



## Article

# “Why Can’t We?” Disinformation and Right to Self-Determination. The Catalan Conflict on Twitter

Elena Llorca-Asensi <sup>1,\*</sup> , Alexander Sanchez <sup>2</sup>, Maria-Elena Fabregat-Cabrera <sup>1</sup> and Raúl Ruiz-Callado <sup>1</sup>

<sup>1</sup> Department of Sociology 1, University of Alicante, 03690 Alicante, Spain; malena.fabregat@ua.es (M.-E.F.-C.); raulruiz@ua.es (R.R.-C.)

<sup>2</sup> Department of Computing Languages and Systems, University of Alicante, 03690 Alicante, Spain; alexander.sanchez@ua.es

\* Correspondence: ellorca@ua.es

**Abstract:** Disinformation does not always take the form of a fake news item, it also appears in much less evident formats which are subtly filtered into public opinion, thus making its detection more difficult. A method is proposed in this paper to address the study of “widespread” disinformation by combining social science methods with artificial intelligence and text mining. The case study chosen was the expression “right of self-determination” as a generator of disinformation within the context of the Catalan independence process. The main work hypothesis was that the (intentional or unintentional) confusion around the meaning and scope of this right has become widely extended within the population, generating negative emotions which favour social polarisation. The method utilised had three stages: (1) Description of the disinformation elements surrounding the term with the help of experts; (2) Detection of these elements within a corpus of tweets; (3) Identification of the emotions expressed in the corpus. The results show that the disinformation described by experts clearly dominates the conversation about “self-determination” on Twitter and is associated with a highly negative emotional load in which contempt, hatred, and frustration prevail.

**Keywords:** disinformation; misinformation; self-determination; rights; law; polarization; emotions; Catalonia; Twitter



**Citation:** Llorca-Asensi, Elena, Alexander Sanchez, Maria-Elena Fabregat-Cabrera, and Raúl Ruiz-Callado. 2021. “Why Can’t We?” Disinformation and Right to Self-Determination. The Catalan Conflict on Twitter. *Social Sciences* 10: 383. <https://doi.org/10.3390/socsci10100383>

Academic Editor:  
Andreu Casero-Ripollés

Received: 16 August 2021  
Accepted: 4 October 2021  
Published: 13 October 2021

**Publisher’s Note:** MDPI stays neutral with regard to jurisdictional claims in published maps and institutional affiliations.



**Copyright:** © 2021 by the authors. Licensee MDPI, Basel, Switzerland. This article is an open access article distributed under the terms and conditions of the Creative Commons Attribution (CC BY) license (<https://creativecommons.org/licenses/by/4.0/>).

## 1. Introduction

The cases of Trump and Brexit, frequently mentioned in studies dealing with disinformation (Blanco Alfonso 2018; Bergmann 2020; García and Chicaíza 2018; Lewandowsky et al. 2017; Osmunden et al. 2021; Rose 2017) highlight the intensive use of the so-called ‘fake news’ to achieve political goals. Nonetheless, creating or disseminating fake news are only ways to spread disinformation among the population, usually resorted to within the context of broader strategies which seek to generate confusion in public debate, thus creating what Wardle and Derakhshan (2017) have called “information pollution”.

The objectives sought may be manifold. Bosworth (2019) described the building of an environmental discourse supported on scientific pseudo-evidence which was presented as an alternative to the official discourse with the aim of ensuring the construction of an oil pipeline in the USA. García and Chicaíza (2018) explained how the campaign to say “no” to the peace agreement in Colombia aimed to mobilise voters through the manipulation of their emotions, especially anger, to arouse their indignation; the European Commission (2020) denounced the elaboration of “false or deceitful accounts” around the coronavirus crisis which have intoxicated public debate and placed the life of many people at risk. There is usually a rejection of the “official knowledge” in these strategies, which increases in populist contexts, if it is stated that such knowledge has been produced by the elite (Bergmann 2020). Moreover, in the scenarios dominated by ideological polarisation that tend to accompany such contexts, disinformation has a stronger impact than in other

situations (Arce García et al. 2020), and polarisation is a factor in the Catalan case, where 48.7% of the population was against independence and 44.9% supported it (CEO 2021).

The situation described shows what Lewandowsky et al. (2017) has referred to as “the emergence of an alternative epistemology” which does not need to be grounded on evidence. Rather, it is a situation in which a large part of the population instal themselves in an “epistemological space” which has abandoned “the conventional criterion of evidence, internal consistency and the search for data.” As a result, Lewandowsky added that the public discourse can no longer continue to be examined from the perspective of false information which can be denied, but as an *alternative reality*, as a worldview shared by millions of people.

### 1.1. Disinformation, Misinformation, Malinformation

Whoever creates or spreads false information may be aware of its falseness or not, and that has different implications. Thus, intent arises as a key element when studying disinformation as a phenomenon, as can be seen in many studies. According to the European Commission (2020), when information is shared with friends and relatives without knowing that it is false, we would talk about “misinformation”, rather than about disinformation; it is the conscious act that turns it into disinformation. Claire Wardle (2017), a member of the World Economic Forum’s Global Agenda Council on the future of information and entertainment, pointed out up to eight different reasons to create and disseminate false or deceitful content, and intent always stood out as a key variable. Srijan and Shah (2018) also categorised false information with regard to the author’s intent (whether or not it is spread with the intention of deceiving) and the knowledge source (based on facts or on opinions).

UNESCO adopted in its manual “Journalism, fake news and disinformation” (Ireton and Posetti 2018) the scheme developed by Wardle and Derakhshan (2017), classifying the ways in which disinformation may appear—regardless of the format adopted by the (dis)information pieces—into three categories: “disinformation”, when the person publishing the information is aware of its falseness; “misinformation”, when they are unaware of it; and “malinformation”, when the information is true but serves to do harm to something or someone (see Figure 1).

## TYPES OF INFORMATION DISORDER

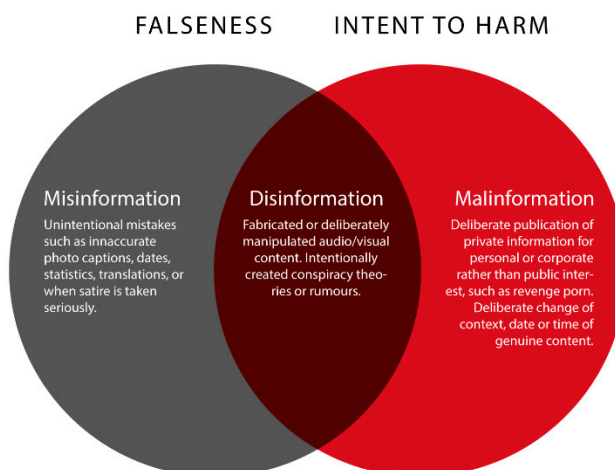


Figure 1. Information disorder. Source: Wardle and Derakhshan (2017).

The three aforementioned broad “information disorder” categories which arise from this scheme in turn give rise to various disinformation strategies that usually combine actions belonging to all three categories (Wardle and Derakhshan 2017).

### 1.2. Case Study: Peoples' Right of Self-Determination and the Case of Catalonia

In Spain, the so-called Catalan conflict<sup>1</sup> has been the target of diverse disinformation strategies both by supporters of independence and by unionists. Such strategies, developed on social media, have pursued the mobilisation of citizens through the manipulation of their emotions (Aparici et al. 2019; Carrasco Polaino et al. 2018; Hernández-Santaolalla and Sola-Morales 2019; Pérez-Curiel and García-Gordillo 2018). Alongside the proliferation of fake news, which tends to revolve around the actions of radicals, of the State's law enforcement agencies, or of the political protagonists, the creation of disinformation narratives which also seek to justify one political ideology or another, introducing confusion in the public sphere, can be found.

However, no sociological studies have hitherto specifically focused on analysing the use of legal issues to build those "alternative realities" mentioned above and the impact that it has on people, which led us to choose our case study. This is a highly relevant matter due to the characteristics inherent to the pro-independence movement, which opposes the so-called unionism in the interpretation and scope of legal issues, among which stands out the expression "right of self-determination" as a potential source of disinformation (Llorca-Asensi et al. 2021).

The current Catalan pro-independence movement gained strength from 2010 following the Constitutional Court's rejection of the new *Estatut de Catalunya* (Statute (of Autonomy) of Catalonia), but it was in 2015 that it "first impacted on the legal domain" (Arbós 2020) with the resolution that set in motion the *Procés*, the process of disconnection between Catalonia and Spain.<sup>2</sup> Since then, the arguments in favour of independence have frequently invoked the existence of a "right of self-determination", which justifies Catalonia's secession and the categorisation of the Spanish State as anti-democratic for not allowing the exercise of that right. This clash, so often staged in mass media, has given rise to an extensive amount of academic literature which usually reflects different views and interpretations (Atienza 2020; Ferreres 2019; Moreso 2020; Payero López 2016; Ruiz-Miguel 2019; Vilajosana 2020). Concepts such as legality, legitimacy, the right to secession or the right to decide, appear in the centre of that debate.

The complexity of the expression "right of self-determination", along with the mutual accusations of falseness or inaccuracy between those who use it to defend their respective positions, resorting to "hideouts in the argumentation" (Moreso 2021), put the spotlight on this expression as a generator of legal disinformation within the context of the Catalan conflict and, consequently, justify this research.

### 1.3. The Right of Self-Determination

The so-called right of self-determination appears in Article 1 of the International Covenant on Civil and Political Rights (ICCPR) and the International Covenant on Economic, Social and Cultural Rights (ICESCR), also called the Covenants of New York, which constitute, together with their corresponding protocols and the Universal Declaration of Human Rights, the UN International Bill of Human Rights.<sup>3</sup> The exact wording of the above-mentioned article reads as follows:

"All peoples have the right of self-determination. By virtue of that right they freely determine their political status and freely pursue their economic, social and cultural development."

Interpreting this article turns out to be complex for several reasons, starting with the actual definition of what a "people" is, on which no consensus exists; the scope and content of "free determination" is the second aspect; its application to some cases or others being the third one (Buchanan 2017). This complexity explains the existence of different doctrinal streams in the legal and political domains which approach the phenomenon from different standpoints and keep alive a debate on which various nationalist and pro-independence movements are supported at present (Moreso 2021).

Regarding scope and content in particular, attention must be paid to the existence of two dimensions when it comes to self-determination: the external and the internal one. The *Diccionario Panhispánico del Español Jurídico* (Pan-Hispanic Dictionary of Legal Spanish) describes them as follows: “*In its external dimension, (the right of self-determination) implies that the peoples submitted to colonial, racist or foreign domination have the right to decide their future political status, through the free expression of their will, to choose between independence, free association or integration into an independent State or any other political condition freely chosen. In its internal dimension, the principle materialises in the right to democratic participation in public affairs*” (RAE n.d.). In accordance with this definition, the possibility to decide on independence would be exclusively limited to the peoples<sup>4</sup> that find themselves in one of the situations of abuse described, whereas those peoples that are not in such a situation, and can take part in the public affairs that concern them democratically and on an equal footing, would already be exercising internal self-determination and would not have the right to secession, at least based on that legal text.

In this context, several authors have stressed the use of the expression “right to decide” (a right which does not exist in legal terms) to replace “right of self-determination” in Catalonia, perhaps with the aim of dodging the legal argument that secession as a right is not justified in the Bill of Human Rights (Ferreres 2019; Moreso 2020). Thus, appealing to a “right to decide” adds a new twist to the debate which, far from solving the confusion, complicates things even further. In the Catalan case, there is currently neither a “right to secession” nor a “right to decide” if they want secession. As seen above, a right exists to participate in the political decisions that affect the Catalan people and, of course, a right also exists to fight for a change in the legal framework which can eventually make it possible to achieve independence. The latter is the political dimension of the right of self-determination.

The reference to International Law in order to justify Catalonia’s right to become an independent state is consequently rejected by experts in international law (see, in this respect, the manifesto “Declaration on the lack of grounding in International Law of the independence referendum to be held in Catalonia” (AEPDIRI 2017), which once again highlighted the confusion between “wanting to be independent” and “being legally entitled to be independent.”. The works of the above-mentioned scholars, to quote but a few, follow along these lines.

It is important to emphasise at this point that this research work questions neither the legitimacy of the pro-independence political movement nor that of unionists’. Quite the opposite, the goal is to leave aside aspects of political ideology to focus on what is or is not, legally speaking. The intended aim consists in bringing to light what citizens perceive or know about the issue of self-determination and to what extent the confusion around such a complex concept affects them too. Therefore, the—intentional or unintentional—dissemination of distorted definitions of the “right of self-determination” which mix law and politics, or which confuse “wanting to have” with “having”, is what we consider disinformation in this study, and not the contents showing an affinity to the fight for Catalonia’s independence or an opposition to it.

On the other hand, given the impossibility to know which users know the legal reality and which ones do not, or which of them have the intention of deceiving and which ones do not, for the purposes of this work, we decided to always speak about disinformation, albeit by assuming that both deliberately false information and unintended misinformation are brought together behind that term, as shown in Figure 1.

#### 1.4. Twitter as a Stage for Virtual Politics

The study performed focuses on the contents published and shared on Twitter between January 2019 and March 2021. It is on this social network that an important part of the political communication strategy unfolds nowadays and where the political actors build their respective narratives to mobilise citizens, encouraging them to demonstrate, to claim their rights, or to make monetary donations (Marcos García 2018). The Catalan case is no

exception in this regard (Carrasco Polaino et al. 2018; Arce García et al. 2020); quite the opposite, this behaviour is also adopted by the most important civil associations—ANC and Omnium—that play a starring role in the movement (Llorca-Asensi et al. 2021).

For any connected citizen, Twitter is the place for them to speak and debate on politics and current events (Arce García et al. 2020), which is usually referred to as the new virtual politics (Kruikemeier 2014; Parmelee and Bichard 2011; Tumasjan et al. 2010). The social network indicates that users are highly interested in politics and consider Twitter the main virtual space to talk about it (Mayo 2016).

However, not everything is positive when it comes to democratic quality on this network: a variety of studies have demonstrated Twitter's power to multiply disinformation (Pérez-Curiel and García-Gordillo 2018) and to make echo chambers through what Pariser (2011) defined as the "filter bubbles", giving rise to spaces where users only see content which match their pre-existing beliefs (DiFranzo and Gloria-García 2017). Furthermore, and unlike what it may seem, it is an environment in which hardly any dialogue exists (Alonso-Muñoz et al. 2016; Pérez-Curiel and García-Gordillo 2018), a relevant aspect which we have managed to solve in this research.

In the field of emotions, Twitter's format makes it easier to disseminate mottos over reflective arguments by limiting the length of messages, which likewise rewards the spreading of emotional aspects as opposed to rational ones, an occurrence that happens even in situations of robot-created "artificial" interaction (Woolley and Howard 2016). Among the existing techniques for the analysis of emotions, a decision was made to work on GALC, given its suitability to examine free, non-induced texts (Scherer 2005), as tweets are.

Despite all the above, the *real* impact that disinformation has on Twitter when it comes to the emotions of users and their eventual political polarisation is hard to quantify, and that affects our case study too. If there is hardly any "conversation" on Twitter, if the "right of self-determination" is ambiguous, and if the objective consists in characterising "widespread disinformation" in the case study, it becomes essential to address our work, combining methods from social sciences and from data science so that we can draw meaningful conclusions.

### 1.5. Text Mining to Analyse Twitter

Since Twitter limits the extension of the messages published, users need to condense their ideas by the selecting relevant words that reflect them, which makes it possible to link the concept of relevance to that of frequent words. One can consequently state that the content of tweets admits a semantic representation which permits one to study the central elements of a discourse as well as peripheral ones easily, assigning them degrees of relevance (Denia 2020).

Over the last two decades, the development of various natural language processing (NLP) techniques for text analysis by using methods from Information Systems and Artificial Intelligence (AI) have made it possible to obtain very valuable information from large data volumes. Important progress has been made thanks to these techniques by allowing the extraction of keywords and expressions that can summarise the content of a document or a group of documents. Nevertheless, although plenty of powerful algorithms exist, the corpus of documents that these techniques require for the training of neural network models is usually insufficient and, moreover, many of the libraries widely used for programming do not support languages such as Catalan.

By means of Artificial Intelligence, combined with structured, unstructured, and semi-structured data, Text Mining permits one to analyse natural language expressions (Bovi et al. 2015). It is thus possible, not only to handle syntactic and semantic structures, but also to resolve ambiguities such as those derived from the polysemy and synonymy that are present in languages (Weissenborn et al. 2015). Information Retrieval Systems have distinguished the techniques applied to short documents from those used with long ones (Baeza and Ribeiro 1999).

Ensuring the permanent availability of relevant information poses a huge challenge (Manning et al. 2008). Techniques such as Latent Semantic Indexing (Deerwester et al. 1990), which is used in this research, play a fundamental role in this task. It becomes essential in the NLP, whether through the use of supervised learning techniques or not, to have data that are necessary to train and use in the algorithms, and Big Data plays a crucial role in that respect (Gandomi and Haider 2015). Although the data structures on Twitter are relatively simple, their volume makes it very difficult for a specialist in the human domain to make a specific decision, hence our choice to rely on the Twitter API to generate plain text data, in addition to which, and also based on different metadata, we have tried to ascertain the relevance of the information under examination by constructing text with multiple expressions. This makes it easier to apply several of the NLP techniques that handle context and interpret results as topics.

### 1.6. Hypothesis and Research Questions

As mentioned above, Llorca-Asensi et al. (2021) described the conversation about the Catalan conflict on Twitter as prone to disinformation. Among other things, the analysis showed that the activity was focused on the mobilization of citizens and the launching of political slogans with little or no real conversation outside their own echo chambers, alongside a highly emotional discourse loaded with frustration and exaltation. Furthermore, the discourse was proved to be built on false or inaccurate information, with the ambiguous use of “right to self-determination” in the spotlight. Literature additionally shows that the said expression is misleadingly used for political goals (Moreso 2021) and that International Law can provide no grounding whatsoever to support Catalonia’s independence (AEPDIRI 2017).

Faced with this scenario, it becomes necessary to consider to what extent this—confusion, be it deliberate or unintentional, has really permeated the population and whether it is helping to increase social polarisation by bringing out negative emotions. Obviously, fighting for a political ideal such as managing to create an independent state does not carry the same implications (and neither does it arouse the same negative feelings among the population) as fighting against an oppressive state which unfairly violates fundamental rights.

In this context, the following starting hypothesis is posed:

**Hypothesis 1 (H1).** *Within the context of the Catalan pro-independence movement, the expression “right of self-determination” is a source of disinformation that generates negative emotions.*

The research questions that will have to be answered in order to validate or refute this hypothesis are formulated as follows:

Q1 What sort of disinformation exists around the concept of self-determination according to experts?

Q2 How can this disinformation be identified on Twitter and described within the context of the Catalan independence conflict?

Q3 What emotions become visible when the right of self-determination is mentioned in the case study?

## 2. Materials and Methods

The work is structured into three blocks, in such a way that each one answers a research question, as shown in Figure 2.

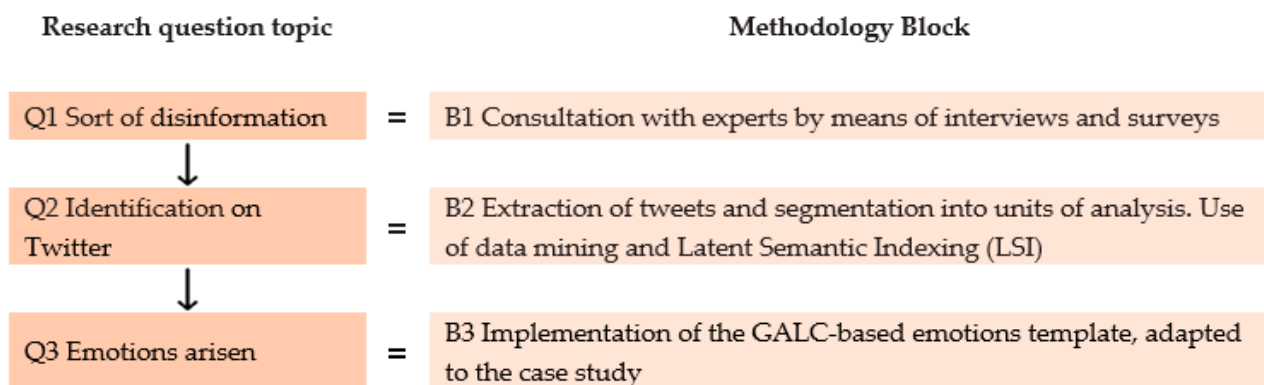


Figure 2. Research question topics and methodology utilised to answer them.

### Block 1. Consultation with experts

Following Figure 2, and in order to answer Q1, experts (n = 94) joined the research in two stages: first, a heterogeneous group, whose attention focused on the meaning of “right of self-determination”, distinguishing its legal and political dimension; second, a larger and more homogeneous group, in which a validation was made of the previous group’s criterion, additionally delimiting the problem in its legal dimension. Figure 3 shows their universities of origin.



Figure 3. Experts’ universities of origin. Source: elaborated by the authors.

1. First group (n = 19): Semi-structured interviews by video call were carried out with the support of a form. The aim was to make a first approach to the topic and to obtain the main elements needed for the disambiguation of this term. The interviewees assessed 10 items as true, false, or inaccurate, motivating their opinion in each case. The selection of experts relied on the “snowball” technique, trying to ensure that they had different academic profiles and ideological positions so as to guarantee the quality of results.<sup>5</sup>

This group provided the keys with which to single out the legal dimension of politics in relation to the “right of self-determination”, and distinguished it from the “right to secession” or “right to independence” with which it is usually confused. This served to modify the form as well as to choose the profile of the second group: experts in International Law.

2. Second group (n = 75): A self-administered 6-item form was used with 75 experts from 31 Spanish universities and 3 foreign universities for the purpose of confirming the assessment of the previous experts exclusively from the perspective of International Law.

The reports made by both groups of experts coincided in identifying the following as the origin of confusion:

The *right* of self-determination<sup>6</sup> is confused with the *political principle* of self-determination. The former must be validated in some legal framework, while the latter is the legitimate capacity to pursue any independence claim “politically” and in a peaceful manner.<sup>7</sup>

The *right of self-determination* is confused with the *right to secession*. The former is covered by International Law, and the latter depends on each State’s constitutional and legal framework.<sup>8</sup> The right of self-determination only includes a right to secession in very specific cases (Figure 4).

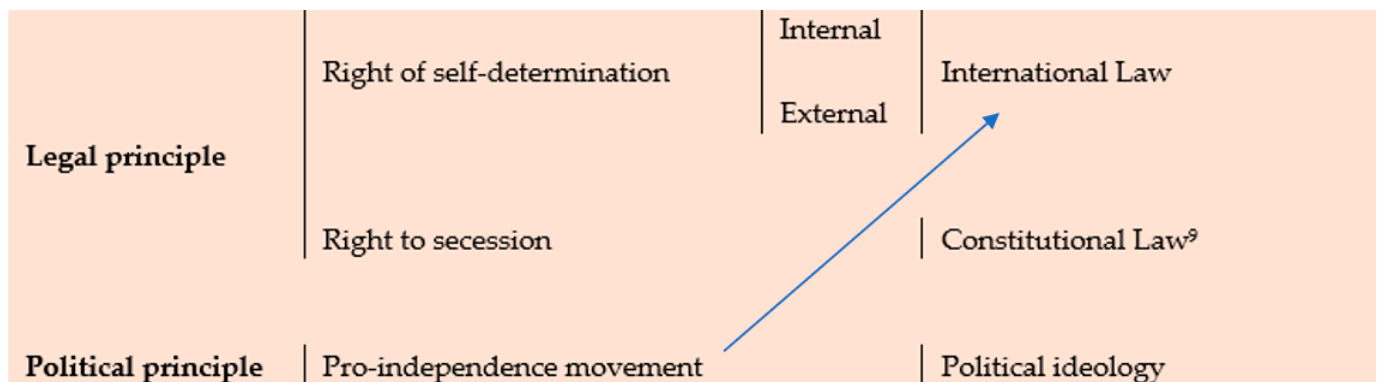


Figure 4. Disambiguation of the “right of self-determination”.<sup>9</sup> Source: elaborated by the authors.

It follows from the above that it is possible to label as disinformation any content which suggests the following:

Finally, a selection was made of the words which make it possible to link—within this case study—the presence of disinformation using the criterion of the experts described in Table 1. These terms were chosen at the researchers’ initiative based on their meaning and the result of the consultation with experts and a previous literature review. It was not an automated assignment, since the computer-assisted research methods assume that the terms have the same meaning in any context (Matthes and Kohring 2008), whereas the use of human coders leads to a better interpretation of the discussion environment (Denia 2020).

Table 1. Signs of disinformation in the text.

1. That (right of) self-determination and (right to) secession or independence are synonymous
2. That International Law recognises the right to secession of *any* people
3. That Catalonia has a right to secession according to International Law
4. That Catalonia’s right to secession stems from the UN covenants
5. That Spain<sup>10</sup> infringes International Law by not permitting Catalonia’s secession
6. That Spain is violating its own Constitution by not allowing Catalonia’s secession
7. That the Spanish State does not recognise peoples’ right of self-determination
8. That Catalonia does not have/enjoy a right of self-determination

Source: elaborated by the authors.

Although the appearance of the terms in Table 2 in the texts under analysis does not automatically provide evidence of disinformation, it comprised a sign from which the researchers examined the content in order to code such texts manually.



**Table 2.** Terms linked to a disinformation content in the case study.

covenants treaties	In plural, they refer to ICCPR and ICESCR
UN	The United Nations Organization within which such treaties are produced
peoples	In plural form, it alludes to the literal wording of Article 1 of the covenants
constitution	It refers to the Spanish Constitution and denotes an allusion to the legal framework which permits—or does not permit—to fit certain claims
legal right	They suggest that this is a debate on legality within the framework of the right of self-determination
recognition	It is an expression used to demand that the existence of a right (to decide or to secession) be admitted
(to) exercise	This is the verb utilised to express that Catalonia has a recognised right and to denounce the Spanish State for preventing its exercise
human fundamental	They link the non-acceptance of the right of self-determination with a violation of Human Rights and fundamental rights.

## Block 2. Identification of disinformation elements in the corpus of tweets

The next step consisted of analysing a corpus of tweets ( $n = 102,364$ ), collected using the Twitter API, which included the term “self-determination” written in Catalan<sup>11</sup> and published between 1 January 2019 and 1 March 2021. The objective was to avoid the massive dissemination of political slogans so that attention could be paid to users’ conversations. To that end, Latent Semantic Indexing was applied for the extraction of topics<sup>12</sup> to the whole corpus ( $n = 102,364$ ), then such topics were identified on the data organised in “micro-forums” ( $n = 31,624$ ), and finally a closer analysis was conducted to verify the presence of disinformation on the 30 main “micro-forums” ( $n = 1068$ ).

### (1) Analysis of micro-forums

Micro-forums are sets of tweets which derive from a single initial tweet; the latter opens the topic, and the former comment on it or reply to it, which means that the conversation logic resembles that of Internet forums. As the whole corpus was made up of tweets that included the term “self-determination”, so did micro-forums.<sup>13</sup>

Such an organisation of data<sup>14</sup> helps reduce a large-sized corpus to a significant number of qualitative references through which meaningful conclusions can be drawn. The characteristics of micro-forums were additionally suitable to apply the subsequent semantic analysis, since they permitted to identify the context—which is essential in this type of analysis—from the following elements: (i) All tweets are reactions to a single initial message (second level messages are not included), hence the assumption that they speak about the same topic; (ii) They are collected within the same period of time; (iii) They are published in the same language (Catalan), which serves to reinforce their thematic unity (they refer to the case study); (iv) The language, which also suggests a similar political ideology within the context of this crisis (Rodón et al. 2018); (v) That they are arranged chronologically, which leads us to assume the existence of a cause–effect relationship (in\_reply\_to) and, at least in part, a previous reading of the replies to a tweet, prior to formulating one’s own, exactly as it happens in internet forums.

As a result of the process, it was attested that 30% of the tweets (31,624) in the corpus were formed by micro-forums, and the remaining 70% (70,724) were separate tweets, which is why the latter were excluded from the analysis. Micro-forum sizes ranged between 2 and 97 tweets, and those including over 15 tweets ( $n = 30$ ) were chosen to shape the sample to examine.

### (2) Latent Semantic Indexing<sup>15</sup>

This technique allows us to determine the relevance of a term inside a document (a micro-forum, in our case) and with regard to other terms, based on their occurrence and the distance between them. LSI assumes that words which are close to one another in a portion of text have similar meanings or are related. This stage focused on identifying the

most relevant terms in the conversation about Catalonia's right of self-determination, even if their frequency of appearance in the document (micro-forum) was not high or the word had several meanings or did not always appear with the same name, since the LSI system solves the problem of polysemy and synonymy and thus permits the emergence of the ideas underlying a text, beyond the mere frequency of appearance of each term in a literal way. All the terms identified in each micro-forum are semantically related to one another and denote the conversation content.

The need to reduce the analysis space was an important reason which led us to combine the different techniques in such a specific scenario as Twitter, where the fact of not being able to write a long text, but only text sequences not exceeding 280 characters, largely influences the choice of a specific strategy.

### Block 3. Analysis of emotions

The last step consisted of identifying the emotions expressed in micro-forums, according to Figure 2. The work was based on the GALC system,<sup>16</sup> suited to the analysis of free, non-induced text (Scherer 2005), translated into Catalan, and modified to adapt it to the case study, removing categories which provided no value or achieved less than 10 results (such as *gelosia* (jealousy), *enveja* (envy), or *luxúria* (lust)) and adding terms which were relevant for the case study (e.g., *botifler* (word used to refer to the supporters of Philip V during the Spanish Succession War, with a derogatory expression toward Spanish people), *ñordo* (literally meaning "excrements" and metaphorically used to refer to someone who feels Spanish), or *feixista*<sup>17</sup> (fascist) in the category "Contempt"). Despite not referring to an emotion, the category "Lies/Lying/Deceit" was added to ascertain whether users alluded to disinformation in the micro-forums under examination. Finally, denial (up to -3 terms) was included. The process through which GALC was adapted went through a discussion with colleagues who, albeit not involved in the research, were familiar both with qualitative text analysis and with the case study.

The result is a template with 20 categories (see Table 3), almost half of them positive (with 113 terms) and the other half, negative (with 137), applied to the 30 largest micro-forums, which included a total of 1068 tweets. The appearance of terms belonging to each emotion category in the results must be understood as evidence of the presence of an emotional state which is closely associated with that category (Scherer 2005).

**Table 3.** Template of emotion categories adapted to the case study.<sup>18</sup>

<b>Admiration/Awe/Surprise</b>	ador* adoració*	sorpres* esbalai*	atordit* bocabada*	enlluernad* sobresalt*	embadali* desconcertat*	captiva* atònit*	fascina* (adorn*)	meravell*	enart*	venera*
<b>Amusement/Pleasure/Enjoyment</b>	divert* (amenaç*)	humor* (amenac*)	riall* amen*	jugan*	jogass*	somri*	diversió	gaudi*	encant*	resplend*
<b>Being touched (Emotion)/Sympathy</b>	emocio*	compade*	compass*	empatia	empàtic*					
<b>Satisfaction/Happiness/Joy</b>	content* exultant	satisf* eufor*	alegr* exalt*	benaure* estimula*	delicios* exult*	encanta* gaubança	agrad* joio*	plaent* alegr*	feliç* encantad*	content* gaub*
<b>Feeling(s)/Gratitude</b>	afecte	cariny*	amist*	tendresa*	gràcies	agraï*				
<b>Hope</b>	fidel*	esperança*	optimis*							
<b>Interest/Enthusiasm</b>	despert* fervor*	apassiona* il.lus*	atent*	curi*	ansio*	fascina*	abstret*	entusiasta*	fervent*	interes*
<b>Longing</b>	somni anhel*	deler* somiar	fantasi*	fris*	rememorar	nostàlgia	enyor*	nostalg*	penedi*	desitj*
<b>Pride</b>	orgull*	supèrb*								
<b>Relaxation/Serenity/Relief</b>	calma* alleuj*	desenfadat* seren*	indiferent* tranquil*	desapassiona*	equanim*	afable*	Despreocupat	placid*	equilibr*	relax*
<b>Anger</b>	enfad* ressent*	ràbio* temperament	enrab* disgust*	Furiós ences*	fúria	enfurism*	fregi*	rabi*	còler*	embog*
<b>Anxiety</b>	ansie*	aprehensi*	reticent*	Cangueli	nervi*	turbac*	recel*	previngut	preocupat	problem*
<b>Boredom/Disgust</b>	fastig* fàstic*	indifer* indispo*	tedi* repugn*	Desgast repuls*	aversi* reprova*	detest* abomina*	disgust*	desagrad*	aversió	desassaborir
<b>Desperation/Despair/Disappointment</b>	perdu* resigna*	decaigu* amarg*	desconsola* boicotej*	desepera*	abat*	decebu*	desconten*	desencis*	desil·lusiona*	frustra*
<b>Dissatisfaction/Sadness</b>	infeli* plor*	disgust* llàstima	abat*	Dolor	taciturn*	desespera*	melanco*	aflig*	trist*	llagrim*
<b>Fear</b>	esglai*	alarma*	Por	esfereid*	horror*	aterr*	terror*	amenac*	amenaç*	(por ellos)
<b>Guilt/Shame</b>	avergony*	desgracia*	humilia*	ruboritz*	culpa*	Contrició	culpabl*	remordiment*	penedi*	
<b>Contempt/Hatred</b>	denigr* amarga*	desaprov* odi*	burlet* rencor*	desprecia* l'odi	arrogant facha	botifler* fasci*	ñordo*	nyordo*	*Ñi*	charneg*
<b>Tension/Stress/Irritation</b>	malestar enfada*	estres* crispa*	cansa*	tensio*	rigid*	molest*	exaspera*	malhumora*	indigna*	irrita*
<b>Lies (Lying) (Deceit)</b>	mentider*	fals*	mentida*	Mendacitat	fal·làcia	falsedat*	Bola	conte	engany	embolic*
	Ficción	Calúmnia	Fake							

### 3. Results

The relevant terms that shaped each topic in a micro-forum provided researchers with evidence of the existence of disinformation. Table 4, which lists them all, shows that 26 out of 30 micro-forums in the sample had at least one of the terms identified in Table 2. Only those numbered as 23, 24, 26, and 27 failed to include evidence-supplying terms in the corresponding topics,<sup>19</sup> and political content had much more weight than legal aspects therein.

Reading the messages allowed us to verify the predominant utilisation of “right of self-determination” either as an equivalent to “right to decide” or directly as “right to secession.” Disinformation is not present to the same extent in every micro-forum: the largest ones and those including at least two evidence-supplying terms show a higher degree of disinformation than the rest. However, all micro-forums, regardless of the topic with which the conversation began in them, reveal the confusion of users, who refer to the UN covenants to support their arguments and describe the Spanish State as antidemocratic (basing such categorisation on Spain’s non-compliance with the international legislation).<sup>20</sup>

*“We have the right of self-determination because we are a nation even though we do not have a State and Spain has the obligation to authorise one self-determination referendum if we request it, since that is our right recognised in the International Covenant on Civil and Political Rights (UN 1966) ratified by Spain”*

An illustrative example of the significant confusion generated by this term is provided by the reaction to the statement made by the unionist Manuel Valls<sup>21</sup>: “Self-determination is not constitutional and an illegal referendum is a crime”. According to Valls, self-determination is not constitutional and, despite not specifying that he was referring to the case of Catalonia, it can be inferred from the context that he was.<sup>22</sup> Firstly, since self-determination as a right falls within the domain of International Law, it seems confusing to say that it is not constitutional (insofar as that right does not appear among the competences of the Spanish constitution, according to Figure 4). Secondly, considering that Spain has ratified international treaties, among which are the New York covenants, self-determination enters the Spanish constitutional framework when that ratification is signed. Nonetheless, self-determination is constitutional, but only in the conditions established by International Law, not in others. That is to say, Spain defends that the different peoples who live inside a state should have an egalitarian participation in the political issues that affect them (internal self-determination) and, likewise, that those peoples that are submitted to colonial, racist, or foreign domination should be able to achieve secession (external self-determination). Insofar as Catalonia falls within neither of these cases, (external) self-determination would not be a right for it from an international point of view, and internal self-determination would not have been violated, since Catalan citizens are democratically involved in political life to the same extent as the other citizens who live in Spain.

Valls’ message gave rise to a forum of some three thousand tweets, from which were extracted those containing the term “self-determination” for analysis. It can be verified in the sample that the replies to the message published by Valls denied his statement, but not because users clarified the real scope of this term but rather because, being also trapped in disinformation, they adduced arguments with which an attempt was made to prove that Catalonia has the right to independence because it is so stated by the UN and because Spain has signed the treaties whereby that was established. In other words, self-determination is put on a level with secession, independence is considered constitutional, and the United Nations Organization is mentioned as the source of that right. Some examples are:

*“Self-determination is a right envisaged in signed, ratified and published international treaties as foreseen in the Spanish Constitution which was incidentally drafted and approved after these treaties.”*

*“Precisely self-determination is constitutional. The law and the constitution are used to protect one’s own interests; it is distorted, manipulated and utilised according to what is convenient for your “mother-country-saving” discourse.”*

*“The Spanish State has signed the international treaties and therefore they have come to form part of the Spanish legal framework and self-determination is a right! Scatterbrain!”*

The outcome was that the pro-independence movement accused Manuel Valls of disinforming (or misinforming), and they would be right, the only problem being that the arguments used to prove it show the same level of confusion:

*“Peoples’ self-determination is constitutional. Hope you have some time to read it (the Spanish Constitution). As always, the *españolistas* (a derogatory blend of *españolito* [little Spaniard] and *listos* [clever]) *deceiving the people.*”*

*“[Are you saying] that no Constitution recognises the right of self-determination?? . . . what do you think (articles) 154–160 of the SPANISH Constitution are? Does the *ReiÑo*<sup>23</sup> (sic) respect the international treaties that it has assimilated?? The right of self-determination is a fundamental principle in public international law.”*

Similar examples such as the following one can be found in other micro-forums of the sample:

*“Isolated cases? The right of self-determination is a recognised right and it internationally protects ALL the peoples (nations) and Catalonia is actually a much older nation than Spain (I did not say Castile, I said Spain, because Castile is indeed a nation with years of history).”*

Although there are only very few of them, the corpus also contains some messages which show a correct knowledge of the scope and meaning of the rights of self-determination and secession:

*“It is no OPINION, these are FACTS. If you cannot distinguish it, you have a problem, and I am not trying to avoid the issue: I mean that the Right of Self-Determination CANNOT be applied as a Right to Secession to a region of a democratic country which has never been a colony.”*

*“Neither Veneto nor Bavaria or Texas or Brittany or Ulster or California . . . nor many others. Perhaps the “Right of Self-Determination” is NOT what you have been told about a supposed “Right to Secession”.*

Finally, several tweets clearly reflect the ignorance or contempt for evidence that characterises disinformation narratives, as illustrated in the example below, which refutes an argument that the right to secession is limited to specific cases in the international context:

*“Universal Declaration of Human Rights 1948. Right of self-determination of peoples: Part I Article I of the economic, social and cultural rights. Spare me the mantra of “for the colonies”.*

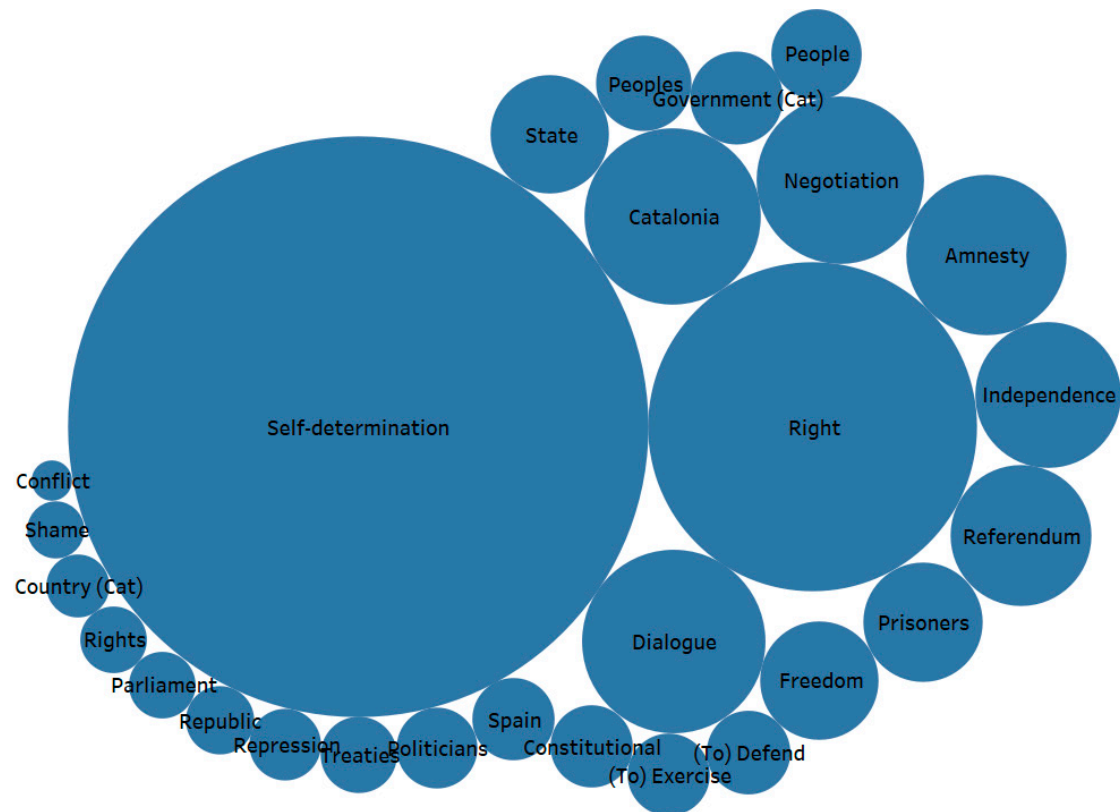
The polarisation between the noble “we” and the despicable “they”—which is present in populist disinformation strategies (Hameleers 2020)—can be easily recognised in some messages too:

*“Self-determination is a right envisaged by the UN. Whether you like it or not. The 1978 constitution is a Francoist one. Catalonia lives in the 21st century, while Spain remains anchored in the terrible 20th century.”*

**Table 4.** Topics which are semantically relevant in each micro-forum.

Mf	N	Terms
1	95	<b>constitutional, right, peoples</b> , treaties, international (pl), crime, <b>constitution, legal</b> , referendum, democracy, Barcelona, Spain, Spanish (m), referendum/plebiscite, Spanish (f), rights
2	55	dialogue, <b>right</b> , table (Cat), independence, (to) speak, years, referendum, PSOE (Spanish (Worker's) Socialist Party), conflict, <b>(it) exercises</b> , political/politician, no, proclamation, negotiation
3	45	motion, <b>right</b> , (to) vote, solutions, people, axis, (I) trust, PSOE, Catalonia, central, (to) negotiate, policies, therefore, fully, thanks, prisoners, Madrid
4	46	<b>right</b> , referendum, Catalonia, dialogue, social (pl), rights, shame, prisoners, repression, agreement, politicians, progress
5	51	<i>comuns</i> (members of the party En Comú Podem), (they) defend, (they) want, moment, Catalonia, <i>Entesa</i> (agreement of centre-left and left-wing political parties in Catalonia), only, part, <b>right</b> , (to) search, (we) defend, (you) say, people,
6	47	<b>right</b> , referendum, dialogue, amnesty, prisoners, freedom, negotiation, nothing, <b>recognition</b> , table (Sp), table (Cat), no, independence, politicians
7	44	<b>right</b> , budget, (to) speak, (to) accept, population, error, politicians, govern (Cat), trial, partisan, social (pl), historic(al), prison, right, arms, interests, (to) approve
8	88	citizens, issue, important, <b>right</b> , (that should) resolve, (to) <b>decide</b> , democracy, (to) resolve, people, <i>ciutadans</i> (political party)/citizens, no, referendum,
9	40	<b>right</b> , unilateralism, referendum, rights, country, (to) leave, <b>human (pl)</b> , Spain, no, <b>peoples</b> , (to) vote, unilateral, against, Catalonia
10	40	amnesty, <b>right</b> , independence, referendum, freedom, this, prisoners, shame, dialogue, agreement, referendum, exiles
11	39	table (Cat), (to) defend, negotiation, nothing, independence, <b>right</b> , less, defence, forgotten,
12	51	change, motion, (to) withdraw, all, <b>right</b> , <i>botiflers</i> (derogatory expression towards Spanish people), to agree on/negotiate, senators, parliament, (to) relinquish
13	25	<b>right, peoples</b> , prisoners, fight, politicians, Catalonia, people, against, freedom, justice, Catalan, safe/sure, independence
14	24	<b>right</b> , independence, referendum, freedom, prisoners, politicians, exiles, dialogue, <b>peoples</b> , president, democracy, prisoners
15	25	<b>right</b> , Catalan(s), welfare, interests, all, progress, president, Catalonia, politicians, pathetic, government (Cat), people, nothing
16	29	motion, change, <b>right</b> , (to) withdraw, parliament, (to) agree on/negotiate, no, afterwards, unity, senators, part, (to) oblige
17	20	dialogue, amnesty, <b>right</b> , change, (to) speak, investiture, referendum/plebiscite, people, prisoners, treason, situation, seems, agreement
18	38	(to) negotiate, negotiates, Brussel(s), <b>right</b> , independence, enough, president, Europe, Catalan(s), (to) deceive, <b>(it) exercises</b> , dialogue, table (Cat), declaration
19	22	dialogue, <b>right</b> , prisoners, (to) speak, freedom, amnesty, referendum
20	20	amnesty, all, possible, <b>exercise, right</b> , press, position, no, (to) speak, out(side), (to) leave/divide, Catalan (f), enough
21	38	<b>right</b> , favourable (pl), (to) save, Catalonia, majority, very, against, voters
22	22	<b>exercise</b> , Republicanism, that, State, fronts, barn, broad (pl), Catalonia, (to) convert, majorities
23	25	freedom, you (pl), Catalan (f), Republic
24	19	referendum, table (Cat), dialogue, pro-independence demonstrations, amnesty, negotiation, repression, <b>right</b>
25	20	supporters of sovereignty, government (Cat), <i>comuns</i> (members of the party En Comú Podem), amnesty, broad (m), centre, front, seriousness, broad (f), (they) vote, right-wing parties
26	20	consensuses, against, Catalonia, consensus, independence, (to) want, democratic (pl), broad (pl), (to) articulate, congress
27	20	independence, freedom, republic, acquittal, without, path, less, (to) vote
28	20	table, <b>right</b> , Catalonia, government (Sp), time(s), dialogue, side, repression, debate, (to) defend, sectarian (m)
29	21	(to) negotiate, State, motion, <b>right</b> , Catalonia, negotiation, parliament, independence, power, Spanish (m)
30	15	<b>right</b> , (to) speak, table (Cat), table (Sp), Statute, achieved, (to) negotiate, prisoners, negotiation, change, determined, (to) <b>exercise</b> , referendum, Catalan(s)

Furthermore, when the sample of micro-forums is treated as a single document, without breaking down the different units that comprise it, the terms with greater semantic relevance, allowing researchers to identify the overarching topics, are the ones listed in Figure 5.



**Figure 5.** Cloud of semantically relevant terms. Source: elaborated by the authors.

It becomes evident that the debate revolved around four main interconnected topics: Firstly, around the thesis that a right to independence (or to decide) exists endorsed by the UN covenants (*Right, Catalonia, Independence, Peoples, (To) Exercise, Treaties*). Secondly, that this and other rights cannot be exercised in Spain for political reasons (*Spain, Constitutional, Politicians, Rights, Repression*). Thirdly, the imprisonment of the persons accused by the 1-O,<sup>24</sup> for whom freedom is requested (*Amnesty, prisoners, freedom*). In the fourth place, these ideas coexisted with a permanent complaint about the lack of dialogue between the parties to solve the conflict through a referendum/plebiscite among the population (*dialogue, negotiation, referendum*). Finally, this list of terms already allows us to clearly appreciate the negativity and frustration that prevailed in the content of messages (*repression, shame, conflict*).

In this sense, Table 5 shows the result of applying the GALC-based emotions template adapted to the case study. The emotions collected denote a clearly negative context, since, even in those cases where the system correctly identified a positive emotion in the text, human coding revealed that the term was present, though in an ironic sense, normally expressed as distrust, despair, or anger. This can be easily seen in the table below, where the colour of the data in the upper quadrant (the first ten categories), initially green because they were positive emotions, becomes almost entirely yellow after checking the ironic sense. An example thereof is the detection of emotions such as “fun”, “liking”, “tranquillity” or “gratitude”, which are not like that in the corpus:

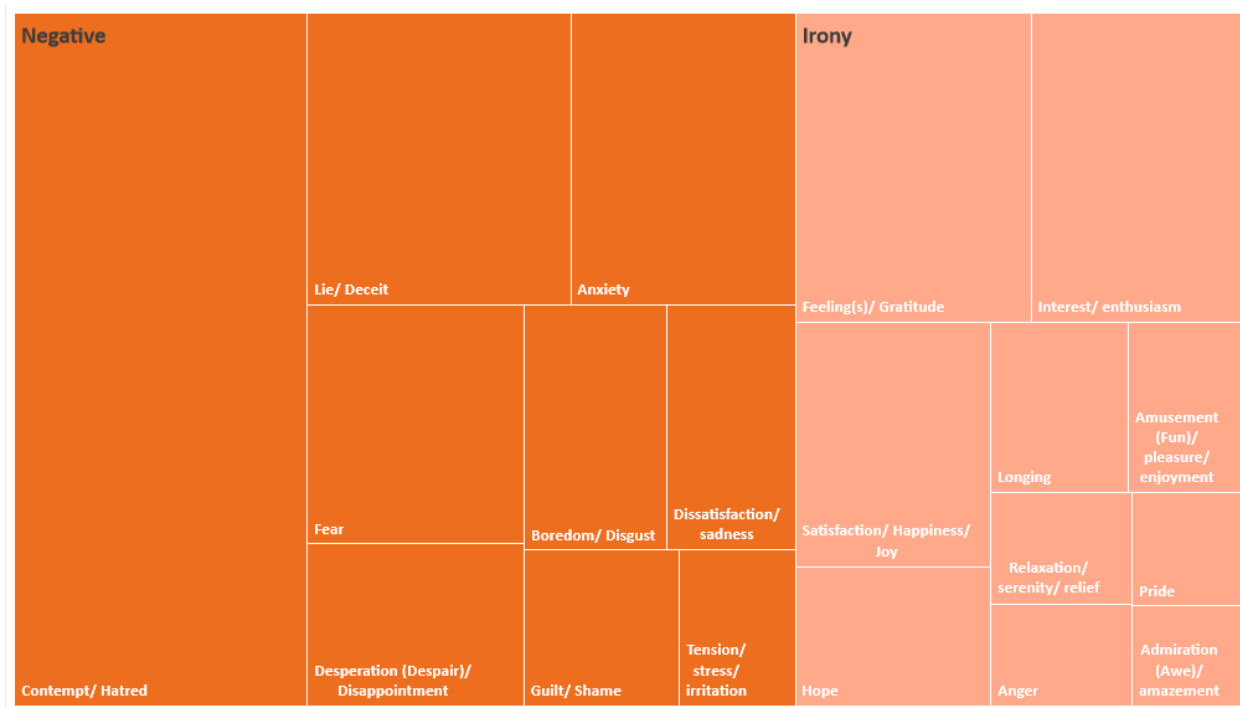
*“How **funny** it will be if amnesty is achieved, the prisoners go out and they themselves remind you that, if they have been in prison, it was for defending the right of self-determination”<sup>25</sup>*

*“We all **would like** a dialogue table. But the Spanish State will never talk about self-determination. Never”<sup>26</sup>*

*“**don’t worry**, Spain will soon come and forbid it”<sup>27</sup>*

*“That the General State (National) Budget should include an entry to carry out a legally binding self-determination referendum in Catalonia. Can you tell your boss? **Thanks**”*

The upper quadrant of the table shows the number of occurrences for each category, whereas the lower one reflects the weight of negativity (65.5%), irony (31%), and positivity (3.5%) within the sample as a whole. Adding irony to negative expressions (since we are dealing with negative attitudes in both cases) leads us to reach 96.5% of the total. Figure 6 breaks down emotions by typology.



**Figure 6.** Emotions detected in the sample.





Within the emotion categories expressed on an irony basis stand out gratitude, enthusiasm, joy, and hope. We can highlight contempt and hatred among the negative ones, followed by the references to lies/lying/deceit, anxiety, fear, desperation/despair, and disappointment.

*“But how do we want to negotiate self-determination with a state like **FachaÑa** (blend meaning “Fascist Spain”)?? Have we lost our senses? We already voted and earned the right to be the Catalan Republic at the referendum of 1 October 2017 and independence was declared, bollocks! Enforce it or you can all bugger off!”*

*“Self-determination is a right. And you are nobody to prevent us from exercising a right. It is also constitutional and thus legal. You **fascists** shall not pass!”*

*“It is **disgusting**. And it is even more so that, with international rights such as that of self-determination, a country can **OBLIGE** us to form part (of it) forever and forcibly, denying us the right to **BE** free.”*

*“Every country has **enjoyed** self-determination sooner or later. Why **CAN’T** we?”*

Polarisation is obvious, and the presence of several messages which show the “we/us” (the people–victim) against the “they/them” (the oppressive State) so characteristic of populism denotes its impact on citizens:

*“When you say compatriots, do you mean those who deny us the language, those who hate us ‘cos we are Catalans, those who oblige us to belong to their state, refusing to accept a referendum and our self-determination? Those who sing “Go get them!”? Who are the “compatriots”?’.”*

*“Cos this is the real basic problem that has been dragging on for 3 years: Even though the **CAT** nation has the right of self-determination recognised by international law, the oppressive regime will never admit political actors that can threaten its totalitarian integrity”*

By way of recapitulation of the contents exposed in this section, it can be stated that the conversation and disinformation on Twitter about the “right of self-determination” revolve around the semantically relevant terms specified in Figure 5, and also that users resort to them within a context of full negativity, as shown by the emotions listed in Table 5 and, more specifically, in Figure 6.

#### 4. Conclusions

The work carried out enabled us to confirm the starting hypothesis through the answers to the research questions posed:

**Q1. What sort of disinformation exists around the concept of self-determination, according to experts?**

A1: The external and internal dimensions of the right of self-determination are ignored; this right is confused with that of secession and, furthermore, the political dimension (wanting independence) is confused with the legal one (having the right to independence).

**Q2. How can this disinformation be identified on Twitter and described within the context of the Catalan independence conflict?**

A2: By combining social science methods, artificial intelligence, and data mining, we verified that disinformation is present in every segment of the sample, made up of 30 micro-forums extracted from a corpus of 102,634 tweets. They all reflect disinformation to a greater or lesser extent. Conversations show how deeply concepts are merged, with the result of individuals claiming their right to secession based on the UN articles, a right that they have as “the people”. Consequently, the Spanish State is accused of being fascist or undemocratic for violating what they consider to be a basic and internationally recognized human right—the right to secession.

**Q3. What emotions become visible when the right of self-determination is mentioned in the case study?**

A3: Very clearly negative ones, including contempt, hatred, anger, and fear, and an extensive use of irony. Negativity is directed to the Spanish State, the ideological opponents—the unionists—and also towards their own politicians for their “weakness” in fighting against the former two. Only 3.5% of the emotions detected were positive.

According to our findings, and derived from the answers to the above questions, the research hypothesis (**Within the context of the Catalan pro-independence movement, the expression “right of self-determination” is a source of disinformation that generates negative emotions**) is confirmed: the use of said expression with a wrong or inaccurate meaning, or when stated out of context, not only leads to a widespread confusion on Twitter that can be described as disinformation, but brings out negative emotions in the already highly polarised context of the Catalan conflict.

On the other hand, from a methodological point of view, arranging the data in micro-forums made it possible to locate conversations within a corpus mostly formed by “separate” tweets, and to zoom in on them to perform a detailed qualitative analysis of their content. The subsequent combination of some text mining techniques made feasible an analysis of a simplified sample without losing generality. Within the context of digital politics such as the one under study, where hardly any dialogue exists and most tweets are unidirectional, it becomes difficult to extract conversations about relevant ideas, which is why the method used has proved to be highly useful in this case.

## 5. Discussion and Proposals for New Works

The consequence of selecting only tweets in Catalan, seeking to avoid the appearance of topics outside the case study, was that the results were more closely linked to the pro-independence position than to that of the unionists, insofar as this is the language in which the pro-independence movement tweets, as attested by [Rodón et al. \(2018\)](#). This does not necessarily mean that the results within the unionist side have to be different, but it does mean that they are not represented to the same extent as those of the pro-independence movement in the sample used for this study.

The analysis was confined to Twitter users. It would be interesting to check the degree to which the Catalan population, beyond the former, shows confusion or disinformation concerning this issue. A comparison should also be drawn with the knowledge of the population living outside Catalonia.

We have not broken down users’ profile into entities and private users, which means that it is impossible to assign an intent (proven or supposed) to the authors of the tweets, and, accordingly, to distinguish people who could be *disinforming*, i.e., they would be aware of the confusion, and those who could be sharing *misinformation*, i.e., being unaware of the confusion caused.

Likewise, one could discuss whether having “responsibility” and not only an “intent” might give rise to a new category of disinformation agent. Thus, the consideration as *disinformers* would correspond to those individuals who have the duty, the possibility, and the responsibility of providing truthful information to citizens (political parties, mass media, civil associations, and public institutions). Instead, *misinformers* would be mainly those citizens who do not have the responsibility or even the resources to distinguish between the different meanings of the term in question. In this regard, it must be stressed that the involvement of “official” actors in disinformation campaigns leads to increase their sophistication, financing, and potential impact ([Wardle and Derakhshan 2017](#)), which makes the analysis proposed even more important.

On the other hand, although the contents which generate positive emotions are associated with a greater likelihood of becoming viral, emotional intensity also arises as a highly influential factor ([Berger and Milkman 2012](#); [Wihbey 2014](#)), hence the convenience for future research studies to verify the messages analysed here in relation to their scope, the speed of dissemination or the interactions obtained. In the case under examination, it is estimated that the 102,364 messages included in the corpus reached 62,802,787 users.<sup>28</sup> Their potential impact, or, expressed differently, the total number of devices in which

these messages could have been displayed was 1,852,748,816.<sup>29</sup> These figures alone suffice to justify the need to continue delving deeper into the problem of legal and political disinformation in digital environments, whether it is within the framework of the Catalan conflict or in any other situation characterised by political polarisation.

Lastly, it would be suitable to connect disinformation in the context analysed not only with ideological polarisation but also with *affective polarisation* (resentment towards the political opponent), especially when Spain is one of the advanced democracies which shows higher levels of this index, an aspect on which the rise of the Catalan secessionist movement has laid emphasis (Orriols and León 2021).

**Author Contributions:** Conceptualization, E.L.-A. and A.S.; methodology, E.L.-A., A.S. and M.-E.F.-C.; software, A.S.; validation, E.L.-A. and A.S.; Formal analysis, E.L.-A. and A.S.; investigation, E.L.-A. and A.S.; resources, E.L.-A., A.S., M.-E.F.-C. and R.R.-C.; data curation, A.S.; writing—original draft preparation, E.L.-A.; writing—review and editing, E.L.-A., M.-E.F.-C. and R.R.-C., visualization, E.L.-A. and A.S.; supervision, M.-E.F.-C. and R.R.-C.; project administration, M.-E.F.-C.; funding acquisition, M.-E.F.-C. and R.R.-C. All authors have read and agreed to the published version of the manuscript.

**Funding:** This research was financed with the grant of the deputy vice-chancellor's office Program for Research and Knowledge Transfer, for the promotion of R&D&I, at the University of Alicante, Modality B: Aids for the financing of R&D&I projects which give rise to a doctoral thesis with an "Industrial Doctorate" mention.

**Data Availability Statement:** Restrictions apply to the availability of these data. Data was obtained from Twitter and are available from the authors username URI [http://twitter.com/\[username\]](http://twitter.com/[username]) with the permission of Twitter.

**Conflicts of Interest:** The authors declare no conflict of interest.

## Notes

- <sup>1</sup> This is the expression used to refer to the institutional and social crisis which is taking place in Spain as a result of the so-called Catalan independence process (the *Procés*), which pursues to achieve Catalonia's independence.
- <sup>2</sup> Resolution 1/XI of the Parliament of Catalonia dated on 9 November 2015.
- <sup>3</sup> A/RES/1514(XV); A/RES(1541(XV); A/RES/2625(XXV).
- <sup>4</sup> It is not relevant for this work to choose among the various definitions of "people" within the context of studies on nationalism, hence our decision to assume the broadest concept, according to which "people" is a group of individuals who see themselves as a people, without any further requirements.
- <sup>5</sup> Even though experts were not directly asked about their ideological views, they were asked to include among their recommendations other experts whose position was known to be different from theirs.
- <sup>6</sup> Defined in its internal and external dimension in a previous section.
- <sup>7</sup> According to this, the mere existence of pro-independence parties in Spain would show that the political principle of self-determination is respected.
- <sup>8</sup> Experts place emphasis on the non-existence of this right in any country around the world, with the exceptions of Liechtenstein, Ethiopia, and Saint Kitts and Nevis.
- <sup>9</sup> Or national legal frameworks, regardless of whether they have a constitution or not.
- <sup>10</sup> The Spanish State.
- <sup>11</sup> The selection was limited to tweets published in the Catalan language so that we could be sure that they referred to the case study and in order to dodge the abundant contents in Spanish related to other forms of self-determination, such as those of other human groups (indigenous peoples, the Sahara, etc.) or in other fields such as gender or euthanasia.
- <sup>12</sup> Sets of terms which are semantically relevant in a text.
- <sup>13</sup> Logically, the micro-forum may have been extracted from a larger conversation (forum) in which not all tweets include "self-determination", but a decision was made to keep only those which contained that term so that we could focus on them and avoid possible drifts in the conversation. Therefore, each micro-forum is in itself a sample of a bigger forum.
- <sup>14</sup> The strategy utilised prevented potential biases in the construction of micro-forums, since it was carried out iteratively in two steps: We first built the *hot-words* (frequent words), which are the words with a high level of appearance in every tweet and whose extraction is based on their frequency of appearance range in the entire corpus. All *stop-words*, built from a group of 614 words, were filtered during this stage (Yzaguirre n.d.). In a second step, we identified within the set of dialogues (micro-forums) which

of those words could be regarded as keywords and to what extent. Or, expressed differently, we considered the entire corpus to identify the keywords in micro-forums. In our work, this technique was combined with other metrics, such as the Inverse Document Frequency (IDF\*TF), which make it easier to understand the text and the discourse. Several programs in Python language were likewise developed for the extraction and transformation of tweets, their metadata, as well as to detect emotions in tweets. With the aim of building a training corpus and reducing the dimensionality of the problem, deep networks were used to classify content by means of the Keras/Tensorflow library. Twitter's Premium API provides plenty of data, which makes it possible to cross them and to construct a more elaborate text from possible conversations which are generated from the replies (in\_reply\_to) and the aforesaid retweeting (quoted\_tweet).

- 15 LSI is successfully used in Information Systems for semantic search from heuristic methods based on the singular value decomposition (SVD) with matrix factorisation.
- 16 Geneva Affect Label Coder.
- 17 These are usual derogatory expressions referred to Spaniards uttered within the pro-independence context.
- 18 Terms and stems used to identify each category of emotion are in Catalan.
- 19 Although some of the terms in Table 2 do appear in the messages, their semantic relevance is not sufficiently significant to appear in the topic.
- 20 The experts consulted agree that Spain is objectively a full democracy. However, they also point out, subjectively and according to their respective political ideology, that its level of democracy could be improved to a greater or lesser extent. For this reason, we do not consider a tweet as disinformation when it says that Spain is not a democracy, but when that statement is grounded on the supposed lack of compliance with the UN covenants or the actual Spanish Constitution.
- 21 Candidate for Mayor of Barcelona by the political party Ciudadanos/Ciutadans in 2019.
- 22 He reacts to a demonstration in Barcelona where that right was requested for Catalonia.
- 23 The Spanish word REINO "kingdom" deliberately written with Ñ in a derogatory sense.
- 24 Imprisonment of 12 politicians and representatives of civil society for events related to the illegal referendum of 1 October 2017.
- 25 The term in the original tweet is "divertit", matching "divert\*" in Table 3, Amusement/Pleasure/Enjoyment category.
- 26 In the original tweet, "agradaria", matching "agrad\*" in Table 3, Satisfaction/Happiness/Joy category.
- 27 In the original tweet, "tranquil", matching "tranquil\*" in Table 3, Relaxation/Serenity/Relief category.
- 28 The average number of followers per user in the corpus analysed was 2841.
- 29 Calculated on an average of 30 viewings per reached user.

## References

- Asociación Española de Profesores de Derecho Internacional y Relaciones Internacionales (AEPDIRI). 2017. Declaración Sobre la Falta de Fundamentación en el Derecho Internacional del Referéndum de Independencia que se Pretende Celebrar en Cataluña. Available online: <https://web6341.wixsite.com/independencia-cat> (accessed on 16 April 2021).
- Alonso-Muñoz, Laura, Susana Miquel-Segarra, and Andreu Casero-Ripollés. 2016. Un potencial comunicativo desaprovechado. Twitter como mecanismo generador de diálogo en campaña electoral. *Obra Digital: Revista de Comunicación* 11: 39–59. [CrossRef]
- Aparici, Roberto, David García-Marín, and Laura Rincón-Manzano. 2019. Noticias falsas, bulos y trending topics. Anatomía y estrategias de la desinformación en el conflicto catalán. *Profesional De La Información* 28: 1–16. [CrossRef]
- Arbós, Xavier. 2020. Legalidad y Legitimidad en el 'Procés'. *Ideas*. Available online: <https://revistaidees.cat/es/legalidad-y-legitimidad-en-el-proces/#notes-group-00> (accessed on 1 April 2021).
- Arce García, Sergio, Tatiana Cuervo Carabel, and Natalia Orviz Martínez. 2020. #ElDilemaSalvados, análisis de las reacciones en Twitter al programa de Jordi Évole sobre Cataluña. *Revista Prisma Social* 28: 1–19. Available online: <https://revistaprismasocial.es/article/view/3312> (accessed on 15 May 2021).
- AtiENZA, Manuel. 2020. Sobre un derecho inexistente. A propósito de «Democracia y derecho a decidir» de Josep M. Vilajosana. *Eunomía. Revista en Cultura de la Legalidad* 19: 422–31. [CrossRef]
- Baeza, Yates, and Neto Ribeiro. 1999. *Modern Information Retrieval*. New York: ACM Press.
- Berger, Jonah, and Katherine L. Milkman. 2012. What Makes Online Content Viral? *Journal of Marketing Research* 49: 192–205. [CrossRef]
- Bergmann, Eirikur. 2020. Populism and the politics of misinformation. *Safundi* 21: 251–65. [CrossRef]
- Blanco Alfonso, Ignacio. 2018. Creencias, posverdad y política. *Doxa Comunicación* 27: 421–28. [CrossRef]
- Bosworth, Kai. 2019. The People Know Best: Situating the Counterexpertise of Populist Pipeline Opposition Movements. *Annals of the American Association of Geographers* 109: 581–92. [CrossRef]
- Bovi, Claudio, Luca Telesca, and Roberto Navigli. 2015. Large-scale information extraction from textual definitions through deep syntactic and semantic analysis. *Transactions of the Association for Computational Linguistics* 3: 523–43. [CrossRef]
- Buchanan, Allen. 2017. Secession. In *The Stanford Encyclopedia of Philosophy*. Edited by Edward N. Zalta. Stanford: Metaphysics Research Lab.

- Carrasco Polaino, Rafael, Ernesto Villar Cirujano, and Laura Tejedor Fuentes. 2018. Twitter como herramienta de comunicación política en el contexto del referéndum independentista catalán: Asociaciones ciudadanas frente a instituciones públicas. *Icono 14* 16: 64–85. [CrossRef]
- Centre d'Estudis d'Opinió (CEO). 2021. Encuesta Sobre Contexto Político en Cataluña. Available online: <https://ceo.gencat.cat/ca/barometre/detall/index.html?id=7988> (accessed on 10 August 2021).
- Deerwester, Scott, Susan T. Dumais, George W. Furnas, Thomas K. Landauer, and Richard Harshman. 1990. Indexing by Latent Semantic Analysis. *Journal of the American Society for Information Science* 41: 391–407. [CrossRef]
- Denia, Elena. 2020. The impact of science communication on Twitter: The case of Neil deGrasse Tyson. *Comunicar: Revista Científica Iberoamericana de Comunicación y Educación* 28: 21–30. [CrossRef]
- DiFranzo, Dominic, and Kristine Gloria-Garcia. 2017. Filter bubbles and fake news. *XRDS: Crossroads, The ACM Magazine for Students* 23: 32–35. [CrossRef]
- European Commission. 2020. Joint Communication to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions. Tackling COVID-19 Disinformation—Getting the Facts Right. Available online: <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52020JC0008&from=ES> (accessed on 1 April 2021).
- Ferreres, Víctor. 2019. Cataluña y el derecho a decidir. *Teoría y Realidad Constitucional* 37: 461–75.
- Gandomi, Amir, and Murtaza Haider. 2015. Beyond the hype: Big data concepts, methods, and analytics. *International Journal of Information Management* 35: 137–44. [CrossRef]
- García, Mario, and Liliana Alejandra Chicaíza. 2018. Brexit, paz y Trump: Enseñanzas para los economistas. *Revista de Economía Institucional* 20: 129–56. [CrossRef]
- Hameleers, Michael. 2020. Populist Disinformation: Exploring Intersections between Online Populism and Disinformation in the US and the Netherlands. *Politics and Governance* 8: 146–57. [CrossRef]
- Hernández-Santaolalla, Víctor, and Salomé Sola-Morales. 2019. Postverdad y discurso intimidatorio en Twitter durante el referéndum catalán del 1-O. *Observatorio* 13: 102–21. [CrossRef]
- Ireton, Cheryl, and Julie Posetti, eds. 2018. *Journalism, 'Fake News' and Disinformation: Handbook for Journalism Education and Training*. Paris: UNESCO.
- Kruikemeier, Sanne. 2014. How political candidates use Twitter and the impact on votes. *Computers in Human Behavior* 34: 131–39. [CrossRef]
- Lewandowsky, Stephan, Ullrich K. H. Ecker, and John Cook. 2017. Beyond misinformation: Understanding and coping with the “post-truth” era. *Journal of Applied Research in Memory and Cognition* 6: 353–69. [CrossRef]
- Llorca-Asensi, Elena, Maria-Elena Fabregat-Cabrera, and Raúl Ruiz-Callado. 2021. Desinformación Populista en Redes Sociales: La Tuitosfera del Juicio del Procés. *OBS\*Observatorio* 15. [CrossRef]
- Manning, Christopher D., Prabhakar Raghavan, and Hinrich Schütze. 2008. *Introduction to Information Retrieval*. Cambridge: Cambridge University Press.
- Marcos García, Silvia. 2018. *Las Redes Sociales como Herramienta de la Comunicación Política. Usos Políticos y Ciudadanos de Twitter e Instagram*. Castellón: Programa de Doctorat en Ciències de la Comunicació, Universitat Jaume I. [CrossRef]
- Matthes, Jörg, and Matthias Kohring. 2008. The Content Analysis of Media Frames: Toward Improving Reliability and Validity. *Journal of Communication* 58: 258–79. [CrossRef]
- Mayo, Maria. 2016. David Núñez: “Es infundado decir que hay sesgo político en Twitter”. *Expansión*. Available online: <https://www.expansion.com/economia/politica/elecciones-generales/2016/06/22/5769008f468aeb0f188b4570.html> (accessed on 15 June 2021).
- Moreso, Josep. 2020. Los shibolets del procés: Vilajosana sobre el derecho a decidir. *Eunomía. Revista en Cultura de la Legalidad* 19: 495–505. [CrossRef]
- Moreso, Josep. 2021. De secesione. The Hideouts of The Catalan Way. *Las Torres de Lucca. International Journal of Political Philosophy* 10: 47–65.
- Orriols, Lluís, and Sandra León. 2021. Looking for Affective Polarisation in Spain: PSOE and Podemos from Conflict to Coalition. *South European Society and Politics* 25: 351–79. [CrossRef]
- Osmunden, Mathias, Alexander Bor, Peter Bjerregaard Vahlstrup, Anja Bechmann, and Michael Bang Petersen. 2021. Partisan Polarization Is the Primary Psychological Motivation behind Political Fake News Sharing on Twitter. *American Political Science Review* 115: 999–1015. [CrossRef]
- Pariser, Eli. 2011. *The Filter Bubble: How the New Personalized Web Is Changing What We Read and How We Think*. New York: Penguin.
- Parmelee, John H., and Shannon Bichard. 2011. *Politics and the Twitter Revolution: How Tweets Influence the Relationship between Political Leaders and the Public*. Plymouth: Lexington Books.
- Payero López, Lucía. 2016. El derecho de autodeterminación en España: Breve explicación para extranjeros estupefactos y nacionales incautos. *Revista D'estudis Autonòmics federals* 23: 46–79.
- Pérez-Curiel, Concha, and Mar García-Gordillo. 2018. Política de influencia y tendencia fake en Twitter. Efectos postelectorales (21D) en el marco del Procés en Cataluña. *Profesional De La Información* 27: 1030–40. [CrossRef]
- Real Academia Española (RAE). n.d. Definición de Autodeterminación. *Diccionario Panhispánico de Español Jurídico*. Available online: <https://dpej.rae.es/lema/autodeterminaci%C3%B3n> (accessed on 28 February 2021).

- Rodón, Toni, Francesc Martori, and Jordi Cuadros. 2018. Twitter activism in the face of nationalist mobilisation: The case of the 2016 Catalan Diada. *Revista D'Internet, Dret i Política* 26: 15–29. [CrossRef]
- Rose, Jonathan. 2017. Brexit, Trump, and Post-Truth Politics. *Public Integrity* 19: 555–58. [CrossRef]
- Ruiz-Miguel, Carlos. 2019. Sobre la insostenible pretensión de la existencia de un «derecho de autodeterminación» para separarse de España al amparo del Pacto Internacional de los Derechos Civiles y Políticos. *Anuario Español de Derecho Internacional* 35: 103–26. [CrossRef]
- Scherer, Klaus R. 2005. What are emotions? And how can they be measured? *Social Science Information* 44: 695–729. [CrossRef]
- Srijan, Kumar, and Neil Shah. 2018. False Information on Web and Social Media: A Survey. *arXiv* arXiv:1804.08559.
- Tumasjan, Andranik, Timm Sprenger, Philipp Sandner, and Isabell Welpe. 2010. Predicting Elections with Twitter: What 140 Characters Reveal about Political Sentiment. *Proceedings of the International AAAI Conference on Web and Social Media* 4: 178–85.
- Vilajosana, Josep. 2020. Democracia y derecho a decidir. *Eunomía. Revista en Cultura de la Legalidad* 18: 375–91. [CrossRef]
- Wardle, Claire. 2017. Fake news. It's Complicated. *First Draft*. Available online: <https://firstdraftnews.org/latest/fake-news-complicated/> (accessed on 15 May 2021).
- Wardle, Claire, and Hossein Derakhshan. 2017. One Year on, We're Still Not Recognizing the Complexity of Information Disorder Online. *First Draft*. Available online: [https://firstdraftnews.org/articles/coe\\_infodisorder/](https://firstdraftnews.org/articles/coe_infodisorder/) (accessed on 15 May 2021).
- Weissenborn, Dirk, Leonhard Hennig, Feiyu Xu, and Hans Uszkoreit. 2015. Multi-objective optimization for the joint disambiguation of nouns and named entities. Paper presented at 53rd Annual Meeting of the Association for Computational Linguistics and the 7th International Joint Conference on Natural Language Processing, Beijing, China, July 27.
- Wihbey, John P. 2014. *The Challenges of Democratizing News and Information: Examining Data on Social Media, Viral Patterns and Digital Influence*. Shorenstein Center on Media, Politics and Public Policy Discussion Paper Series, #D-85; Cambridge: Harvard Kennedy School.
- Woolley, Samuel C., and Philip N. Howard. 2016. Political Communication, Computational Propaganda, and Autonomous Agents. *International Journal of Communication* 10: 4882–90.
- Yzaguirre, Lluís. n.d. Catalan Stop Words. Available online: [http://latel.upf.edu/morgana/altres/pub/ca\\_stop.htm](http://latel.upf.edu/morgana/altres/pub/ca_stop.htm) (accessed on 3 May 2021).