

An approach to the Spanish Twitter debates about Income Inequality and Poverty

A Social Network Analysis essay

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THIS IS AN ESSAY LINKED TO THE PROJECT *News, Networks and Users in the Hybrid Media System. Transformation of the Media Industry and the News in the Post-Industrial Era*, an insight on the characteristics of the network as well as the relevant actors and communities associated with the income inequality and poverty conversation on Twitter. Using Social Network Analysis to map and measure different kinds of relationships and fluxes between network nodes, and use categories of analysis of Appraisal Theory, whose main components are affect, judgement and appreciation, we arrive to several preliminary conclusions. It appears that political and institutional collectives are influencing the conversation, rather than citizens. Consequently, these Twitter spheres show an institutionalization of income inequality and poverty social media debate without opening up the conversation. The networks we analyze show a high modularity. As a result, interaction between users occurs more frequently with the same community than with other communities.

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1. INTRODUCTION

IN TIMES OF CRISIS, income inequality and poverty concerns spread faster in the public sphere. In this preliminary study, we investigate the characteristics of the network as well as the relevant actors and communities associated with the income inequality and poverty conversation on Twitter. We used SNA (Social Network Analysis) (Wasserman & Faust, 1999) to map and measure different kinds of relationships and fluxes between network nodes. This study follows previous research on digital debates on economic inequality on Twitter (Pérez-Altable et al, 2020). We use the term network as a way to think about social systems that emphasizes the interaction between the components of the system (Borgatti, Everett & Johnson, 2018). Accordingly, we focused on two periods: 18 September 2020, which the UN has declared International Equal Pay Day, and 17 October 2020, which the UN has declared (recognized since 1992) as World Poverty Day.

We also use the theoretical framework in order to do a tweet discourse analysis. For that we use categories of analysis is Appraisal Theory (Martin and White 2003). We want to analyse the terms that serve to “evaluate, adopt positions, construct textual persons or discursive identities, assume roles, negotiate relationships,

and transform intersubjective postures that are ultimately ideological into ‘natural’” (Kaplan 2004: 53). This taxonomy is based mainly by the contributions of functional linguistics (Halliday, 1975). Its categories are Attitude, Gradation and Commitment. For this paper, we’ll analyse the first one, attitude, whose main components are: Affect, related to emotions; Judgement, related to the law and the norms; and Appreciation, related to aesthetic appraisal.

2. SAMPLES AND METHODS

Our case study consisted of two samples of tweets around the debate on Twitter. Due to the limitations of the trial, we started the research with tweets published only in Spanish. Each network is built from Twitter users who participate in the hashtags. The content-oriented interactions are measured by mentions and/or retweets that connect the nodes of each network. The first sample (N=2423) we used a set of tweets that contained the hashtag #Dialaigualdadsalarial related to the International Equal Pay Day, on 18 September. We get a sample for the tweets posted from 17 to 20 September. The second sample (N= 4874) we used is based on a set of tweets that contained the hashtags observed during the day against poverty, on October 17, 2020, specifically two:

#DiaContraLaPobreza #Acabar-conLaPobreza. During both periods of debates, we observed real-time scenarios and selected hashtags accordingly. The tweets of the first sample were obtained after an order was placed with a company specialised in downloading tweets¹. The tweets of the second sample were obtained through the Twitter search API, on October 21, in order to capture the tweets that were published

on the international day against poverty and the days after. Both data files obtained were imported into the Gephi² program in order to apply the preliminary analysis and visualisation of the network based on retweets and mentions obtained. In the analysis, some elemental issues have been used to characterise the network and the actors within it based on a set of fundamental questions (Table 1).

N	Issues/Description	Main Questions
1	PageRank (Page et al, 1999). Each Twitter user is assigned a Pagerank score based on its importance in the network. According to this, important users are those with many in-links (retweets and/or mentions) from other important users in the debate.	Q1: Who are the influencers of the network and what kind of communities are related to that influence?
2	Modularity (Newman & Girvan:2004). Structure of networks is measured by modularity. Modularity measures how well a network is divided into modules (for us, communities). In networks with high modularity, nodes within community are tightly connected, while nodes between different communities are relatively unconnected.	Q2: Which is the structure of the network and how are the communities related in the conversation?
3	Distribution Force Atlas 2 (Jacomy et al, 2014). Gephi users can better interpret networks (and polarization) using ForceAtlas2, an algorithm for spatializing networks.	Q3: Does the debate seems to be visually polarized? And why?
4	Discourse Analysis. Appraisal Theory (Martin and White 2003). as a framework for categorising opinions regarding public issues.	Q4: What is the attitude highlighted in the selected messages?

Table 1. Metrics and main questions

¹ TrackMyHashtag.com

² www.gephi.org

3. RESULTS

The SNA and discourse analysis applied so far have yielded some results.

First sample analysis: #Diadelagualdadsalarial

Regarding Q1, using PageRank score, Table 2 shows us the influencers of #DialdelagualdadSalarial network in which @ONUMujeres (Organización de las Naciones Unidas) is the most important one.

N	ID	Pagerank
1	ONUMujeres:	0,1347120166
2	ONU_es:	0,08870679955
3	PartidoMIRA:	0,04733839224
4	ionebelarra:	0,03125067829
5	CINUmexico:	0,01165511693
6	balbinama7:	0,01153415668
7	UGT_Comunica:	0,00609094519
8	unodcesp:	0,005707904381
9	ONUMX:	0,005486143913
10	MujeresConfiar:	0,005365183658
11	AngelaSanchezL:	0,005123263147
12	SamiaTacle:	0,003550779829
13	XimenaPena1:	0,003308859318
14	Solidaridad1000:	0,003187899063
15	imcomx:	0,003187899063
16	OxfamIntermon:	0,003147578978
17	PNUD_ALGenera:	0,00300645868
18	MinTrabajoEc:	0,002825018297
19	CentralASI:	0,002784698212
20	Agenda2030Gob:	0,002764538169
21	ProDESC:	0,002583097786

22	ceeymx:	0,002583097786
23	ONU_Cuba:	0,002341177276
24	LinaPinzonAr:	0,00222021702
25	GPDerechoHumano:	0,00222021702
26	_NoEstasSola_:	0,00222021702
27	MujeresFedepo:	0,002099256765
28	PTnacionalMX:	0,00197829651
29	MonicaBritoRC:	0,00197829651
30	avanterafael:	0,00197829651
31	ACN_Cuba:	0,00197829651
32	MujeresAsfalto:	0,001857336255
33	podem_mataro:	0,001736375999
34	RicardoDuenasEC:	0,001736375999
35	PatiTeran:	0,001615415744
36	ONUMujeresCol:	0,001514615531
37	vocesvitalsvzl:	0,001494455489
38	AidaCerdejaC:	0,001494455489
39	ONU_RD:	0,001433975361
40	SenadoUGenero:	0,001373495233
41	LeticiaBueno_27:	0,001373495233
42	CNDH:	0,001373495233
43	SEGOB_Queretaro:	0,001252534978
44	pilar_llop:	0,001252534978
45	Laboratoriala:	0,001252534978
46	gabrieljvelasco:	0,001252534978
47	FPedroZero:	0,001252534978
48	maria_tena:	0,001131574723
49	ScotiabankPE:	0,001010614468
50	RedLopezDiaz:	0,001010614468
51	onumujeresEcu:	0,001010614468

52	MujeresMovMX:	0,001010614468
53	maryjosealcala:	0,001010614468
54	LF_Euskadi:	0,001010614468
55	garechigas:	0,001010614468
56	EspaciosPol:	0,001010614468
57	CooperacionAND:	0,001010614468
58	ContraportadaOR:	0,001010614468
59	ClauCorichi:	0,001010614468
60	cenejyd:	0,001010614468

Table 2. Sources #DesigualdadSalarial. N=60 users with higher PageRank score. In relation to users with PageRank more scored, users from 2 to 60 positions each have over 10% indegree score each.

Starting with a previous codebook developed by Odriozola-Chéné et al (2020) in the analysis of online media, we group users in categories to measure the impact of communities in the network. The following findings are observed regarding the sources of the interactions (Figure 1): "Governmental sources of a political nature" (like prime ministers) are the main actors

present in the content-oriented interaction (23%), followed by "Supranational organizations" (like ONU) (16,7%) and "Political parties/unions/and business actors" (15%) and "Non-governmental organizations (Oxfam) and other social movements" (16,7%). The network interactions is largely dominated by these sources, accounting for 71,4 % of it.

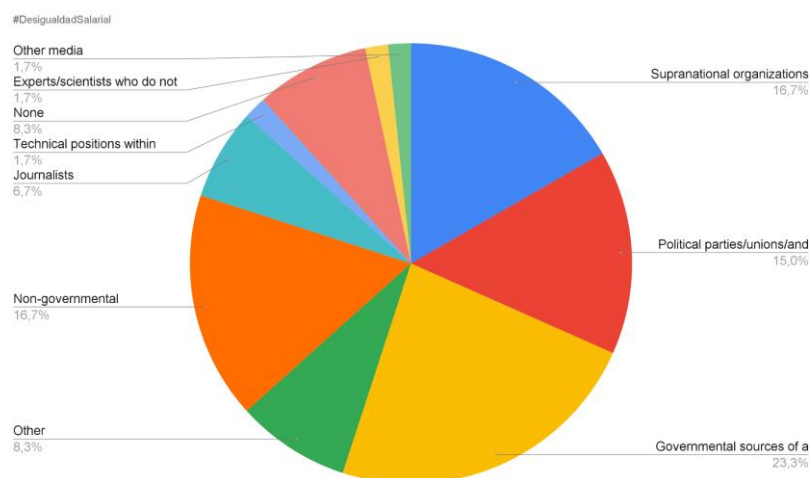


Figure 1. Sources #DesigualdadSalarial. N=50 users with higher PageRank score

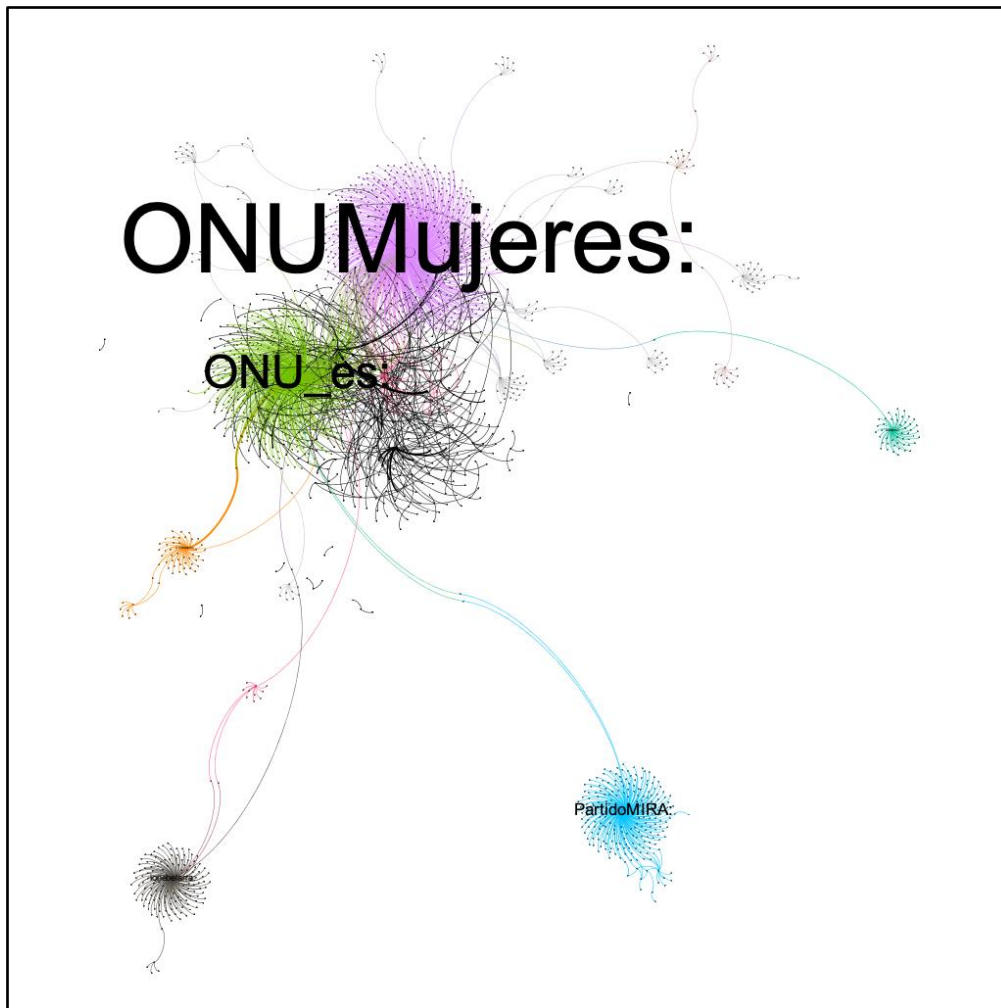


Figure 2. Network of mentions and retweets of #DialdelagualdadSalarial. Modularity: 0,795

Regarding Q2, network of mentions and retweets of #DialdelagualdadSalarial (Figure 2) presents a modularity of 0,795. As we state before modularity measures how well a network is divided into the communities. Our results show that #DialdelagualdadSalarial is a network with high modularity, so users within communities are tightly connected, while users between different communities are relatively unconnected. The content-oriented interactions seems to be

happening between members of supranational organizations (ONU Mujeres (33,23% of total members) and ONU; 23,38% of total members), between a Colombian political party (Partido Mira; 13,34%) and between a member of the Spanish Parliament (Ione Belarra; 8,29%) who is currently Spanish Minister of Social Rights and 2030, in less extent. The next communities have a less presence and have been discarded for the analysis of results.

Regarding Q3, we observe the spatializing network in order to evaluate polarization. In our case, this network seems to be not polarized. The non-polarization would be explained by two main factors. First, the apparent discursive unanimity among the few actors participating in the debate, as we explained before. Second, the practically absence of other radical political ideologies (including extreme-right parties) does not favour polarization, since a clear counterweight could be generated in this type of story, even though there is a right-wing political party (Partido Mira) in the network.

Regarding Q4, it's been analyzed those messages with the greatest number of retweets, starting with that of UNwomen, focuses on four

lawsuits that appeal to issues of the Judgment category, especially the first three. In the last one, there's a claim made in the aforementioned tweet: solidarity (Figure 3), a term that semantically can be categorized in Affect, given the underlying emotional aspect which contrasts with the others, which are perceived as a normative requirement. In Figure 4, there's a picture of the Partido Mira (from Colombia) tweet, which is appealing to Judgment at the beginning of the phrase, but to the Affect category at the end (*perjuicio para las mujeres*). Finally, in Figure 5, Politician Ione Bellara fit her message in the Judgment category related to the terms work and remunerated (*seguimos cobrado menos por trabajos de igual valor*).



Figure 3. ONU Mujeres Tweet



Figure 4. Mira political party Tweet



Aunque muchos no quieran verlo a día de hoy en España las mujeres seguimos cobrando menos por trabajos de igual valor.

Es consecuencia de asumir los cuidados o de trabajos más precarios, peor retribuidos.

Estamos trabajando para cambiarlo. #DíaDeLaIgualdadSalarial #YouCanPayIt

11:49 a. m. · 18 sept. 2020 · Twitter for iPhone

140 Retweets 7 Tweets citados 279 Me gusta

Figure 5. Spanish minister Ione Belarra Tweet

Second sample analysis: #DiaContraLaPobreza #Acabar-conLaPobreza

Regarding Q1, using PageRank score, Table 3 show us the influencers of

#DiaContraLaPobreza #Acabar-conLaPobreza network in which @sanchezcastejon (Spanish Prime Minister) is the most important one.

N	Id	Pagerank
1	Sanchezcastejon	0,06629999529
2	Inclusiongob	0,03942133362
3	Joseluisescriva	0,02605114994
4	GEMReport	0,02519977877
5	comisionadoPI	0,02425760463
6	gasco63	0,02399282894
7	UNESCO_es	0,02389525376
8	APRAMP	0,02008578459
9	CelaaIsabel	0,01641201148
10	SaveChildrenEs	0,01231139287
11	equipoGabilondo	0,01218946053
12	SaveChildrenAn	0,009594009801
13	AhoraNoticiasEs	0,009521033129
14	Desdelamoncloa	0,00945602008
15	PSCTiana	0,00775616603
16	PGN_COL	0,006902396141
17	Sareensarea	0,006514580778
18	BritosGuillermo	0,006513335453
19	SabellaMarcela	0,006513335453
20	Amnistiaespana	0,006193380637
21	PSOE_CVillalba	0,005713670054
22	Educaciongob	0,005654309852

Table 3. Tweets statistics. N=22 users with higher PageRank score. In relation to users with PageRank more scored, tweets from 2 to 22 positions each have over 10% indegree score each.

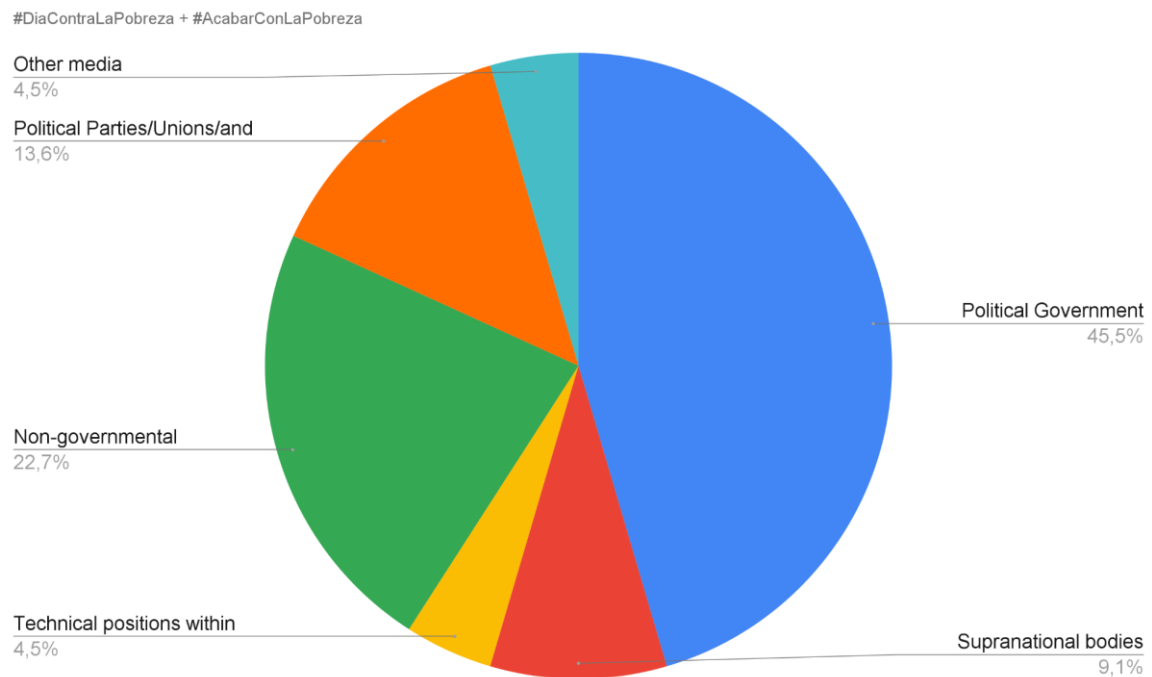


Figure 4. Sources #DiaContraLaPobreza #AcabarconLaPobreza. N=22 users with higher PageRank score

As a result of the #DiaContraLaPobreza #AcabarconLaPobreza debate, the following groups were observed. "Political Government Sources" dominate the conversation (45,5%), followed by "Non-governmental Organizations" (22,7%)

and then "Political Parties/Unions/and Business Actors" (13,6%). Combined, these sources contribute 81,8% to the network debate. There is also a significant decrease in the prevalence of the category "Supranational bodies" (9,1%) in contrast to the #DesigualdadSalarial debate (18%).

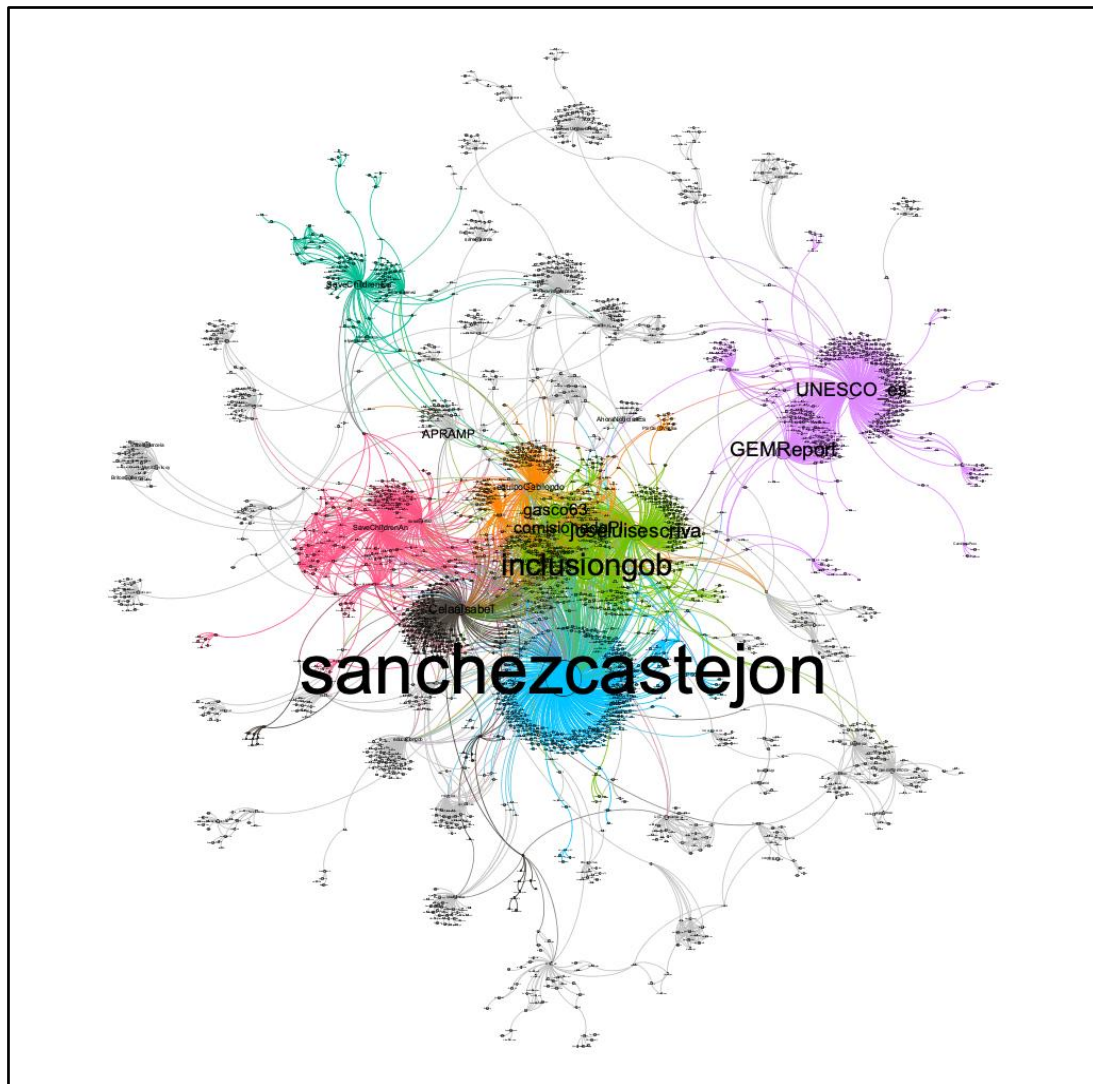


Figure 5. Network retweets³ of #DiaContraLaPobreza #AcabarconLaPobreza.

Regarding Q2, network of mentions and retweets of #DiaContraLaPobreza #AcabarconLaPobreza presents a modularity of 0,829. Our results show that this is also a network with high modularity. The conversation seems to be between supporters of Spanish prime minister (sanchezcastejon; 10,86% of

total members), between Spanish Ministerio de Inclusión, Seguridad Social y Migraciones (inclusiongob; 10,12%) and between UNESCO (@unesco and @gemreport mainly; 9,98% of total members). The next communities have a less presence in the network, and they include as ex-

³ We were only able to construct the network of retweets, not mentions, due to the limitations of the sample we obtained. Given that most interactions tend to occur through retweets, we assume that the comparison between the two networks is convincing for the characteristics of this preliminary study.

ample other Spanish ministers (ce-laisabel; 6,49%).

Regarding Q3, we found similarities in relation to #DíaDelagualdad-Salarial polarization results. This network seems to be also not polarized. The non-polarization would be explained by the same reasons: apparent discursive unanimity in the discourse of Spanish socialist politicians and supporters and supranational bodies (like UNESCO) and the clear absence of other radical political ideologies (including extreme-right parties).

Regarding Q4, we analyze each tweet separately to categorise it according to the proposed taxonomy

(Appraisal theory). We found the following ideas. Figure 6 reflects Spanish president, Pedro Sánchez, opinion. Throughout the adjectives “vulnerability and injustice”, appealing to the category of judgement. Figure 7 is an ad from the Ministry of Inclusion and Social Security which recalls that hundreds of households receive the IMV (minimum vital income), benefiting 400,000 people, it can be categorised in the Judgement rank. Finally, Figure 8 appeals to emotions (Affect rank) with the comic draw in which the shadow of a racialized child (a smile boy with a schoolbag) contrast with the reality (a poor boy carrying his few belongings in a bag).



Figure 6. Pedro Sánchez prime minister Tweet



Figure 7. Ministerio de Inclusión, Seguridad Social y Migraciones spanish government tweet



Figure 8. UNESCO mentioning GEM Report tweet

4. FINAL REMARKS

This article analyzes the income inequality and poverty debate on Twitter. In this study, we follow ideas and methods that other researchers have done (see Pérez-Altable et al, 2020). Due to the limitations of our research, we only use a few hashtags to evaluate some trends. A first point to note is that some metrics used here (PageRank, Modularity, and Distribution Force Atlas 2) are useful for understanding the influence, communities, and polarization of a social media network. We also identify for that reason Gephi as a useful free open source tool for that.

In terms of membership, both networks appear to have very similar results. It appears that collectives (politically/institutionally mainly) are influencing the conversation, rather than citizens. It is possible that citizenry participated in other hashtags or in conversations without hashtags as they were not persuaded by those collectives. These Twitterspheres appear to institutionalize income inequality and poverty discourse without promoting an open dialogue.

Consequently, these Twitter spheres show institutionalization of income inequality and poverty social media debate without opening up the conversation. Secondly, both networks show high modularity. As a re-

sult, interaction between users occurs more frequently with the same community than with other communities. It seems that those users and communities are limiting the exposure to others income inequality and poverty perspectives; each community may favor the formation of similar groups “framing and reinforcing a shared narrative” (Cinelli et al, 2021). The third observation states that networks show an absence of a polarized debate. In general, it is observed that the debate is distributed among several communities identified with similar political ideologies. It is relevant that media and/or journalists does not participate actively in both debates. Finally, the use of the Appraisal Theory (Martin and White 2003) in order to analyse qualitatively some tweets discourse stat the Judgement appeal. Almost all of them refer to legal issues regarding both problems: Equal Pay-day and the Day for the Eradication of Poverty.

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We use the term network as a way to think about social systems that emphasizes the interaction between the components. It appears that collectives (politically/institutionally mainly) are influencing the conversation, rather than citizens.

It seems that those users and communities
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Networks show an absence of a polarized debate,
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