things differently. This is often exploited  
76 in jokes. For example, the joke in (1) plays upon the fact that the perspectives of the two characters are  
77 different and this fact and the information conveyed by the joke about the specific situation is revealed to  
78 the joke hearer incrementally.

79 (1) from Hurley et al. (2011)

80 A senior citizen is driving on the highway. His wife calls him on his cellphone and in a worried voice  
81 says, “Herman, be careful! I just heard on the radio that there was a madman driving the wrong way on  
82 Route 280”. Herman says, “Not just one, there are hundreds!”

83 The example above illustrates dialogicity *within* a joke – the joke is set up as a dialogue between two  
84 characters with different takes on the situation. However, interaction is also fundamental in joke telling  
85 (or joke reading or joke interpretation) *events*. For example, the author of a joke book might not direct  
86 a particular joke at a specific individual. However, she must have some idealised audience in mind, one  
87 that is likely to get the joke. This means that even in contexts such as social media, humour is inherently  
88 dialogical, not just when a humorous tweet gets a response. The opportunity to respond, which may or  
89 may not be taken up, is made explicit in cases where there is a follow-up, as in example (2). A is making a  
90 joke referring to the social distancing rules introduced in the pandemic and the trope that men sometimes  
91 exaggerate their height on dating sites.

92 (2) from Twitter

93 A: guys will stand 5’8” from you and call it 6 feet

B: Most guys can’t tell what six inches look like let alone six feet...

94 One important consequence of the dialogicity of humour is the possibility that interlocutors might  
95 interpret the same piece of discourse in distinct ways, just as characters within a joke can, and the source of  
96 humour is often a play on this potential for multiple interpretations. This potential is a consequence of,  
97 among other things, the inferential nature of language in use.

### 98 2.1 Linguistic theories of humour

99 One of the most prominent theories which emphasises the importance of linguistic understanding of  
100 humorous texts is Victor Raskin’s Semantic Script Theory of Humour (Raskin, 1985). The main hypothesis  
101 of SSTH is formulated as follows:

102 A text can be characterised as a single-joke-carrying text if:

103 (a) The text is compatible fully or in part, with two different scripts;

<sup>2</sup> In dialogue research, what is considered an increment is not necessarily a complete sentence or utterance but can be – and often is – a smaller phrasal unit, or even a word (Howes and Eshghi, 2017). We adopt this more finely grained notion of incrementality here.

104 (b) The two-scripts with which the text is compatible are opposite.

105 These notions of script opposition and script overlap, are often taken as the basis for “incongruity theories”  
106 of humour (e.g., Oring, 2016), which view an *incongruous* component as essential for humour. The General  
107 Theory of Verbal Humour (GTVH, Attardo and Raskin, 1991), extends the remit of SSTH, to differentiate  
108 between verbal and referential humour, and to account for the relative degree of similarity between different  
109 jokes. In GTVH, the notion of script opposition is the most abstract of the six “Knowledge Resources”  
110 which the creator of a joke may draw upon.

111 These, the most well-known theories of humour (SSTH, GTVH) are only concerned with humour  
112 competence (Attardo, 2010). They abstract away from the actual process of joke comprehension and do  
113 not include processing as a crucial condition for humour (Ritchie, 2018). Acknowledging Ritchie’s claim  
114 about a lack of actual explanations regarding how jokes are processed as text, we view the dialogicity of  
115 joke processing as a crucial condition for getting a humorous effect that may result in amusement, a smile  
116 or laughter.

117 We believe that that notion of scripts can be usefully cast in terms of topoi (as resources to account for  
118 different ways of opposing) and enthymemes (as arguments occurring in a dialogue or text, which evoke  
119 one or more topoi) that arise from specific interactional experiences (see section 2.2, below; Breitholtz and  
120 Maraev, 2019). We see the ability to manipulate incongruity in this way as being central to creativity in  
121 humour. Our model, which takes the dialogicity of jokes as its core insight, is also compatible with the  
122 GTVH model, providing a finer-grained way of describing the resources used in humour. We take these to  
123 be based on general resources for interaction.

124 In recent decades incongruity-resolution theories have become influential (Hempelmann and Attardo,  
125 2011; Hurley et al., 2011). The key assumption is that most jokes require a *resolution* step, accounting for  
126 the decrease in oddity of the situation as a joke unfolds. However, although the notion of incongruity has  
127 been discussed for many years, it hasn’t been precisely defined (though see Mazzocconi, 2019; Ginzburg  
128 et al., 2020, for recent attempts to do so), and many scholars claim that other key concepts in incongruity-  
129 resolution theories also lack precise definitions (Ritchie, 2004; Morreall, 2011; Warren and McGraw, 2016).  
130 In this work we do not aim at precisely defining incongruity, although we believe that the elements in our  
131 account can be used as the building blocks for defining (and therefore calculating) incongruity.

132 Ritchie (2018) emphasises the importance of explicating these so-called ‘theory-internal’ concepts in  
133 ‘theory-external’ terms which will arise from more general explanations relying on underlining cognitive  
134 processes, such as text comprehension. Along these lines, Attardo (2010, Chapter 3) underlines some  
135 of the necessary semantic and pragmatic tools for establishing the meanings of texts, for the purpose of  
136 accounting for humorous text beyond short jokes. We agree with the importance of explanation in terms  
137 external to humour. In our case we hope to add to this body of work by explicating our theory of humour in  
138 terms of wider notions of incremental reasoning and enthymematic inference in dialogue.

139 A considerable amount of research has also been done in conversational humour, mainly studying it from  
140 a qualitative and sociological perspective. For instance, Hay (2000) studies gender differences in humour  
141 production, Davies (1984) considers the group activity of “joint joking” and highlights different styles  
142 of such activity, and Günther (2003) provides conversational analysis of canned jokes and corresponding  
143 laughs in the BNC corpus. Our theory is intended to apply to these naturally occurring humorous episodes,  
144 not just to written jokes as found in joke books.

## 145 2.2 The role of inference in humour

146 Jokes, like any piece of discourse that in some way involves implicit meaning, necessitate drawing  
147 on some kind of resources about the world (Yus, 2003) in order to infer from what is explicitly said.  
148 These resources could be facts, judgements about people and society, etc. which underpin inferences  
149 and associations made by interlocutors. Breitholtz (2020) discusses the link between such resources and  
150 the different types of rhetorical relations in discourse theories like Segmented Discourse Representation  
151 Theory (SDRT; Asher and Lascarides, 2003) and neo-Gricean pragmatic theories such as Relevance Theory  
152 (Wilson and Sperber, 2004).

153 Breitholtz and Maraev (2019) suggest analysing humorous interactions in terms of *enthymemes*, arguments  
154 where the conclusion does not follow by necessity, usually because one or more premises are not explicit  
155 in the discourse. The principles warranting enthymemes are referred to as *topoi*. Ducrot (1988, 1980) and  
156 Anscombe (1995) argue that topoi are essential not only for coherence in argumentation but for all kinds  
157 of interaction, as they supply principles of reasoning which must be recognised by an interlocutor for  
158 enthymematic discourse to make sense. For example, if Alice is going out on a rainy day, and Bob advises  
159 her to take an umbrella, it is implicit that the umbrella provides protection from the rain. If Bob in the same  
160 situation tells Alice to put on a sun hat, the comment would either not make sense to Alice, or be taken  
161 as sarcasm due to general practices associated with umbrellas and sunhats and different types of weather.  
162 Thus, it is important for understanding to base arguments on acceptable topoi.

163 It is important to point out that the exact nature of a topos warranting a particular argument is hard, if  
164 not impossible, to determine, as topoi are not rules of logic, but rather associative rules of thumb about  
165 how it is acceptable to reason. We know that certain pieces of discourse require underpinning by a topos  
166 to make sense, and based on intuition we could say something about some of the features present in that  
167 topos. However, sometimes it is obvious that there is more than one topos available that could successfully  
168 underpin a chain of reasoning. In our analysis it is the juxtaposition of clearly different available topoi  
169 that gives rise to a humorous effect. For example, (2) relies on two contrasting topoi: a corona-specific  
170 *safe-distance* topos that people should stay 6 feet apart and a topos, associated for example with dating  
171 apps and web sites, that men who are 5'8" tall often claim to be 6', with *6 feet* as a point of overlap between  
172 the two. We will return to this example in section 3 below.

173 Topoi may be very generally applicable, such as the topos that items which are not supported by anything  
174 fall to the ground, which holds in most contexts on earth. However, often topoi are specific to, or at least  
175 more strongly associated with, particular contexts. This context may be recognised by the citizens of a  
176 nation, the members of a sub-cultural group or people in a particular age span, such as children in school.  
177 Also, just as new topoi emerge when new situations arise, established topoi gradually disappear as norms  
178 and circumstances change. For example, consider the joke in (3):

- 179 (3) What game does a lady's bustle resemble?  
Back-gammon! [Gammon is a type of ham.]

180 This joke is a word play on the name of the game backgammon and gammon as a joint of meat, the rear  
181 leg of a pig, implying that this is what a bustle<sup>3</sup> looked like. This fashion of making your backside look  
182 huge was much ridiculed at the time, and there was even a particular genre of "bustle jokes". Today, there  
183 is still an overarching topos that changing the way you look to appear more attractive is slightly ridiculous.  
184 However, this applies to things like botox, but not to dying one's hair. So, even if we know what a bustle

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<sup>3</sup> A type of woman's undergarment used in the mid to late 19th century that added volume to the back part of the skirt just below the waist

185 is, the humour is less obvious to us than it would have been to a 19th century person who had access to a  
 186 topos that if  $x$  uses a bustle,  $x$  is vain and slightly ridiculous, while no similar topos existed for example  
 187 with respect to corsets. Another example where a topos is strongly associated with a particular situation is  
 188 the corona related joke in (4):

189 (4) “Dear Postnord Customer! The Corona pandemic poses big challenges for our company. How can we  
 190 claim that we sought you, but that no-one was at home?”

191 The joke is a fabricated message that is written as if it comes from the Swedish postal service Postnord,  
 192 which has a bad reputation for service in general. The topoi that are relevant for interpreting this joke  
 193 are that since there is a pandemic, people are at home, and that Postnord tend to make excuses for not  
 194 delivering, blaming the recipient or sender for not having met the conditions for delivery.

195 The basic topos that this joke evolves around is the principle that if someone is at home and there is a  
 196 parcel for them, the parcel can be delivered. We represent that as (a) below. In our semi-formal notation, the  
 197 premises are shown above the line and the conclusion below, as is standard. The wiggly line denotes a not  
 198 strictly logical chain of reasoning, as opposed to for example an if-then sequence separated by a straight  
 199 line, which indicates a logical inference. These are not intended to be complete formal representations,  
 200 rather as a convenient and clear way of representing our intuitions about topoi and enthymemes. More  
 201 complete formal representations are shown in Breitholtz (2020). The topos that if someone is at home they  
 202 can receive a delivery is acceptable to most people. It is also relatively uncontroversial that if the opposite  
 203 were true, that the person who is expecting a delivery is not at home, the parcel cannot be delivered, as  
 204 seen in (b).

$$\frac{x\_is\_a\_parcel\_for\_y \quad y\_is\_at\_home}{\text{wiggly line} \\ deliver\_x\_to\_y} \quad (a)$$

205

$$\frac{x\_is\_a\_parcel\_for\_y \quad y\_is\_not\_at\_home}{\text{wiggly line} \\ not\_deliver\_x\_to\_y} \quad (b)$$

206 (b) licences an argument that a particular parcel hasn’t been delivered by Postnord since the recipient  
 207 was not at home, and is thus applicable to situations where the premises above the wiggly line in (b) are  
 208 instantiated. However, there is a third topos in play here – one saying that Postnord claims (possibly falsely)  
 209 that they are unable to deliver parcels since recipients are not at home.

$$\frac{x\_is\_a\_parcel\_for\_y \quad A\_claims\_y\_is\_not\_at\_home}{\text{wiggly line} \\ unable\_to\_deliver\_x\_y} \quad (c)$$

210 An argument based on (b) is acceptable (though possibly mistrusted due to (c)) in situations where the  
 211 claim that the recipient is not at home is true or at least not clearly false. However, in times of lockdown,  
 212 where the vast majority of people are at home most of the time, this is very unlikely to be the case.

### 213 2.3 Humour interaction during the coronavirus pandemic

214 The 2020 coronavirus pandemic is a widely discussed global event. Such new situations introduce new  
 215 concepts and beliefs into a community (in the case of coronavirus, across the globe, but in other cases in  
 216 more limited groups), which quickly become shared. Examples of these concepts in the case of coronavirus  
 217 include notions such as social distancing and lockdowns and more scientific concepts such as flattening the



218 curve and R-numbers. This evolving, globally shared socio-cultural context offers a unique opportunity to  
219 explore how new humour arises from the combination of existing and new interactional resources.

220 The new concepts and beliefs around the coronavirus available to the community are dynamic with  
221 new concepts becoming available as resources for language users as our knowledge of the virus—and the  
222 societal changes it has brought—evolves. These can be tracked through mainstream and social media from  
223 discussions about lockdowns and stockpiling in spring 2020 to conversations about new vaccines in winter  
224 2020 (Abd-Alrazaq et al., 2020).

225 Much has been written about the use of disaster humour as a psychological way to cope with uncertain  
226 and scary events, such as the explosion of the Challenger space shuttle in 1986 (Oring, 1987) and the  
227 aftermath of the 9/11 terrorist attack (James, 2015). In a similar vein there have been a few related recent  
228 studies concerned with coronavirus pandemic including a large scale psychological study of coronavirus  
229 humour perception in Italy (Bischetti et al., 2021) and a discourse analysis study of face mask memes  
230 (Dyrel, 2021). However, our focus here is rather different from most studies of disaster humour, as we are  
231 interested in the interactive dynamics of humour, rather than psychological functions or motivations. We  
232 focus on the dialogue resources required to both produce new jokes or humorous utterances and how to  
233 process them.

234 We take our data from the coronavirus pandemic because it has led to large quantities of new information  
235 and topoi becoming widespread in society. This rapid introduction of new topoi (in this case related to  
236 the coronavirus pandemic) has led to many instances of humorous creativity in the form of jokes, memes,  
237 videos and funny exchanges, rapidly disseminated through social media. This makes the coronavirus  
238 pandemic a perfect case study for exploring human humorous creativity, as we do in the remainder of the  
239 paper.

240 The examples in this paper have not been collected in a systematic way as our aim is not to provide a  
241 quantitative analysis. We rather use examples which were shared with us on social media by our own social  
242 networks – and that we found humorous – to illustrate our argument.

### 3 ELEMENTS OF HUMOROUS CREATIVITY

243 In this section we discuss four elements in humour corresponding to the title of the paper:

- 244 1. Something old
- 245 2. Something new
- 246 3. Something borrowed
- 247 4. Something taboo

248 Our claim is not that any one of these elements is either necessary or sufficient for humour. Indeed the same  
249 utterance can be experienced as humorous by one agent and not humorous by another agent in the same  
250 situation. Furthermore, a single agent can experience something as serious at one time and then at another  
251 time find it funny (as in “We laugh about it now, but it was deadly serious at the time”). The presence of  
252 one or all of these elements is, then, no guarantee that something will be experienced as humorous.

253 We do, however, hypothesise that anything which is experienced as funny will have at least one, and  
254 often several, of these elements. Furthermore, it seems to us that a central aspect of creativity in humour is  
255 the reuse of something old adapted to a new situation.

256 In going through the four elements listed above, we will give several examples of jokes where something  
 257 old and something new is combined, the “old” thereby being borrowed into a new context where it is  
 258 combined with the “new”. These three (old, new, and borrowed) thus seem, at least judging from these  
 259 examples, to hang together as a whole, and be directly related to topoi. Rather than attempting to isolate  
 260 these factors, Sections 3.1–3.3 highlight the role of the old, the new and the borrowing, respectively. Just as  
 261 in the case of our borrowed bridal saying, there is no need for these elements to be mutually exclusive,  
 262 for example, a bride might borrow a brooch from her grandmother, thus fulfilling the criteria for both  
 263 something “old” and something “borrowed”.

264 Something taboo is less central to our analysis, as not all jokes include a taboo element. However, taboos  
 265 often strengthen the humour and many jokes which do not include a taboo in the strict sense of the word do  
 266 relate to what Ritchie (2018) calls “impropriety”. We discuss this further in Section 3.4.

### 267 3.1 Something old

268 In this section we will look in more detail at example (5), and see how the new corona topos has been  
 269 creatively combined with an already established, or “old”, topos for humorous effect. Informally, we can  
 270 speak about two topoi here: the corona-specific *safe distance* topos and the pre-existing *dating website*  
 271 topos, with ‘6 feet’ as a point of overlap between the two topoi.

272 (5) guys will stand 5’8” from you and call it 6 feet

273 Information which is present in the joke needs to be integrated with pre-existing knowledge. The joke  
 274 brings a few puzzles when processed, which require additional creative effort from the listener. Why do  
 275 guys call the distance 6 feet when it is 5’8”? How easy is it to notice 4” difference in distance? Why does  
 276 this relate to guys specifically, and not to people in general? Overall, some imagination is required from  
 277 the listener.

278 But what can this imagination be based on? We argue that connotations of the words used play an  
 279 important role, and this can be expressed in terms of the topoi that are available for conversational  
 280 participants. In any given situation or context there will be several topoi which are potentially applicable,  
 281 but some will be more salient than others. In the case of topoi related to the coronavirus, these are  
 282 particularly salient as they are directly related to people’s everyday lived experience. Much humour relies  
 283 on the existence of the multiplicity of applicable topoi in any given context. More generally, jokes are often  
 284 based on the asymmetry of the salience of topoi (we refer the interested reader to Breitholtz and Maraev  
 285 (2019) for discussion).

286 More formally we can speak of two crucial topoi; during the coronavirus pandemic people should stand  
 287 6 feet apart (to prevent the spread of the disease), which we represent as (d), and the topos that guys  
 288 exaggerate their height on dating sites (e).

$$\frac{x\_is\_a\_person \quad y\_is\_a\_person}{x\_and\_y\_should\_stand\_6'\_apart} \quad (d)$$

$$\frac{x\_is\_a\_guy \quad x\_is\_5'8''}{x\_claims\_he\_is\_6'} \quad (e)$$

289 In order to see what mechanisms are required for the creative process of comprehension let us modify the  
 290 joke slightly, to see which elements are required to make it comprehensible and/or humorous.



### 291 3.1.1 Relocating the joke to the UK

292 First, let's move our joke to the UK, where people refer to height in imperial units, but the coronavirus  
293 social distancing rule is formulated as "Stay 2 metres apart from anyone not in your household".<sup>4</sup> Therefore  
294 (d) requires one or several additional premises in order to be processed. We can see (at least) two possible  
295 reasoning patterns: one option is to add the premise that person  $x$  and person  $y$  are located in the USA.  
296 Another option is to reason by seeking an analogy of the corona specific 2-metre rule, that is the 6 feet rule.  
297 Overall, taking the additional premises into account, the humour ought to be less obvious (and perhaps less  
298 funny) for a Brit as compared to an American, although this can be further investigated in an empirical  
299 study.

### 300 3.1.2 Relocating the joke to Europe

301 In Europe, feet are not used at all in measurements. Let us try to adjust the joke to the European metrics  
302 and corona-specific rules by changing the coronavirus restriction. Given the restriction, in the joke we  
303 will need to "call it" 2 metres. But what about the height? We have 2 alternatives: direct conversion of 4'  
304 difference (6) or picking some arbitrary height that is "not good enough" for dating (7).

305 (6) guys will stand 189 cm from you and call it 2 metres.

306 (7) guys will stand 1.6 metres from you and call it 2 metres.

307 Here the corona-specific topos, similar to  $\tau_{distancing}$  (d) but involving 2 metre distance is invoked, but  
308 not the "dating website" one, because 2 metres is commonly considered "too much" for a height. Therefore  
309 the joke basically doesn't work.

310 The joke also does not pass the direct measurement conversion test:

311 (8) guys will stand 172 cm from you and call it 183 cm.

312 Here the coronavirus social distancing topos is no longer salient here and the "dating website" topos is  
313 not salient either. One of the possible ways to encourage associations with online dating is to substitute  
314 the very precise 183 cm by (say) 185 cm. But this would not make it humorous, just bizarre and possibly  
315 far-fetched: one can think of it as a riddle, and the solution to it is to convert cm to inches, think of it in an  
316 American context and only then get to the humour.

### 317 3.1.3 Guys

318 One more thing to test is to break the compatibility with the old "dating website" script, or, more  
319 specifically, topos (e) which constitutes it, and is itself based on the more general topos that being tall  
320 (but not too tall, as discussed in section 3.1.2, above) is considered an attractive quality in men (at least in  
321 Western societies), such that men who do not meet the tallness criteria of attractiveness may be inclined to  
322 claim that they do in situations involving searching for a partner.

323 (9) people will stand 5'8" from you and call it 6 feet

324 Although the (USA-specific) corona social distancing topos still applies here, (9) does not invoke the  
325 same associations between height exaggeration on dating apps because 'people' usually encompasses both  
326 men and women. There is no common topos about women exaggerating their height to attract a date, and  
327 different norms apply. As with 2 metres for men, discussed above, 6' is generally considered excessively

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<sup>4</sup> <https://www.gov.uk/guidance/national-lockdown-stay-at-home>.

328 tall for a woman. This means that even if there were an equivalent topos about women exaggerating their  
 329 height on dating apps, the heights in question would be e.g. 5'4" and 5'9", which would not be compatible  
 330 with the corona social distancing topos.

### 331 3.1.4 Summary

332 In summary, in this section we have highlighted the role of the existing ("old") information in the process  
 333 of creating a novel joke. We have shown that to understand the humour you need to have access to the old  
 334 topos (in this case the dating website topos) – which you may not if you come from Europe, where feet are  
 335 not used to describe either height or distance. Additionally, you must be able to find a point of overlap  
 336 between the old topos and the new topos, which may not be obvious in the case of example 2, if you only  
 337 use feet for heights and not in the social distancing rules, as in the UK.

### 338 3.2 Something new

339 As previously discussed, informally we think about the creation of humorous discourse as involving  
 340 something old and something new. In the case of the new jokes around the coronavirus pandemic, this  
 341 means that well established and generally accepted topoi are combined in some way with topoi which are  
 342 novel. We have already seen examples of this in (2) and (4).

343 Although the coronavirus jokes are established by combining completely new topoi with established  
 344 topoi, our notion of 'newness' does not rely on the acquisition of completely new topoi. In general, jokes  
 345 can be created from two or more different topoi which are already available to a competent language user.  
 346 What is new, we argue, is the relationship which is established between topoi, which may, for example,  
 347 come from different unrelated domains, or from completely new topoi as in the coronavirus pandemic  
 348 examples discussed here. As we become used to the combinations through repeated exposure, these lose  
 349 their novelty and the jokes lose their humorous effect.

350 The novelty of a topos is not fixed, either. Repeated exposure to a topos means that the novelty value  
 351 decreases and the possibility of making jokes using the topos in creative ways also diminishes. It seems  
 352 likely that there is a quantifiable relationship between the novelty of topoi or combinations of topoi and  
 353 how humorous they are perceived to be (as seems to be the case with so-called "Dad jokes" which may  
 354 induce laughter in children who have not encountered them before, but groans from more experienced  
 355 members of the language community), but this is an empirical question for future work.

356 The decrease of novelty of topoi is particularly clear where many new topoi quickly became shared –  
 357 available as resources for a community of language users – in a short space of time, due to exceptional  
 358 circumstances. In the case of the coronavirus pandemic of 2020, early on in the pandemic (before many  
 359 countries went into lockdown) people started panic buying certain goods such as toilet paper. This led to  
 360 the topos "if you are going to be in lockdown, you need plenty of toilet roll", with a chain of reasoning  
 361 from existing topoi that can be paraphrased as: if something is essential then you don't want to run out of  
 362 it, and if you don't want to run out of something then you should buy lots of it.

363 Given the new premise that during a lockdown toilet roll is an essential item, and that during a lockdown  
 364 there are limited opportunities for buying goods leads to a more specific version of the topos such that you  
 365 should buy lots of toilet paper if you are going to be in lockdown. This led to jokes such as that in (10)  
 366 when the new topoi first became shared, but these typically did not persist as the context changed and it  
 367 became clear that buying toilet paper was still possible during lockdown.

- 368 (10) Why did the chicken cross the road?  
 She saw a shop with some toilet rolls left

369 In addition to the corona specific new topoi and the pre-existing old topoi, getting the joke in (10) also  
 370 requires a knowledge of the joke frame in English of the classic chicken joke (11), which the lockdown  
 371 chicken joke subverts and exploits.

372 (11) Why did the chicken cross the road?  
 To get to the other side

373 Interestingly, while the classic chicken joke is usually considered to just be absurdist,<sup>5</sup> subverting the  
 374 notion of a chicken crossing the road for exactly the same reason a person would (which even small  
 375 children can grasp), it originally may have had a double meaning relying on knowledge that where you go  
 376 when you're dead can be referred to as "the other side", which was well known when the chicken joke  
 377 first appeared (presumably some time before it is first attested in print in a 1847 New York periodical),  
 378 though may be a less accessible topos now (or completely unavailable, as with the 'bustle' example (3)).  
 379 This additional knowledge that a (suicidal) chicken crossing a road is likely to be hit by a car and killed  
 380 adds another level to our understanding of the joke.<sup>6</sup> This ability to get the joke at different levels is  
 381 characteristic of jokes – which rely on interlocutors having different (and possibly multiple) interpretive  
 382 resources available.

383 The dynamic nature of which topoi are salient in a particular situation also means that certain humorous  
 384 comments which would not have been interpretable to us (or at least would have required a significant  
 385 effort to understand) before the coronavirus pandemic now become comprehensible due to our new salient  
 386 topoi, which are analogous to many from the 1918 flu pandemic, such as (12), about 'flu' masks, which are  
 387 also prevalent in the coronavirus pandemic (though usually referred to as 'face' masks).<sup>7</sup> Example (12)  
 388 juxtaposes the contrasting reasons a woman might have for covering her face: either to appear alluring (as  
 389 with a harem veil) or to prevent the spread of infection (in the case of the flu mask).

390 (12) Every woman secretly believes she would be fascinating in a harem veil. Wearing a flu mask is a  
 391 good, safe way to try the effect.

392 Other jokes which may not be so obvious to a modern audience, such as (13) rely on the context of the  
 393 1918 flu pandemic occurring at the same time as the first World War, with the Allies fighting the Germans  
 394 led by Kaiser Wilhelm II. This joke can, however, be updated to the 2020 context by simple substitution of  
 395 both the disease and a controversial figure, as in (14). Whether you find this funny or not will also depend  
 396 on your political persuasion, which also relies on your acceptance of a number of associated topoi.

397 (13) The Kaiser and the Flu are running neck and neck in the world's popularity contest.

398 (14) Donald Trump and the coronavirus are running neck and neck in the world's popularity contest.

### 399 3.3 Something borrowed

400 A common technique for creating humorous effect is importing a topos (that is, *borrowing* it) from a  
 401 different domain/type of situation to the context of the joke. This involves *accommodation* (Lewis, 1979;  
 402 Beaver and Zeevat, 2007), integration of new information which is in some way conveyed or hinted at in an

<sup>5</sup> Wikipedia, for example, describes it as anti-humour, [https://en.wikipedia.org/wiki/Why\\_did\\_the\\_chicken\\_cross\\_the\\_road%3F](https://en.wikipedia.org/wiki/Why_did_the_chicken_cross_the_road%3F).

<sup>6</sup> See e.g. <https://www.esquire.com/uk/life/news/a12346/the-upsetting-true-meaning-of-that-why-did-the-chicken-cross-the-road-joke/>

<sup>7</sup> Taken from <https://www.smithsonianmag.com/history/memes-1918-pandemic-180975452/>

403 utterance but not explicitly stated. Accommodation is frequent in dialogue and often happens seamlessly as  
 404 the things we accommodate are non-controversial (Larsson, 2002; Breitholtz, 2020). We believe that many  
 405 or even all utterances which involve reasoning require the accommodation of topoi. Normally, although  
 406 not activated before the utterance in question, this accommodated information is more or less salient in  
 407 the current domain or context. However, the cases in which a humorous effect is created seem to require  
 408 accommodation of topoi that are not the most salient and that need to be borrowed from a different domain  
 409 or context.

410 In previous examples (2 and 4), we have seen how jokes rely on combining something old (in these  
 411 examples, from pre-corona times) and something new (corona-related). We argue that these jokes can  
 412 be described as borrowing a new topos (from the corona pandemic context) into an old context (males  
 413 boasting in online dating sites and late mail delivery, respectively for (2) and (4)). However, the borrowing  
 414 effect comes out even more clearly when a new topos is borrowed into the context of a more clearly defined  
 415 existing joke structure, such as knock-knock jokes. In such cases, the joke structure is assumed to be  
 416 familiar to the hearer(s), and the jokes rely on jointly establishing the context of the well-known joke  
 417 structure, and then breaking it by introducing a topos from the “new” context.

418 To make clear how these jokes rely on access to the topos to be borrowed, we will look at a dialogic  
 419 exchange where a dialogue participant *lacks* sufficient knowledge of the context that the topos to be  
 420 accommodated is to be borrowed from. (In this example, the borrowed topos is neither new nor corona-  
 421 related, although it can be assumed that the joke was perceived as more funny when the borrowed topos  
 422 was more recent and more salient than it is now.) The excerpt is an example of explicit joke telling from  
 423 the British National Corpus (BNC). In this extract, 6-year old David reproduces the knock-knock joke (in  
 424 line 3799) without understanding its meaning. We can say that he does not understand what is incongruous  
 425 about the Avon lady knocking, which is what (allegedly!) makes the joke funny.

426 (15) Phillip (46), Jane (40), Christopher (9), David (6) – at home having breakfast [BNC KCH].  
 427 *Overlapping material is shown in square brackets.*

	David	3797	Knock, knock.
	Jane	3798	Who’s there?
	David	3799	The Avon lady, your bell’s broken!
	Phillip	3800	The Avo- Avon lady?
	David	3801	Mm mm.
	Phillip	3802	What does she do?
			(...)
	David	3814	Dad, I don’t know what an Avon lady does.
428	Phillip	3815	What does she do?
	David	3816	I don’t know.
	Phillip	3817	Mm mm!
		3818	Oh!
		3819	Well she doesn’t come here.
	David	3820	She fixes bells.
	Phillip	3821	<laughing>: No
	David	3822	Well what [does she do?]
	Jane	3823	[Guess] can’t you?

- Christopher 3824 < talking from other room > She rings the bell, she rings.  
 3825 And she  
 Jane 3826 She co-  
 Christopher < unclear >  
 429 Phillip 3827 Okay.  
 3828 Thanks Chris.  
 Jane 3829 She's somebody who comes to the door and tries to sell you  
 some make-up and perfume and toys and things.

430 In order to understand this joke at least two things are required: a) knowledge of the general structure of  
 431 knock-knock jokes and b) cultural knowledge of the Avon lady being a door to door salesperson (for Avon  
 432 make-up products) who, according to the longstanding advertising campaign, rings the bell (leading to  
 433 the advertising slogan "Ding Dong, Avon Calling" becoming a well-known phrase.<sup>8</sup> This joke breaks the  
 434 pattern of knock-knock jokes, as "knock-knock" doesn't generally bear any sense apart from being a set-up  
 435 for an upcoming pun from the joke teller.

436 When Phillip asks David to explain the joke (which is not for Phillip's benefit, but because he does not  
 437 expect his son to have access to the appropriate topos), David (3820) proposes a topos which is compatible  
 438 with the joke (someone who fixes bells would expect a broken doorbell, and therefore knock at the door).  
 439 This topos is rejected by his father, Phillip (3821), although the rejection is accompanied by laughter, which  
 440 indicates an mismatch between David's topos and the actual one. David's explanation is treated by Phillip  
 441 as a humorous episode, albeit an unintentional one. Later, Christopher (3824) explains what the Avon lady  
 442 does, which may help David to get the joke, and Jane (3829) also adds more information which might help  
 443 David to understand.<sup>9</sup>

444 Next, we will show an example of borrowing of a new (corona-related) topos into a old (pre-corona) joke  
 445 context. Here, the context is again clearly identifiable (erotic role-play) although perhaps more loosely  
 446 structured than the "knock-knock" joke. It is a prime example of borrowing and also highlights the temporal  
 447 dynamic of dialogic jokes by invoking a so-called "garden path" mechanism (Attardo and Raskin, 1991).  
 448 Ritchie (2004, 2018) calls this type of joke construction the "forced reinterpretation". The joke teller  
 449 has two possible interpretations of the joke set up in mind, or, more specifically, two topoi which can  
 450 underpin the communicated enthymeme. Using the sequential ordering of the information in the joke,  
 451 the joke teller boosts the saliency of one of the topoi, nudging the listener towards one of the possible  
 452 interpretations. This encourages the listener to accommodate this particular topos. The punch line then  
 453 subverts this accommodation, revealing another interpretation of the joke. Accommodating this second,  
 454 unexpected, topos from a different domain is a case of what we call borrowing.

455 (16) "Darling... fancy putting on a nurse's uniform?" "Ooh, cheeky boy... you feeling horny?"  
 456 "Nah... we've run out of loo roll"

457 A teller of the joke in (16) presents an enthymeme in the first two utterances of the joke; this enthymeme  
 458 can be rephrased as "If A is persuading B into wearing a nurse's uniform, then A is feeling horny" and  
 459 it is an instance of a topos similar to (f), namely that a (sexy) nurse's uniform may be worn as part of an

<sup>8</sup> See e.g. <https://www.youtube.com/watch?v=66IWgU9AAis> from 1956.

<sup>9</sup> Note that understanding a joke and finding it funny are not the same thing. We do not go into this distinction here.

460 erotic role play situation. The joke teller hints at the topos (f) using available language resources (“darling”,  
461 “cheeky boy”, etc.) making it more salient and therefore encouraging the listener into accommodating it.

*x\_wears\_nurse’s\_uniform*  
*x\_is\_involved\_in\_erotic\_role\_play* (f)

462 The joke teller plays on this borrowing, presenting the final utterance, which explicitly negates this  
463 assumption (“Nah...”) and providing the new reason for wearing a nurse’s uniform. The reasoning behind  
464 understanding the punchline is unfolded as follows: due to the coronavirus lockdown restrictions people  
465 in general are not allowed to go out. However, these restrictions do not apply to key workers (including  
466 nurses). In the UK, for example, in the lockdown of Spring 2020, special shopping hours were introduced  
467 for NHS (National Health Service) staff, who were also exempt from quarantine restrictions. In the situation  
468 projected in the joke the reasoning is based on the lockdown specific topos that if one pretends to be a  
469 nurse, one is allowed to buy toilet paper.

470 In order to create a humorous effect it is not only inferences which play a crucial role, but also the *order*  
471 in which they are made. This is pointed out by Ritchie (2018, Section 7.7) as a major critique against the  
472 Semantic Script Theory of Humour (SSTH) (Raskin, 1985) which claims that we can consider the text to  
473 be “joke-carrying” without sequential and procedural factors. We believe that one reason that order matters  
474 has to do with borrowing, in the sense that an established context first needs to be established so that the  
475 borrowing of a new topos creates a humorous effect, by forcing the hearer to infer and accommodate the  
476 new topos. This is an attempt to explain more specifically *why* order matters, in terms of participants’  
477 real-time inferential work on the level of topoi in dialogue.

478 Let’s consider the following reformulation of the 5’8” joke (5) which we claim is significantly less funny:

479 (17) Guys keep their distance just like they lie about their height on Tinder. They will stand 5’8” from  
480 you and call it 6 feet.

481 Here the first sentence is the crucial inference that is assumed to be made by the listener of the joke. In  
482 our opinion, making the inferred overt ruins the humour, or at least makes the joke much less amusing.  
483 This emphasises the importance of the process of integrating new information by the listener, and the  
484 corresponding assumptions that are made by the joke teller.

485 Another example is given in (18), a modified version of (1). Here, we see that merely adjusting the order  
486 in which information is introduced, without making anything more explicit, seems to make a joke less  
487 funny (but perhaps more confusing).

488 (18) A senior citizen is driving on the highway and confronts hundreds of cars driving the wrong way.  
489 His wife calls him on his cellphone and in a worried voice says, “Herman, be careful! I just heard on the  
490 radio that there was a madman driving the wrong way on Route 280”.

491 To sum up, one might argue that all jokes that combine topoi from different contexts are examples of  
492 borrowing from one context into the other. However, the borrowing aspect is more clearly brought out when  
493 one context (often but not necessarily a joke-related context) is first established, and then an unexpected  
494 topos from a different context is introduced.



### 495 3.4 Something taboo

496 Taboo subjects are those which it is not (usually) acceptable to talk about in a given society. This may  
497 be because it is repulsive (as with bodily functions, such as poo and vomit) or because it is considered  
498 morally unacceptable (such as adultery, incest or cannibalism). Many societies have taboos about sex and  
499 death, with other taboos (for example about particular types of food) demonstrating that taboos are based  
500 on specific cultural norms.

501 Several of the jokes in this paper involve a taboo element. For example, in (16), the initially evoked topos  
502 is about erotic role play, which is taboo in most contexts. While we will not precisely define what is taboo  
503 we do claim that elements that are considered taboo in a particular context can create a humorous effect or  
504 enhance a joke. An example is the joke (19), below.

505 (19) Since everybody has now started washing their hands, the peanuts at the bar have lost their taste.

506 Here the communicated topoi are that the taste of people's fingers greatly contributes to the taste of  
507 communal bowls of peanuts, and if people don't wash their hands there will be traces of many things on  
508 their hands. In particular, there is a topos that people do not wash their hands after going to the toilet, so  
509 the peanuts will contain traces of urine or faecal matter – a classic taboo subject. This topos is also the  
510 basis of an urban myth claiming that there was a scientific study done on bowls of bar peanuts which found  
511 traces of a number of different urine samples.<sup>10</sup>

512 What counts as a taboo also depends on the context of the interaction (in a patient doctor interaction,  
513 for examples, bodily functions may be legitimately discussed) and is also gradient with certain topics  
514 being seen as more or less improper depending on the situation. We therefore extend the discussion in this  
515 section to cover topics which are not considered to be outright taboos, but are considered improper in some  
516 contexts.

517 Any element of joke can be appraised as a reference to a sensitive subject or an insult. For instance, in  
518 (5) the message (the topos) which was communicated covertly is that guys often exaggerate their height.  
519 Here the topos contains a criticism, therefore it can be considered sensitive — direct criticisms are not  
520 acceptable in some cultures — and appraised as being a laughable.

521 The aspect of joke impropriety is often associated with the work of Freud (1905), who distinguishes  
522 *tendenziös* (“tendentious”) elements in jokes, which refer to either hostility or obscenity, both of which  
523 directly relate to violations of social norms, including the norms of conversation. In the witty remark by  
524 Mark Twain below (20) the improper purpose of this quote is to covertly communicate the provocative  
525 idea that Wagner has no ideas. This implicit inference is achieved by contrasting the unusual topos evoked  
526 by the first sentence (that there is no law against composing music if you have no ideas) with its inverse  
527 (that Wagner composes legal music and therefore has no ideas). The humour here exploits the tendency  
528 to overextend conditionals to biconditionals, that is, if “if *a* then *b*” is true, then “if *b* then *a*” is also true,  
529 which is prevalent in human reasoning (Wason, 1968). The humour is additionally enhanced through the  
530 contradiction of the common topos that Wagner is a great composer (and great composers usually have lots  
531 of ideas).

532 (20) There is no law against composing music when one has no ideas whatsoever. The music of Wagner,  
533 therefore, is perfectly legal. (Mark Twain)

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<sup>10</sup> <https://www.cottagesmallholder.com/peanuts-or-peanuts-2054/>

534 According to Freud, improper subjects are funny in and of themselves. However, this cannot explain the  
 535 amusement caused by jokes which already establish the impropriety or taboo in the set-up. Ritchie (2018, p.  
 536 145) provides a nice example of the point of the joke being concerned not with impropriety on the general  
 537 level, which was already established in the set up, but on a more precise version of the set up, revealed in  
 538 the punch line. Ritchie doesn't seem to think that amusement triggered by the joke can be explained by the  
 539 Freudian view: "If a topic can be mentioned in the set-up of a joke without creating humour, it is hard to  
 540 see why an indirect mention should be the cause of amusement." (Ritchie, 2018, p. 145).

541 (21) *recited by Ritchie (2018) from Tibballs (2000)*

542 A woman was in bed with her husband's best friend when the phone rang. After hanging up, she turned  
 543 to her lover and said: "That was Jim, but don't worry, he won't be home for a while. He's playing cards  
 544 with you."

545 We agree that if you analyse the improper content – the adulterous liaison – on a general level, it should  
 546 not be more amusing in the punchline than in the set-up. However, our approach provides greater granularity  
 547 based on which topoi are available at different points in comprehension of the joke: (i) the setup invokes  
 548 the improper topos of the adulterous wife, and (ii) the punchline invokes another improper and contrasting  
 549 topos of adulterous husband through employing additional inference mechanisms enlisted in the previous  
 550 sections.

#### 4 CREATING A JOKE

551 Now let's use the elements described above to be creative and come up with our own (mildly) humorous  
 552 offering.

553 (22) My gran's got coronavirus. I'm not worried though – she's been 35 since 1970

554 Here, the *something new* is the coronavirus topos that old people are more at risk of severe illness or death  
 555 from coronavirus, and the novel juxtaposition of this topos with existing topoi. *Something old* includes the  
 556 lexical associations from 'gran' – namely that a person described as gran is female and old (we also believe  
 557 such lexical aspects can be described using topoi – see e.g. Breitholtz and Howes (2020), with features  
 558 usually considered to be part of a word's meaning also being defeasible inferences – for example, it is not a  
 559 necessary condition of a gran that they are old). The common pre-existing topos that is here *something*  
 560 *borrowed* is that older women sometimes lie about their age because youth is considered an attractive  
 561 quality in women (analogously to men exaggerating their height in our earlier example). *Something taboo*  
 562 is the inference about death and the joke teller apparently being indifferent to the possibility of their gran  
 563 dying (before we get to the punchline). It is also considered improper to do (supposedly covert) things to  
 564 make yourself appear more attractive – such as lie about your age for 50 years.

#### 5 DISCUSSION

565 This paper takes an interactive perspective on humour and humorous creativity. We have suggested that  
 566 humour can be analysed using the resources and theoretical frameworks developed for more general studies  
 567 of dialogue and interaction. We have taken a closer look at some key elements at play and shown how  
 568 these arise from the dialogue context in which jokes and other types of humour occur. We have argued that  
 569 inference plays an important part in humour and that this inference can be analysed in terms of a notion of  
 570 topos closely related to Aristotle's notion. We have also argued that creativity in humour involves more  
 571 than simply saying something new, but rather lies in the combination of something new with something

572 old which is recognised by the addressee. Much of humour seems to rely on borrowing a topos from one  
573 domain and inserting it into a new domain. Referring to something taboo can add humorous spice to the mix.  
574 What we do not claim to have done is provide a complete story about what it is about particular instances  
575 of humour which makes them humorous in a particular context, as opposed to merely miscommunication  
576 or metaphor.

577 In this work we also were intentionally agnostic about the notions of incongruity and clash. These are  
578 common notions in theories of humour, with hitherto unexplored parallels in dialogue research (for example  
579 in research on conversational repair (Hayashi et al., 2013) and prediction error (Garrod and Pickering,  
580 2013)). In future work we plan to explore these parallels.

581 Describing and explaining jokes on the level of topoi allows fine-grained manipulation of jokes, and  
582 thereby makes it possible to evaluate theories empirically and experimentally. In this paper, we suggested  
583 that many jokes involve combining old and new topoi, often borrowing new topoi into an established context,  
584 and often evoking taboo or improper topoi. We tested these assumptions informally here, manipulating  
585 some of these aspects by replacing specific topoi to generate new variants of existing jokes, and subjectively  
586 assessing their funniness, as in Example 2 with variants in Examples 6-8. Similarly, we showed how the  
587 temporal aspect of jokes highlighted by the notion of borrowing can be crucial to a joke, as in the variant in  
588 Example 18 of the joke in Example 1.

589 A natural progression of this work is to account for humour in a more precise way, following the work  
590 of Breitholtz and Maraev (2019) who use Type Theory with Records (Cooper, 2005) to provide a formal  
591 representation of how a particular joke plays out. A general formal model of humorous interaction could,  
592 among other things, provide a more precise definition of incongruity in humour, taking inspiration from  
593 incongruity related to laughter as discussed in Ginzburg et al. (2015, 2020). Such a model could be tested  
594 and evaluated and potentially also feed into research on artificial intelligence (AI) allowing conversational  
595 AI to understand and generate creatively humorous contributions (Maraev et al., 2020).

596 Creativity in humour is, we have suggested, not the creation of something entirely new, but rather a novel  
597 recombination of existing resources. In this way it is similar to creativity in the arts. For example, creativity  
598 in music is often perceived as a clever modification of an existing musical language such as a slight change  
599 to an existing harmonic progression or a bringing together of distinct musical resources, e.g. importing  
600 features of jazz or gamelan into western art music (Cooper, 2013). If the connections that are being made to  
601 existing resources are not recognised by the audience, then the art work is not perceived as creative or even  
602 as art. The case of creativity in humour is essentially similar. An attempted joke which the audience cannot  
603 connect to anything they previously knew in the ways that we have suggested will be at best perceived as  
604 strange or incoherent, but not funny.

## CONFLICT OF INTEREST STATEMENT

605 The authors declare that the research was conducted in the absence of any commercial or financial  
606 relationships that could be construed as a potential conflict of interest.

## AUTHOR CONTRIBUTIONS

607 All authors contributed to the discussion and research of examples. VM, EB and CH wrote the paper with  
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