

Ephemeral mimetics: memes, an X-ray of Covid-19

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Abstract

The Covid-19 pandemic has prompted a crisis with consequences for public health, but also with economic, social and cultural implications that have affected all layers of society to a greater or lesser extent. Communication has been impacted by the immediacy and virality of messages and misinformation has galloped across social platforms. Against this backdrop, memes have emerged as a powerful means to channel citizen sentiment. During the Covid-19 crisis, social sciences and, in particular, the study of social interaction through digital platforms has played a significant role. A study of these digital objects is essential to understanding social network-based communication during the pandemic. The qualitative research reported here analyses the role of memes in communication on Covid-19, studies their development and defends their status as one of this generation's cultural artefacts that, as such, merits preservation. Meme evolution is studied using Kübler-Ross' (1969) stages of grief, which has been applied in a number of contexts involving psychological change. A corpus of 980 memes was analysed according to iconographic and sociological criteria. Studying memes in those terms both brings information on the evolution of citizens' concerns to light and proves useful to identify the trends present in social media communication around the pandemic. The challenges to be faced in meme preservation are defined, along with the ways in which heritage institutions should ensure the conservation of these cultural objects, which mirror early twenty-first century communication and world views and, in this case, provide specific insight into one of the most significant historical circumstances of recent decades.

Keywords: Covid-19, memes, Kübler-Ross' stages, ephemera, heritage institutions.

1. Introduction

After the World Health Organisation declared the public health emergency induced by the SARS-CoV-2 virus an 'international pandemic', many countries around the world instituted

measures to shut down productive activities and impose lockdown on citizens to halt contagion. On March 14, 2020, the Spanish Government published Royal Decree 463/2020, declaring a state of emergency to control the Covid-19 health crisis, which remained in effect nationwide through June 21, 2020.

Although the virus was first reported in Wuhan, China, on December 31, 2019 and its propagability and lethality were given ample media coverage in January and February, society's reaction to such news was initially uneven. Incredulity and indifference gave way to concern as the threat approached. The initial calm with which the Spanish society (and many others) viewed the onset of the virus favoured humoristic attitudes, despite personal hardship, as a collective defence mechanism, a sort of "nervous giggle to confront an uncontrolled situation" in the words of ABC Drawing and Illustration Museum Director, Inmaculada Corcho (Peláez 2020). Memes, viral digital objects that provide an X-ray of how we interact with others, consume information, and view the surrounding world, took centre stage in that process.

During the Covid-19 crisis, social sciences and, in particular, the study of social interaction through digital platforms have played a significant role, for much of the solution to the spread of the virus has consisted in enhancing societal awareness of the behavioural measures required, such as social distancing. Public communication is an imperative for preventive health policies (Thelwall & Thelwall 2020). Social network interaction, frequency and message output have been broached from different perspectives since the outset (Thelwall & Thelwall 2020; Cinelli et al. 2020; Grossman et al. 2020). Monitoring conversations to sound out citizen sentiment around coronavirus is not only of interest for effective communication *per se*, but, on occasion, constitutes a preventive mechanism able to guide health policy decision making (Jahanbin & Rahmanian 2020). Nonetheless, memes are associated with humour and, at times, collectively analysed under the category "trivial content" (Kouzy et al. 2020). Despite their association with speedy or viral information, however, they have been widely studied for their cultural potential (Dawkins 1976; Shifman 2014), along with their communicational efficacy (García-Avilés & Robles 2016) for social critique and the construction of narratives by new political movements (Moody-Ramírez & Church 2019; Martínez Rolán & Piñeiro-Otero 2016).

The present study draws from those contributions to defend memes as cultural artefacts whose analysis may help understand the Spanish society's social and informational behaviour in connection with the Covid-19 pandemic. The article also addresses the heritage value of memes, a consideration generally absent from scientific literature. Exceptions that view them as an expression of new popular culture or born-digital folklore (Tangherlini 2016) or very recent literature defending the role of heritage institutions in its preservation (García-López & Martínez-Cardama 2019) notwithstanding, memes are not normally regarded as a separate document type meriting collection, description or analysis. The speed and virality with which these objects are conveyed across social networks weigh against such an approach and pose a challenge to institutions entrusted with the preservation of new pop culture. Their study and preservation may nonetheless furnish significant sociological information on how societies have reacted to the Covid-19 pandemic and lay the grounds for understanding social-communicational parameters in 2020 that may be of interest in future research.

From this perspective, the present article poses the following research questions:

- Q1. Have memes been prominent elements in social platform communication in Spain during the Covid-19 pandemic?
- Q2. Can an analysis of meme dissemination during the Covid-19 pandemic help understand social perception of the disease and serve as a source for future research?
- Q3. How can heritage institutions such as libraries or museums preserve these cultural objects and what difficulties would that involve?

2. Methodology

Memes are a new and complex object of social science study. Widely used to analyse activist discourse, electoral campaigns and political messages (Martínez-Rolán & Piñeiro-Otero 2016; Meso-Ayerdi et al. 2017), they pose greater difficulty for researchers when their scope covers society at large, as is the case with the reaction to the Covid-19 pandemic.

2.1 Definition of the object of study

The complexities involved in defining memes as cultural artefacts were narrowed in the present study by subjecting their selection to a series of limitations. The first was to restrict the sample to memes uploaded to Twitter, given the network's track record as a participatory medium, channel for political communication and platform for debate around public issues (Peña-López et al. 2014; Woo-Yoo & Gil de Zúñiga 2014). In addition, its 280-character rule favours the inclusion of multimedia elements such as images, gifs, links or videos that amplify or contextualise the initial message. This entailed ruling out text messages liable to spread virally and limiting the items selected to objects containing images, macro images, gifs or videos and graphics.

2.2 Sampling

The starting point for the study consisted in elements whose viralisation attested to prior social acknowledgement. Hashtags *per se* were not monitored, however, for any memes contained in such streams can be channelled through other vehicles. Consequently, and in light of the breadth of the study and the variety of sources of the messages uploaded by users, the tweets selected for inclusion in the sample were identified by resorting to non-Twitter data. More specifically, the sources used were sections on viralised information published by two Spanish dailies: 'Verne' in *El País* and 'Tremending' in *Público*, which were monitored from March 14 to June 21, 2020 (beginning and end dates of the state of emergency declared in Spain), when 980 memes were compiled (Table 1).

The justification for such a methodological criterion is to be found in Shifman's (2014) argument that the importance of memes lies not in their isolated reproducibility but their standing as a set of unique cultural units. This methodological approach is also discussed in studies by Siri (2016) and Meso-Ayerdil et al. (2017).

Table 1. Number of memes drawn from the sources used

Source	URL	Number of memes studied
'Verne'	https://verne.elpais.com/	153
'Tremending'	https://www.publico.es/tremending/	827

2.3 Methods

This qualitative study was divided into three stages:

1) The first, a review of the literature, afforded a suitable and updated theoretical overview of social platform-based communication during the Covid crisis, the most prominently studied features of such communication and the communicational object addressed here – memes. The review focused on memes' definitory characteristics as cultural objects lying within the scope of digital folklore studies and on the peculiarities involved in their preservation. Attention was

likewise paid to their nature as ephemeral objects compatible with libraries' ephemera-collecting tradition.

2) The memes included in the sample were subsequently described and interpreted. The evolution of the most prominent memes disseminated since March was synthesised to understand societal transition in the use of these cultural objects and the sentiments involved. Analysis, structured around Kübler-Ross' (1969) five stages of grief (denial, anger, bargaining, depression, and acceptance), was designed to sound out social reactions to the use of these objects during the pandemic. The perspective adopted to review the memes chosen drew from both content (Titscher et al. 2000) and discourse (van Dijk 2000) analysis. Corpuses were defined in terms of a series of patterns or categories based on both sociological and iconographic criteria (Table 2).

Table 2. Iconographic and sociological criteria for meme selection

Iconographic criteria	<ul style="list-style-type: none"> ● Recognisable structure and composition (only a handful of elements suffices to depict an entire context)
	<ul style="list-style-type: none"> ● Degree of appropriation of multimedia elements
Sociological criteria	<ul style="list-style-type: none"> ● General understandability (common situations, collective symbols, etc.) ● Identification with Spanish popular culture

From the iconographic standpoint, particular importance was attached to the ability of the images selected to institute a representative code for reading about the issues most widely disseminated and recognised during the pandemic. The extent of multimedia element usage was also borne in mind for selection. Two basic types of elements would be expected: those that use pre-defined templates of prototypical memes and those that use images or audiovisual content describing the Spanish political and social environment (celebrities, archetypes, recurrent collective visual cultural symbols or issues, or even new popular icons that appeared with Covid-19, such as press conferences held by the Ministry of Health's spokesman Fernando Simón). The memes that re-appropriated existing popular templates such as 'Coffin Dance/Dancing Pallbearers' (Figure 11), 'My Plans' (Figure 9) or 'Swole Doge vs Cheems' were documented in the *Knowyourmeme* database.

Inasmuch as the study aimed to assess the evolution of citizen sentiment as expressed in memes is concerned, sociological criteria were a key to corpus selection. Account was taken of the degree to which the images and their meanings had been culturally assimilated. The allusions invoked were likewise explored, including any allusion to the exceptional context in place or to collective symbols of Spanish popular culture associated with the pandemic, other political events (Figure 9), familiar situations, or television sketches (Figure 4).

All this metalanguage was marshalled to define meme evolution in terms of the Kübler-Ross' (1969) stages of grief to adopt a broader perspective than afforded by Covid-19-related epidemiological and political evolution. As highly re-contextualisable elements, many of the memes chosen could be used to illustrate different situations in more than one of the stages analysed. The deployment of stage-of-grief-based methodology provided grounds for monitoring the evolution of meme usage in parallel with collective sentiment.

3) Lastly, the study prospectively addressed the possibility of preserving these objects, difficulties involved and heritage institutions' potential to create collections to this end.

3. Review of the literature

The review focuses on matters directly related to the objects of this study: communication on social platforms during the Covid-19 pandemic, including the role of memes, and memes as digital cultural artefacts.

3.1 Communication on social platforms during Covid-19

Social media hold interest for the study of information generated around political, social or economic events. They provide real-time data on the social impact of an event, citizen interaction, the sources of information, and areas of major societal interest. Their role in this regard was observed on the occasion of earlier health crises, e.g. prompted by the H1N1 (Chew & Eysenbach 2010), Zika (Glowacki et al. 2016; Sharma et al. 2017; Vijaykumar et al. 2018) and Ebola (Suau-Gomila et al. 2017) viruses. Popular and largely universal, social platforms constitute a snapshot of a given informational situation and, in health issues, afford not only information on the public at large and their opinion of the measures adopted, but may also support prospective studies on the evolution of the crisis or pandemic.

The international propagation of Covid-19 has generated a sizeable amount of research in which social media were explored to study the characteristic features of the pandemic. Thelwall & Thelwall (2020) analysed the attitudes of the Twitter community toward anti-Covid-19 measures, such as social distancing and lockdown, based on the tweets published during 10 days in March. Other authors have built multilingual datasets to study perceptions around health care policies over time (López, Vasu & Gallemore 2020). In addition to sounding out public opinion during the early weeks of the Covid crisis, such research defends the role of these media in making predictions useful for public health decision-makers (Jahanbin & Rahmanian 2020) or furnishing effective social behaviour-based models to implement more effective communication strategies (Cinelli et al. 2020).

Misinformation and its variations are one of the niches of social media research on Covid-19. The spread of rumour and fake news on Covid-19 induced the WHO to label the glut and speed of falsehoods in circulation an ‘infodemic’, which, according to some models, circulated faster than the virus itself (Davis et al. 2020). The spread of false information about health issues is not new, for the area has always been a breeding ground for fake news or rumours on treatments or diseases that endanger citizens and counteract scientific advances. A number of studies has revealed that 40% of medical information published on social media from 2012 to 2017 was false (Waszak et al. 2018). With the Covid-19 outbreak, this trend intensified in the weeks following lockdown. At the same time, open access was provided to scientific papers and a growing number of pre-prints went viral before they were duly peer-reviewed by the scientific community. That led, among others, to the appearance of hasty conclusions on the efficacy of certain medications (such as ibuprofen or chloroquine) to treat the virus. Such pre-prints, which contribute to science by making recent developments available to all from the outset, also carry premature, unconfirmed findings, clickbait-spawned titles (to attract citations), and, ultimately, misinformation (Heimstädt 2020). Strictly speaking, however, such papers cannot be deemed fake news and many of the studies are drawn from reliable sources and repositories (Orso et al. 2020).

Fake news, in turn, generally refers to four main subject areas: origin of the virus; evolution/appearance of new cases; treatment or prevention; and lockdown measures or policies (López-Borrul 2020). Brennen et al. (2020) found that the information in 38% of their sample of fake news was pure invention. As a rule, such information was readily identified by fact-checker technologies. Greater complexity was posed by the further 59%, labelled in the paper as “reconfigured” or “recontextualised” information which, although based on factual truth, was deliberately manipulated or positioned in a false context. The authors eliminated parodies or satirical messages, which accounted for the other 3% of the news items analysed. Salaverría et

al. (2020) drew similar conclusions in an analysis of the rumours detected, which they classified into four categories: jokes, exaggeration, decontextualisation, and misleading content, noting that overlapping among them hindered ready distinction.

Memes, the object of this study, often seek to be witty or humorous, which are notions that are not readily definable. Most of the few references made to their communicational role during the pandemic associate them with misinformation. Salaverría et al. (2020), for instance, cited these objects in connection with their “jokes” category, which they observed to account for just 1.4% of the rumours identified. This finding was attributed to the fact checkers used for their study, which were geared to the most flagrant misinformation rather than to detecting humour. They deemed jokes to constitute mild rumour bearing less malice than other types of misinformation. Kouzy et al. (2020) and Zarei et al. (2020) also classified memes under “humoristic content” in their analyses of misinformation on Covid-19 on social platforms. Other studies associated memes with the capacity to further misinformation about public health.

Buts (2020), in a case study of two popular anti-virus memes disseminated during the pandemic, showed that the recontextualised use of their visual components could either weaken or strengthen their discourse. Such objects are characterised by kaleidoscopic communication and, with repeated reuse, may lose or gain meaning depending on the context where they are applied, whilst such reuse may serve a purpose or generate irony other than initially intended. Despite such ambiguity, the fact that social networks are associated with entertainment may make memes a vehicle for misinformation (Islam et al. 2020). According to Buts (2020), this is not a direct or clear aim, for it occurs after these objects undergo many reformulations in different contexts and on different platforms. Many meanings, ironic included, are added in the process, radically changing intention and purpose.

This poses the question of whether communication strategies characteristic of misinformation, such as decontextualisation, are used in memes more as a metaphorical or rhetorical tactic than as a deliberate attempt to misinform. Hence the interest in the use of such objects and their characteristically humorous dimension as a mechanism to reduce the information glut and anxiety created around uncertain circumstances. Such approaches call for longitudinal studies covering factors from the perspective of the intersection between visual rhetoric and communication in digital environments (Buts 2020).

The communicational role of memes during the Covid-19 pandemic has not been researched in any depth. The literature carries only case studies of specific memes as items cited in broader surveys of fake news and messages contributing to misinformation. Knowledge of the characteristics that make them digital cultural objects is requisite, however, to a full understanding of their use in the context of Covid-19-related communication and their subsequent preservation.

3.2. Memes as digital artefacts

The word *meme*, derived from the Greek *mimema* (‘that which is imitated’), was coined by Dawkins (1976). Analogically drawn from genetics, it describes the conveyance from one generation to the next, via imitation, of cultural elements such as phrases, behaviours or pop music.

Shifman (2012) adapted the term to today’s digital culture, contending that unlike the stable, lasting cultural units identified by Dawkins, today’s units are associated with domains that quickly gain online popularity. Such objects can be discussed, shared and recontextualised but, in the author’s opinion, must be dealt with as groups of content units rather than as a single stable cultural unit. In a subsequent study, Shifman (2014) alluded to the complexity involved in their redefinition and established three characteristic features: ambiguity and diffusivity; reproduction using various imitation techniques; and adaptation to the rules of competitive

selection. The third feature is vital to deeming memes an element of participatory culture, inasmuch as they are actively sought by internauts who define their context.

In addition to the virality essential to their dissemination, memes would not be understandable without acknowledging that they can be recontextualised. As they can be deemed to be not merely consumed but discovered, they can be associated with Jenkins' (2003) transmedia vision that has been so instrumental in digital storytelling. Assuming that the origin of most internet artefacts lies in transmediation, in memes two such events can be defined: one at the outset and the other during dissemination. *Outset transmediation* entails the re-appropriation and recontextualisation of an image, iconic element, or other type of multimedia object drawn from other media. *Dissemination transmediation* alludes to the possibility of circulating the object with shared meaning across different media.

This is also aligned with the features identified by Shifman (2014), that is, "ambiguity and diffusivity". Given that individually viewed (micro level) memes are ambiguous entities, social macrostructure is imperative for them to acquire genuine significance. Such attitudinal circumstances, which differ from memes in form and content, furnish information on their author's position respecting the information, message and context portrayed (Shifman 2013).

As their structure is infinite, memes can accommodate new layers with different meanings and be reused by recipients for other purposes and contexts (Nichols 2017). Entitlement to use such visual objects is shared socially. Consequently, the primary aim is to define what underlies the creation of their specific meaning in each context and how this meaning may be decoded and adapted to new uses, drawing from expressive and communicational aptitudes.

Despite their apparent humour and simplicity, memes as creative artefacts entail social innovation with implications for network communication and read-write strategies. From the standpoint of research, they are consequently non-trivial elements through which social or individual voices can be tracked in specific space-time (Shifman 2014). From a semiotic perspective, they constitute more than mere entertainment, elements of what might be deemed 'post-modern' or 'born-digital' folklore (McGowan undated). Their ubiquity on different platforms, their circulation and production, exceed the bounds of mere virality. Their structure may itself be deemed as a genre apt for use as an interpretive source for research. This perspective would separate them from academic memetics and associate them with web users' digital vernacular language (Shifman 2013).

The most identificatory characteristic of memes as social and communication artefacts is their association with humour, their capacity to enable internauts to distance themselves from dramatic events in their immediate context. Another characteristic is their capacity to summarise, to reduce an idea to its essence, intensifying the speed and efficacy of communication. By alluding to a trivial event or a complex social context with a single image, they create very eloquent micro-narratives with a sparsity of elements (González & González 2013). Milner (2012) observed that composing such micro-narratives calls for a certain mastery of language to convert it to a sort of shared lingua franca, as well as for a comprehensive knowledge of everyday situations and recognisable archetypes.

As a device, memes have become a key element in conveying citizens' messages about Covid-19. Viewing them as cultural objects provides for a more accurate assessment of their role as drivers not only of humour, but also of social behaviour during the Covid crisis.

4. Meme evolution in the Covid crisis: proposal for analysis

Although in communication studies on Covid-19 memes are addressed only in passing and essentially in connection with misinformation, neuroscientific and psychological research on humour during lockdown includes them as elements of analysis. Bischetti et al. (2020) studied

emotional response to humorous messages, including memes, conveyed during the Covid-19 crisis. Circulation of humorous messages relating to the Covid-19 pandemic across social networks is not exceptional. Rather, it is a normal human reaction to disasters that has been studied in connection with events such as the September 11 terrorist attacks in New York, for instance. Although “disaster wit” may be regarded as gallows humour and hence in bad taste, most research underscores its importance in collective resilience to adversity (James 2015), the formation of collective visual culture (Kuipers 2002) or even in defiance of predominant media discourse (Chovanec 2019). In a study based on an Italian survey on reactions to such humour, Bischetti et al. (2020) explained that distance with which Covid-19 was perceived in terms of possible contagion or physical distance from the initial hotspots modified emotional response to humour generated in the early stages of the pandemic. These digital objects may therefore be analysed from the standpoint of their evolution from initial distance to incredulity during lockdown.

Kübler-Ross’ (1969) five stages of grief were chosen as the under-structure for the present analysis, for they may help identify mental states prevailing during the pandemic and how they were collectively expressed through the memes created and circulated. Although developed to explain individual grief management, the theory has been applied to establish similarities with other human processes, including the Covid-19 pandemic, even where not necessarily involving loss of life. Subsequent revisions of the theory have acknowledged that although the emotions identified are common to the stages defined, not all are necessarily experienced nor is the order invariable. Here, it is used as a template for understanding citizens’ response to the stages of the pandemic and how they have been mirrored in the form of meme formulation and dissemination in social media. Whilst some studies on the use of memes to exemplify the stages of grief have been published on blogs or in informal resources (Blain 2020), no references have yet been forthcoming in academic papers. This analysis is discussed below.

Denial. In Spain, communication on Covid-19 initially revolved around denial of the virus. Collective messages expressed incredulity, viewing the disease as a distant threat, in complete unawareness of what was to follow. One prominent example may be found in the evolution observed in @CoronaVid19, an account created on February 24, 2020 when the country had only two confirmed cases. As contended by Roig & Martorell (cited in Nogueras 2020), initial gallows humour was gradually replaced by a more informative type of wit as the public health emergency deepened. In the latter, sarcasm was even used to heighten public awareness of the severity of the situation, as illustrated in the tweets compared below, uploaded on February 25 and July 20. As a rule, the @CoronaVid19 account continued to echo news and events around the virus with humour, prioritising the socio-political aspects of the pandemic.



Figure 1. Evolution of the tone of messages in the account @CoronaVid19¹. Source: <https://twitter.com/CoronaVid19>.

Another example during the denial stage can be found in the interaction between this and other (previously created) satirical Twitter accounts dealing with diseases, the common flu in particular.



Figure 2. Interaction between @CoronaVid19 and @Gripe_Comun². Source: <https://twitter.com/CoronaVid19>.

The denial-stage memes identified contained messages focusing on incredulity and the perception that the measures adopted in other countries were overblown. Hashtags such as #vamosamorirtodos were trending topics in the period when the infectious potential of the virus was still unknown and equated to that of the common flu. Hence, less importance was attached to the disease and its spread. Many memes attempted to minimise the World Health Organisation's and other institutions' statements and recommendations (Figure 3).



Figure 3. Meme on a WHO statement³. Source: <https://twitter.com/unmundolibre/>.

Other memes satirised personal protection measures adopted by many countries in late February. They commonly alluded to the population's initial hoarding of face masks, despite official recommendations and the existence of other protection measures (Figures 4 and 5). In such

¹ Translation: - *I'm off to bed early so I can go on infecting tomorrow. The Oxford vaccine carries Jordi Hurtado's genes. Wow, am I in trouble*) [T.N.: Jordi Hurtado, host of Spain's longest-running quiz show, is given to joking about his 'immortality'].

² Translation: - *I've come to kill, not to argue. - You have less than a fucking winter in you, asshole*).

³ Translation: - The WHO warns that the Corona virus is 'literally calling at the door'.

contexts, memes often drew from television sketches (Figure 4) or traditional Spanish archetypes, such as the summertime scene depicted in Figure 5.



Figure 4. Meme parodying a running TV skit entitled ‘Our neighbours in Valencia’.

Source: <https://okdiario.com/sociedad/mejores-memes-sobre-coronavirus-que-anuncian-que-vamos-morir-todos-5222045>.



Figure 5. Meme depicting a pet cat attending to a walkway ice cream stand, satirising the initial shortage of face masks⁴. Source: https://twitter.com/____tuan/status/1232049484571475968

Anger. The next stage, anger, marks the beginning of acceptance of the problem and the realities imposed by the pandemic. The most common emotional reaction is frustration. The memes published immediately after Spain's state of emergency was declared on March 14, 2020 were characteristic of this stage. The society began to interiorise the severity of the situation in light of growing contagion and death rates, and the shortage of healthcare resources. The tone of the messages changed, with the focus no longer on the risk of contracting the virus but on lockdown and its effects on citizens. That same attitude was maintained in the following months, although references to the origin of the virus and other factors were also observed. In the following weeks, stress and collective grief led to a focus on personal circumstances around lockdown and its relaxation, and away from the virus *per se*.

The anger stage is characterised by the need to find someone to blame for the situation. The focus is normally on past events that cannot be changed or controlled by the individual concerned. Many messages were geared to understanding the reasons for the severity of the situation. The memes selected under that category began to mirror the tense political atmosphere prevailing around how to handle the pandemic. Further pursuit of that question in other stages attested to the intensity of the confrontation presently characterising Spanish politics, above and beyond the health crisis.

During the anger stage, such attitudes were often likened in tweets to 'Captain Hindsight' behaviour (in allusion to the series *South Park*). An intense debate ensued between reductionist messages that blamed specific events, such as the March 8, 2020 (Women's Day) demonstration, for the spread of the virus and those criticising such attitudes (Figure 6).



⁴ Translation: - *I'm all out of face masks, sweetie.*

Figure 6. Meme satirising the role of the opposition, alluding to Captain Hindsight⁵. Source: <https://twitter.com/tortondo/status/1242203758605500417>.

The emotions experienced at this stage generate uncontrolled actions and irrational behaviours, including hoarding products such as bog rolls or food, and were promptly ridiculed by memes. Even though the authorities consistently guaranteed supply, such behaviours, attributable to uncertainty known as ‘panic buying’ in sociology, were widespread. By engaging in such purchases, individuals attempt to master a situation beyond their control. The corpus of memes on this type of behaviours was very large, as were the successive viral challenges in which bog rolls symbolised these early stages of lockdown.

Bargaining. Anger was followed by the bargaining stage, in which citizens, despite understanding the situation, attempted to bargain with the authorities for solutions other than instituted. It was characterised by the deployment of original approaches to find loopholes in the limits imposed during both lockdown and re-opening. Many memes consequently revolved around pets or children. Dogs, for instance, were the object of memes from the outset, for, in Spain, their owners, unlike the rest of the population, were exempted from strict lockdown to walk them twice a day, although many were suspected of taking much longer walks than permitted (Figure 7). Children, in turn, were the first community to benefit from relaxation, consisting in one hour per day outdoor play beginning on April 26, 2020. The same type of memes was published on the occasion of the relaxation of constraints for practising sports beginning on May 2.



Figure 7. Meme satirising dog-walking⁶. Source: <https://www.pinterest.es/pin/453526624978263309/>.

Depression. The stage termed depression is longer-lasting and characterised by sorrow and despair at the situation at hand. As a rule, it is associated with both recognition of the loss of a previous lifestyle and incredulity around the duration of the situation. In the former, memes carrying the message ‘My plans vs 2020’ proved to be particularly popular to contrast expectations for the year with pandemic-imposed reality. Such micro-narratives were very varied, with a diversity of cultural and social allusions (Figures 8 and 9).

⁵ Translation: - Live from Captain Hindsight’s HQ [T.N.: the photo depicts the head of Spain’s main opposition party].

⁶ Translation: - I’m walking my dog, officer.



Figure 8. My plans / 2020 meme based on *Game of Thrones* screenshots. Source: <https://knowyourmeme.com/photos/1852132-my-plans-2020>.

This leitmotiv was also present in Figure 9, which reproduces a meme alluding to the Spanish political scenario (cases of corruption, political scandals, etc.), along with new icons that arose spontaneously with the pandemic, such as the Ministry of Health spokesperson Fernando Simón, whose press conferences were the object of countless memes.



Figure 9. Example of ‘My plans / 2020’ memes alluding to events in Spain. Source: <https://www.publico.es/tremending/2020/05/20/coronavirus-estos-son-tus-planes-para-2020-y-si-no-te-gustan-tenemos-otros-reirte-con-los-memes-mas-cachondos/>.

Yet another type of memes constituted a reflection on the weariness with a situation that had begun to last too long. Key symbols of lockdown such as the applause devoted to healthcare

workers or the song ‘Resistiré’ (I shall resist), the hymn adopted in the early weeks in Spain, were ironised. Examples of such memes can be found in the archetypes created in many of the videos produced by ‘Pantomima Full’, a Spanish comedy troupe (Figure 10).



Figure 10. Example of a picture made into a meme by Spanish comedians, satirising applause for healthcare worker⁷. Source:

https://twitter.com/pantomima_full/status/1246007427818041345.

An ironic eye was also turned to the complexities of relaxation and re-opening, applied in Spain on a provincial basis.

Acceptance. The final stage entailed acceptance of what came to be known as the ‘new normal’. Acceptance memes were not only generated after lockdown, however. Events occurring in all stages attested to a citizenry fully aware of the public health crisis and its social implications. The success of memes warning about situations that entail risk for the population stand as proof of this awareness. By way of example, the meme with greatest international virality depicted a Ghanaian funeral rite in which survivors dance while carrying their loved one’s coffin. The meme became so internationally famous that the BBC itself reported on its success (Ilevbare & Zoric 2020). The same day that the news item was released, Benjamin Aidoo, member of Nana Otafrija Pallbearing Services, uploaded a video thanking doctors all over the world for their dedication and warning of the consequences of violating the quarantines imposed in most countries with the words: “Stay at home or dance with us”. The meme crossed virtual borderlines and, in some places, such as Brazil, was used on billboards together with Aidoo’s words to heighten citizens’ awareness (Figure 11).

⁷ Translation: - *Clapping for the clapper.*



Figure 11. ‘Stay at home or dance with us’, message from Ghanaian pallbearers that acquired a material dimension on Brazilian billboards after going viral. Source: <https://www.bbc.com/pidgin/tori-52327936>.

Acceptance continues to date, expressed by terms such as ‘new normal’ to denote the unexpected duration of the pandemic and its implications (Figure 12).

Yo: Espero que la pandemia no dure
mucho

La pandemia :



Figure 12. Type of memes with a sarcastic take on the duration of the pandemic, with the message ‘Hope this pandemic ends soon’. Source: https://www.huffingtonpost.es/entry/tuits-coronavirus-pandemia_es_5f12c936c5b6d14c33679218?utm_hp_ref=es-coronavirus.

Micro-narrative development has varied with each phase of the pandemic. The darkest gallows humour gave way to other types of narratives alluding to citizens’ reactions to the public health measures adopted, which, in Spain, included lockdown and various phases of re-opening, together lasting nearly 100 days. As these and similar memes exemplify some of these reactions, their study may help contextualise the extraordinary circumstances induced by Covid-19 and will, for that reason, be a source of information for future generations to understand Spanish society’s behaviour around the pandemic.

5. Memes and their preservation

Meme volatility poses questions about their necessary preservation, bearing in mind that they may eventually form part of today's social history and some current events may be ultimately incomprehensible in their absence. The memes, gifs and tweets circulating across social networks portray how today's population interacts with others, consumes information and interprets the surrounding world. They may, consequently, be of interest for future generations, both for their heritage and their historic value.

Such objects may form part of what has traditionally been known in heritage preservation as ephemera, that is, documents generated around a given event or object of current interest with no intention of outliving the topicality of their message. They have traditionally consisted in printed matter (trading cards, invitations, postcards, posters, bills, brochures, advertisements, labels, stickers, badges, and the like) used to explore past behaviour and practice. Today, ephemeral sociological and iconographic materials circulate in new media, with the internet as the primary vehicle for their dissemination. The use of digital media shortens the life cycle of these artefacts even further, however.

Today's digital information is so volatile that even one of the fathers of the internet, Vicent Cerf, warned that recent digital generations' creations were liable to disappear (Gosh 2015). He alluded to the onset of a "digital dark age", a term coined by Kuny in 1997 to define the loss of digital information and the challenges involved in conserving electronic content. Some public and private institutions are taking measures to prevent such digital decay. The precursor, Internet Archive, was instituted by Brewster Kahle, a visionary who, in the late twentieth century, decided to create an archive geared to preserving volatile websites. Subsequently, national libraries all over the world also implemented programmes to conserve web content.

Although collaborative initiatives are in place, such as the *Know your meme* database that classifies and organises the internet's most popular memes and traces their history, mutation and impact, they do not guarantee their preservation *per se*, as they are no more than inventories of such digital objects. Heritage libraries, in contrast, are aware that internet content (tweets, posts and memes) have begun to acquire meaning for our collective memory and envisage the inclusion of memes as cultural objects meriting preservation in their digital archive planning. Memes have consequently begun to appear in digital collections kept by the Library of Congress, the Australian National Library, the British Library, and France's and Spain's national libraries, either supplementing other types of documents including websites or tweets or forming part of collections dealing with specific subjects, such as general elections or political protests (García López & Martínez Cardama 2019). One such collection is the American Folklife Center's Web Cultures Web Archive, founded by the Library of Congress, which defines memes from the perspective of the preservation of new forms of digital cultural expression. As the collection was built bearing in mind the criteria put forward by new culture researchers, the selection includes websites that can accurately document new forms of discourse, known as vernacular digital language, such as gifs, memes, emojis, DIY movement-related websites, and even gruesome lore such as short stories found on Creepypastas (García López & Martínez Cardama 2019).

In the wake of the impact of Covid-19, museums and archives have also expressed interest in conserving these digital artefacts to enable future generations to access the store of humour presently shared and circulated across social networks. The ultimate justification underlying all such projects is to keep a record of the exceptional nature of the times, of how coronavirus has changed how we view our worldly presence (work, consumption, relationships, study, leisure, etc.) and how micro-narratives (memes, gifs and tweets) allude to the new circumstances.

The Museu Valencià d'Etnologia, for instance, began to compile memes on the pandemic on March 10, 2020. The intention is to document the crisis for future researchers and provide

curators with content for exhibitions on the subject. The initiative, headed by the museum library, is implemented through its Pinterest account, where it has created a board entitled 'Memes' (Biblioteca del Museu Valencià d'Etnologia 2020). In the words of the head librarian, the project constitutes acknowledgement of "the importance of new ephemeral documents and the responsibility incumbent on us to document our reality" (Agencia Efe 2020).

In other institutions, meme conservation forms part of more ambitious projects that aim to conserve all types of ephemeral documents dealing with the coronavirus and elicit citizen participation to build a collective social memory on the pandemic. That is the philosophy behind many archive-driven projects, such as the Associació d'Arxivers-Gestors de Documents de Catalunya's (2020) 'Arxivem la Covid-19' initiative, which has garnered the support of the Direcció General de Patrimoni i els Arxius de Barcelona and the l'Arxiu del Museu Nacional de Catalunya; or in Madrid, the regional Subdirecció General de Archivos' 'Memorias del COVID-19' campaign, which attempts to gather documentary evidence on the pandemic with a proactive selection based on direct citizen involvement. An email address created specifically for the campaign enables citizens to submit drawings, texts, videos or any other material (such as drawings and letters sent by children to the elderly, company circulars, hospital, school, company or supermarket posters with instructions about Covid-19, and personal diaries) that may illustrate the impact of the pandemic on their lives.

Neither has the art world been foreign to the attempt to document the pandemic. With innovative projects, avant-garde institutions such as the Victoria and Albert Museum, in conjunction with British art curators, are endeavouring to introduce the history of the coronavirus in museums through collections of objects that have become icons in our 'new normal' lives. In early March, art curator Brendan Cormier created his 'Pandemic Objects' blog, where artists and museum employees analyse the new meanings acquired during lockdown by everyday objects, such as cardboard boxes or yeast. Other British museums, such as the Museum of London, are following suit with plans for post-coronavirus exhibitions to display videos, diaries, garments, and even memes on the impact of Covid-19 on the British capital; or the Science Museum, which has begun to build a collection geared to conserving the medical and scientific response to the pandemic (Pérez-Cejuela 2020).

In the purely artistic dimension, the Covid Art Museum (CAM) (@CovidArtMuseum) on Instagram is the first art museum created and inspired by quarantining. An initiative of three publicity artists in Barcelona inspired by the exceptional nature of the times, it is a virtual museum geared to compiling all the 'Covid art' produced during the pandemic (Pont 2020). Similar types of artistic expression are also present on a mass participatory scale in China, with platforms such as Kuaishou, TikTok and WeChat constituting a major vehicle for such discourse (Feng 2020).

Archiving ephemeral digital material entails a series of issues yet to be solved. The doubly ephemeral nature of these artefacts, stemming from the volatility of both form and content, poses a challenge for the institutions responsible for conserving this dimension of the collective memory. Specifically in connection with memes, heritage libraries are still debating matters that affect their status as a new type of ephemeral document: establishment of clear selection (mass or selective) and preservation policies, periodicity and indexation levels for such digital objects, and collection-building criteria (type of descriptive metadata, inclusion in theme collections, access through library catalogues, etc.). Technical processing for archival purposes by these pioneer institutions is still in an embryonic stage. Technical difficulties and the characteristics inherent in memes often encumber the establishment of strategies for their user-friendly description and archiving. The significance and communicational capacity of memes are so dependent upon the context in which they were created that the professionals in institutions responsible for keeping their memory alive must act as genuine gatekeepers to be able to build appropriately curated and contextualised collections.

6. Conclusion

This article addresses memes as artefacts with cultural, digital, social, and communicational connotations. Irrespective of their triviality, memes, as significant and meaningful information units, may be an ideal medium for contextualising the exceptional circumstances spawned by Covid-19. From this perspective, memes are analysed here as part of the communicational ecosystem on the coronavirus. Their communicational and expressive potential is supported by their status as one of the media of choice for channelling perceptions of the pandemic, as attested to by their proliferation during various phases of lockdown. In this study, the memes chosen to exemplify Kübler-Ross' (1969) stages of grief were drawn from the study of Spanish realities. This methodological approach is nonetheless deemed replicable for researching meme dissemination in many countries where the pandemic and the measures adopted to constrain it, including socio-health crisis-induced limitations and restrictions, have evolved similarly. Memes may in that case be deemed universal cultural objects.

Based on the findings, the reply to the questions posed is as follows:

1. Despite memes' power of communication, their role is only sporadically addressed in studies on Covid-19, where it is essentially limited to the analysis of concerns around misleading information. In contrast, memes have been adopted as an element of analysis in neuroscience and psychology to explore emotional responses to witty allusions to Covid-19. The present study shows that the initially distant position adopted by memes in Spain *vis-à-vis* the implications of the Covid-19 pandemic evolved into incredulity prompted by lockdown. Gallows humour that characterised the earliest memes was gradually eclipsed by other types of narratives with allusions to societal attitudes toward the pandemic (reactions to medical measures, lockdown and reopening, fear, anger, etc.).
2. Further to the stages of the grief-based method deployed in this study, memes were categorised in terms of the emotional states induced by the Covid-19 crisis in the population at large. Whilst the method is deemed optimal, as studies on their taxonomy have shown, emotions are not linear but overlap with time (Plutchik 1984; Cowie & Cornelius 2003). In a similar vein, and inasmuch as they can be re-contextualised, some of the memes selected may illustrate more than one emotion. To the extent that analysis of such micro-narratives may help contextualise the extraordinary circumstances induced by Covid-19, the respective studies will prove to be a valuable source of information for future generations seeking to understand Spanish society's reactions to the pandemic.
3. The study also addresses the heritage value of memes, arguing that these artefacts merit conservation as a new category of what is traditionally defined as ephemera. Initiatives undertaken by heritage institutions in this regard are identified, in particular a number of pioneering heritage libraries that have envisaged including memes in their collections. In the wake of the pandemic, archives and museums have also expressed interest in conserving these digital objects either to build a collective social memory or for future exhibitions.

In reply to the third question posed, however, archiving ephemeral digital material entails a series of issues yet to be solved. What should be conserved for the future? How can the context in which memes were created be reconstructed? The study calls for the persons and institutions responsible for their custody to act as genuine gatekeepers to build collections curated and contextualised in a manner compatible with their true significance.

References

- Agencia, E. (2020). 'Documentan los memes sobre la crisis del coronavirus para un futuro análisis' [Coronavirus crisis memes documented for future analysis]. Retrieved November 10, 2020 from <https://www.lavanguardia.com/vida/20200402/48277030766/documentan-memes-crisis-coronavirus-futuro-analisis.html>.
- Associació d'Arxivers-Gestors de Documents de Catalunya (2020). 'Arxivem la Covid-19' [Archive Covid-19]. Retrieved November 8, 2020 from <https://www.montornes.cat/actualitat/noticies/2020/06/08/la-campanya-arxivem-la-Covid-19-acumula-ja-mes-de-600-documentos>.
- Biblioteca del Museu Valencià d'Etnologia (2020). 'Els valencians i el coronavirus: mems' [Valencians and Coronavirus: memes]. Retrieved November 3, 2020 from <https://www.pinterest.ca/bibliomuvaet/els-valencians-i-el-coronavirus-mems/>.
- Bischetti, L., Canal, P. & Bambini, V. (2020). 'Funny but aversive: A large-scale survey on the emotional response to Covid-19 humor in the Italian population during the lockdown'. Retrieved November 8, 2020 from <https://psyarxiv.com/efk93/>.
- Blain, A. (2020). 'Stages of acceptance of the CoronaVirus COVID-19 outbreak'. Retrieved November 2, 2020 from <https://medium.com/@amandablain/stages-of-acceptance-of-the-coronavirus-Covid-19-outbreak-c2c644443e73>.
- Brennen, J. S. et al. (2020). 'Types, sources, and claims of Covid-19 misinformation'. *Reuters Institute*. Retrieved November 3, 2020 from <https://reutersinstitute.politics.ox.ac.uk/types-sources-and-claims-Covid-19-misinformation>.
- Buts, J. (2020). 'Memes of Gandhi and Mercury in anti-vaccination discourse'. *Media and Communication* 8 (2), pp. 353-363.
- Chew, C. & Eysenbach, G. (2010). 'Pandemics in the age of Twitter: Content analysis of Tweets during the 2009 H1N1 outbreak'. *PloS one* 5 (11), e14118, <https://doi.org/10.1371/journal.pone.0014118>.
- Chovanec, J. (2019). 'Early Titanic Jokes: A disaster for the theory of disaster jokes?'. *Humor: International Journal of Humor Research* 32 (2), pp. 201-225.
- Cinelli, M. et al. (2020). 'The Covid-19 social media infodemic'. *arXiv preprint*. Retrieved November 1, 2020 from arxiv.org/abs/2003.05004.
- Comunidad de Madrid. Subdirección General de Archivos (2020). 'Memorias del COVID-19' [Memories from Covid-19]. Retrieved November 8, 2020 from <http://www.madrid.org/archivos/index.php/actividades/memorias-del-Covid19>.
- The Covid Art Museum (CAM) '@CovidArtMuseum', <https://www.instagram.com/Covidartmuseum/?hl=es>.
- Cowie, R. & Cornelius, R. R. (2003). 'Describing the emotional states that are expressed in speech'. *Speech Communication* 40 (1-2), pp. 5-32.
- Davis, J. T., et al. (2020). 'Phase transitions in information spreading on structured populations'. *Nature Physics* 16 (5), pp. 590-596, <https://doi.org/10.1038/s41567-020-0810-3>.
- Dawkins, R. (1976). *The Selfish Gene*. Oxford University Press.
- Feng, X. (2020). 'Curating and exhibiting for the pandemic: Participatory virtual art practices during the COVID-19 outbreak in China.' *Social Media+Society* 6 (3), <https://doi.org/10.1177/2056305120948232>.
- García-Avilés, J. A. & Robles, F. A. (2016). 'Géneros periodísticos en los formatos visuales de Twitter: una propuesta de tipología' [Journalistic genres in Twitter's visual formats: a typology proposal]. *Textual & visual media* (9), pp. 101-132.
- García-López, F. & Martínez-Cardama, S. (2019). 'Strategies for preserving memes as artefacts of digital culture'. *Journal of Librarianship and Information Science* 52 (3), pp. 895-904, <https://doi.org/10.1177/0961000619882070>.

- García López, F. & Martínez-Cardama, S. (2019). 'Micronarrativas audiovisuales como documento efímero: ¿quién archiva Internet?' [Audiovisual micronarratives as an ephemeral document: who archives the Internet?] Paper presented at IV Simposio Internacional de Gestión de Comunicación. XESCOM. Porto, Portugal, 25–27 April.
- Glowacki, E. M. et. al (2016). 'Identifying the public's concerns and the Centers for Disease Control and Prevention's reactions during a health crisis: An analysis of a Zika live Twitter chat'. *American Journal of Infection Control* 44 (12), pp. 1709-1711, <https://doi.org/10.1016/j.ajic.2016.05.025>.
- González, A. & González, A. (2013). 'Memes, Rage Comics y Memenautas: comunicación efectiva en internet' [Memes, Rage Comics and Memenautas: effective communication on the internet] [Master Thesis]. Universidad Nacional de Educación a Distancia. Retrieved November 3, 2020 from <http://e-spacio.uned.es/fez/view/bibliuned:masterComEdred-Agonzalez>.
- Gosh, P. (2015). 'Google's Vint Cerf warns of 'digital Dark Age''. Retrieved November 15 from <https://www.bbc.com/news/science-environment-31450389>.
- Grossman, G. et. al (2020). 'Political partisanship influences behavioral responses to governors' recommendations for COVID-19 prevention in the United States'. *PLAS* 117 (39), pp. 24144-24153, <https://dx.doi.org/10.2139/ssrn.3578695>.
- Heimstädt, M. (2020). 'Between fast science and fake news: Preprint servers are political'. Retrieved November 8, 2020 from <https://blogs.lse.ac.uk/impactofsocialsciences/2020/04/03/between-fast-science-and-fake-news-preprint-servers-are-political/>.
- Ilevbare, F. & Zoric, M. (2020). 'Coronavirus: Ghana's dancing pallbearers become Covid-19 meme'. *BBC*. Retrieved November 9, 2020 from <https://www.bbc.com/news/av/world-africa-52503049/coronavirus-ghana-s-dancing-pallbearers-become-Covid-19-meme>.
- Islam, A. N. et. al (2020). 'Misinformation sharing and social media fatigue during COVID-19: An affordance and cognitive load perspective'. *Technological Forecasting and Social Change*, 159, 120201, <https://doi.org/10.1016/j.techfore.2020.120201>.
- Jahanbin, K. & Rahmanian, V. (2020). 'Using Twitter and web news mining to predict COVID-19 outbreak'. *Asian Pacific Journal of Tropical Medicine* 13 (8), pp. 378-380, [10.4103/1995-7645.279651](https://doi.org/10.4103/1995-7645.279651).
- James, A. B. (2015). 'Humour as resistance: Disaster humour in post-9/11 United States'. *The European Journal of Humour Research* 2 (3), pp. 28-41.
- Jenkins, H. (2003). 'Transmedia storytelling'. *MIT Technology Review*. Retrieved November 8, 2020 from <https://www.technologyreview.com/s/401760/transmedia-storytelling/>.
- Kouzy, R., et. al (2020). 'Coronavirus goes viral: quantifying the COVID-19 misinformation epidemic on Twitter'. *Cureus* 12 (3), e7255, [10.7759/cureus.7255](https://doi.org/10.7759/cureus.7255).
- Kübler-Ross, E. (1969). *On Death and Dying*. MacMillan.
- Kuipers, G. (2002). 'Media culture and Internet disaster jokes: Bin Laden and the attack on the World Trade Center'. *European Journal of Cultural Studies* 5 (4), pp. 450-470, <https://doi.org/10.1177/1364942002005004296>.
- Kuny, T. (1997). 'A digital Dark Ages? Challenges in the preservation of electronic information'. Paper presented at 63RD International Federation of Library Associations and Institutions (IFLA) Council and General Conference. Copenhagen August 31-September 5. Retrieved November 8, 2020 from <https://archive.ifla.org/IV/ifla63/63kuny1.pdf>.
- López-Borrull, A. (2020). 'Fake news' y coronavirus: la información como derecho y necesidad' [Fake news 'and coronavirus: information as a right and a necessity']. *COMeIN* 98, <https://doi.org/10.7238/c.n98.2025>.

- Lopez, C. E., Vasu, M. & Gallemore, C. (2020). 'Understanding the perception of COVID-19 policies by mining a multilanguage Twitter dataset'. *arXiv preprint*. Retrieved November 1, 2020 from arxiv.org/abs/2003.10359.
- Martínez-Rolán, X. & Piñero-Otero, T. (2016). 'The use of memes in the discourse of political parties on Twitter: Analysing the 2015 state of the nation debate'. *Communication & Society* 29 (1), pp. 145-159, <https://doi.org/10.15581/003.29.1.145-159>.
- Meso-Ayerdi, K., Mendiguren-Galdospín, T. & Pérez-Dasilva, J. (2017). 'Memes políticos difundidos por usuarios de Twitter. Análisis de la jornada electoral del 26J de 2016' [Political memes spread by Twitter users. Analysis of the 26J 2016 election day]. *El profesional de la información* 26 (4), pp. 672-683, <https://doi.org/10.3145/epi.2017.jul.11>.
- Nichols, B. (2016). 'Mexicans Be Like'. *Working Papers in Educational Linguistics (WPEL)* 31 (1). Retrieved November 15, 2020 from <https://repository.upenn.edu/wpel/vol31/iss1/4>.
- McGowan, C. (2020). 'Digitally born folklore and Internet archives: Where the memes have no name'. Retrieved November 8, 2020 from http://catherinemcgowanthinks.com/img/McGowan_TermPaper_DigitalBornFolkloreandInternetArchives.pdf.
- Milner, R. M. (2012). 'The world made meme: Discourse and identity in participatory media'. [PhD Thesis]. *University of Kansas*. Retrieved November 3, 2020 from <https://kuscholarworks.ku.edu/handle/1808/10256>.
- Moody-Ramirez, M. & Church, A. B. (2019). 'Analysis of Facebook meme groups used during the 2016 US presidential election'. *Social Media + Society* 5 (1), 10.1177/2056305118808799.
- Noguerales, L. (2020). 'CoronaVid19': el usuario más viral de Twitter' ['CoronaVid19': the most viral user of Twitter]. Retrieved November 8, 2020 from https://cadenaser.com/programa/2020/04/02/la_ventana/1585847436_052146.html.
- Orso, D, et. al (2020). 'Infodemic and the spread of fake news in the COVID-19-era'. *European Journal of Emergency Medicine*, pp. 327-328, [10.1097/MEJ.0000000000000713](https://doi.org/10.1097/MEJ.0000000000000713).
- Peláez, R. (2020). '¿El confinamiento ha cambiado los límites del humor?' [Has confinement changed the limits of humour?]. *XL Semanal*. Retrieved November 8, 2020 from <https://www.xlsemanal.com/conocer/psicologia-conocer/20200508/humor-coronavirus-memes-durante-pandemia-chistes.html>.
- Peña-López, I., Congosto, M. & Aragón, P. (2014). 'Spanish Indignados and the evolution of the 15M movement on Twitter: towards networked para-institutions'. *Journal of Spanish Cultural Studies* 15 (1-2), pp. 189-216, <https://doi.org/10.1080/14636204.2014.931678>.
- Pérez-Cejuela, M. (2020). 'Colección Covid-19: los museos documentan la pandemia para el futuro' [Covid-19 Collection: Museums document the pandemic for the future]. Retrieved November 9, 2020 from <https://www.heraldo.es/noticias/ocio-y-cultura/2020/05/20/coleccion-Covid-19-los-museos-documentan-la-pandemia-para-el-futuro-1375906.html>.
- Pont, E. (2020). 'Covid Art Museum: el museo del arte confinado' [Covid Art Museum: the museum of confined art]. Retrieved November 8, 2020 from <https://www.lavanguardia.com/vida/junior-report/20200417/48414308915/Covid-art-museum-arte-confinado.html>.
- Plutchik, R. (1984). 'Emotions and imagery'. *Journal of Mental Imagery* 8 (4), pp.105-111.
- Salaverría, R. et. al (2020). 'Desinformación en tiempos de pandemia: tipología de los bulos sobre la Covid-19' [Disinformation in times of pandemic: Typology of hoaxes on Covid-19]. *El Profesional de la información* 29 (3), pp. 1-15, e290315, <https://doi.org/10.3145/epi.2020.may.15>.

- Sharma, M. et al. (2017). 'Zika virus pandemic – analysis of Facebook as a social media health information platform'. *American Journal of Infection Control* 45 (3), pp. 301-302, <https://doi.org/10.1016/j.ajic.2016.08.022>.
- Shifman, L. (2012). 'An anatomy of a YouTube meme'. *New Media Society* 4 (2), pp. 187-203.
- Shifman, L. (2014). *Memes in Digital Culture*. Cambridge, MA: MIT Press.
- Siri, L. (2016). 'Memes en internet: el escándalo Snowden' [Memes on the internet: the Snowden scandal]. *Letra. Imagen. Sonido: Ciudad Mediatizada* 16, pp. 16-39.
- Tangherlini, T. R. (2016). 'Big Folklore: A Special issue on computational folkloristics'. *Journal of American Folklore* 129 (511), pp. 5-13.
- Titscher, S. et al. (2000). *Methods of Text and Discourse Analysis*. London: SAGE.
- Thelwall, M. & Thelwall, S. (2020). 'Retweeting for COVID-19: Consensus building, information sharing, dissent, and lockdown life'. *arXiv preprint*. Retrieved November 1, 2020 from [arXiv:2004.02793](https://arxiv.org/abs/2004.02793).
- Waszak, P. M, Kasprzycka-Waszak, W. & Kubanek, A. (2018). 'The spread of medical fake news in social media—the pilot quantitative study'. *Health Policy and Technology* 7 (2), pp. 115-118, <https://doi.org/10.1016/j.hlpt.2018.03.002>.
- Woo-Yoo, S. & Gil-de-Zúñiga, H. (2014). 'Connecting blog, Twitter and Facebook use with gaps in knowledge and participation'. *Communication & Society* 27 (4), pp. 33-48, <https://doi.org/10.15581/003.27.4.33-48>.
- Van-Dijk, T. A. (ed.) (2000). *El discurso como interacción social* [Discourse as social Interaction]. Barcelona: Gedisa.
- Victoria & Albert Museum (2020). 'Pandemic objects'. Retrieved November 8, 2020 from <https://www.vam.ac.uk/blog/pandemic-objects>.
- Vijaykumar, S. et. al (2018). 'Virtual Zika transmission after the first US case: Who said what and how it spread on Twitter'. *American Journal of Infection Control* 46 (5), pp. 549-557, <https://doi.org/10.1016/j.ajic.2017.10.015>.
- Zarei, K. et. al. (2020). 'A first Instagram dataset on COVID-19'. *arXiv preprint*. Retrieved November 1, 2020 from [arXiv:2004.12226](https://arxiv.org/abs/2004.12226).