

Curating the Public Sphere: An Online Ethnographic Study of How Op-eds Initiate Discourse on Twitter

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Abstract

Historically, the op-ed page as a unique form of journalism has been designed to embody a moderated public forum. Today, as social media revolutionizes the way news is disseminated and consumed, there exist new challenges as well as new opportunities for op-eds to initiate, facilitate, and democratize cultural and political discourse in the public sphere. As an early step to evaluate the op-ed's influence on discourse in today's world, this study takes a mixed methods approach to examine the initial reactions generated by op-eds of established news agencies on Twitter. Online observations and both qualitative and quantitative analysis were used. This work found that people are responsive to the political stance, authorship, and caption style of op-ed tweets. By contextualizing these observations in the history of op-eds, this work highlights old and new challenges that the op-ed is facing in fulfilling its purpose of promoting civil discourse. This work demonstrates a need to re-envision the op-ed format to adjust to the current technological and ideological landscape. This work aims to offer insights to the ongoing transdisciplinary exploration around the interplay of journalism and discourse in the digital space.

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1 Introduction: The Past and Present of Op-eds

Invented in the mid-twentieth century, the op-ed page was designed to embody a moderated public forum by welcoming and showcasing diverse viewpoints. While this purpose of embodiment is still emphasized and pursued today on modern communication platforms, new challenges and opportunities have emerged in reaching readerships and assessing the impact of op-eds at large.

This section will present an overview of the historical mission and challenges of the op-ed page. This history will then be put in context with how op-eds in their current form function in the world today. The juxtaposition of past and present contextualizes the goal of this research, which is to examine the evolving challenges that the op-ed faces in fulfilling its consistently stated purpose of *embodiment* a public forum, and its derivative purpose of *initiating* and *facilitating* civil discourse beyond the constraint of the page.

1.1 Past: the op-ed page as an embodiment of public forum

Since its invention, the op-ed page has carried the mission of democratizing civil discourse. Since the early 20th century, news agencies across the United States experimented with the op-ed as an innovative form of journalism that breaks out of the elitist culture among professional journalists. John Bertram Oakes, legendary journalist and an editorial editor for *The New York Times*, said in a 1954 speech, "The minute we begin to insist that every one think the same way we think, our democratic way of life is in danger" [53]. This belief echoed with the public sphere theory of German scholar Jürgen Habermas, who warned about the danger of ideological conformity in his 1962 book *The Structural Transformation of the Public Sphere* [9].

Founded upon the purpose of strengthening democracy, the op-ed page was made to embody a virtual, mediated public forum. The purpose of the op-ed page translates into its unique features. Since the early days, the op-ed page was designed to operate independently from the rest of the newspaper and include diverse, interesting, and clashing voices [53]. Diplomats, college professors, novelists, poets, and playwrights, whose writing had not appeared in serious newspapers before, were invited to contribute [53]. Not only was a multitude of professions represented, special effort was made to ensure variety in the opinions themselves. In the contentious year of 1970, Harrison Salisbury of *The New York Times* solicited opinions from Gus Hall of the Communist Party USA, as well as Robert Welch, businessman and anti-Communist political activist [53]. Additionally, the style of writing deviated from traditional news analysis, opening up to more humorous and ironic pieces as well as thought-provoking illustrations [53]. These innovative features of the op-ed page covered a broad range of interests, attracting large readerships [53].

Curating a collage of voices about controversial topics was proven to be challenging. During the early stages of experimentation in the last century, news agencies struggled with the definition of "diversity" when considering whose and which opinions to include. Right after the inauguration of *The New York Times* op-ed page in 1970, it was criticized for distorting political reality by preferring the most radical views on the left and the right [21]. In an attempt to "maintain a certain 'balance' of thinking," *The Los Angeles Times* separated their columnists into three categories: conservative, moderate, and liberal [6]. "We do not overload this page with any one ideological slant," the agency explained, even though "it is always risky to categorize writers, whose views on any given day might surprise even their most faithful followers" [6].

There also existed a common misconception that the columnists' judgments represented those of the agency itself. A 1967 editorial by *The Los Angeles Times* stated, "As our daily reminder on this page states, *The Times'* official stand is expressed only in our editorials. Although we accept responsibility of publishing divergent opinions by columnists, they are strictly the writers'—not ours" [6].

1.2 Present: continued purpose of embodiment and new challenges

Fast forward to the 21st century, according to a 2018 report by Pew Research Center, 43% of U.S. adults get news from Facebook, 21% from YouTube, and 12% from Twitter [37]. While digital platforms have significantly transformed how news is disseminated and consumed, the purpose and template of the op-ed page as an embodiment of public forum have remained mostly consistent. A 2004 editorial by *The New York Times* declared, "A page of clashing opinions... was the aim from the beginning... If you open the newspaper and find the editorial page and Op-Ed in lock step agreement or consistently writing on the same subject day after day, then we aren't doing our job" [50]. A more recent editorial in 2017 by *The New York Times* reiterated the same ideas, "Op-Ed articles are meant to push readers into considering points of view just outside their comfort zone" [55]. Also continued was the page's independence from the rest of the paper and the variety of contributors, which include regular columnists as well as outside writers [55].

As news agencies adopt new technologies and prioritize their digital presence, many old challenges are taking new shapes. In 2019, instead of flipping through the pages to arrive at a neatly, deliberately constructed hierarchy of articles and images, people access news content on websites, in news aggregator apps, on social media, and via email newsletters. The contained, controlled op-ed experience is broken down, thus bringing along new challenges for curation. In a 2011 Neiman Report, journalist and entrepreneur Steven Rosenbaum established the idea of "the curated Web." He

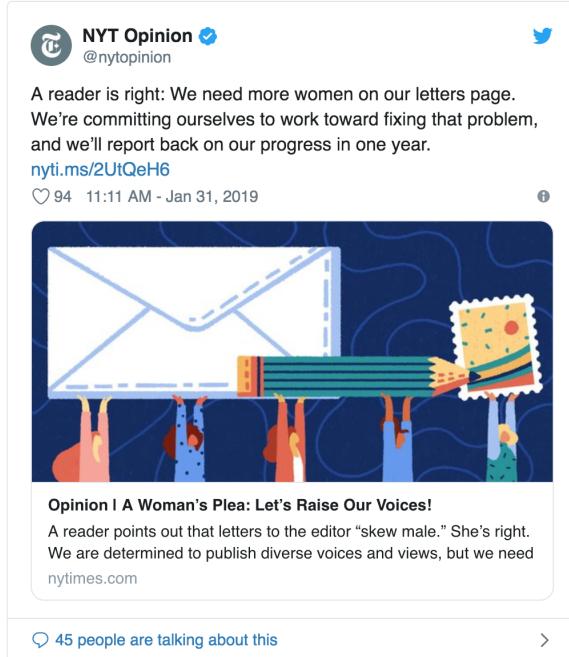


Figure 1: *The New York Times*'s initiative to include more women on its letters page.

stated, "today the idea of journalist as curator is front and center... as information gets messier and noisier, those who possess the skills to recognize important stories, find themes, provide context, and explain the significance of pieces of information will be critically important" [47]. With the internet evolving, the tasks of reaching and engaging readerships become increasingly complex and require continuous adjustment.

As public awareness on diversity has progressed since the 20th century, readers are pointing out inadequacies in representation on the op-ed page. As of April 2019, 9 out of 54 opinion writers for *The Washington Post* are people of color, and 18 out of the 54 are female. For *The New York Times*, 4 out of 17 columnists are people of color, and 5 are female. In response to the demand of its readers, *The New York Times* started an initiative to include more women on its letters page [3]. There are also grassroots efforts such as the OpEd project, "a social venture founded to increase the range of voices and quality of ideas we hear in the world," which collaborates with universities, think tanks, foundations, nonprofits, corporations and community organizations to empower under-represented experts in the media industry [2].

In addition to the challenges with diversity, news agencies also struggle with partisanship. The opinion sections of established news agencies today are continuing their efforts in including political opinions across the spectrum. Among the opinion writers for *The Washington Post* as of April 2019 were a former Republican congressman, the president of an conservative think tank, and a democratic socialist. Widely viewed as a

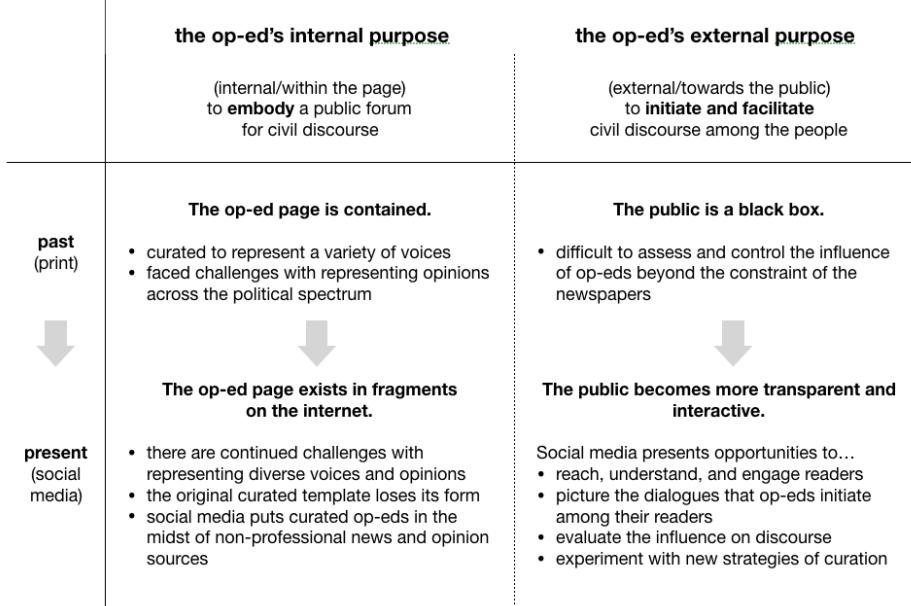


Figure 2: The op-ed's internal and external purposes and how they have evolved since the popularization of social media.

liberal news source, *The New York Times* has published pieces by President Vladimir V. Putin of Russia, the Blackwater founder Erik Prince, and a piece questioning the science behind climate change [55]. However, liberal media has been accused of simply including "token conservatives" to strike a superficial balance in covering the political spectrum [31] [13].

In recent years, social media and the society at large have suffered significantly from the proliferation of trolls, fake news, disinformation, and algorithmic manipulation [27]. Even though traditional news outlets are some of the most followed and influential accounts on social media, the pieces they share are put in juxtaposition with content by citizen journalists and news aggregators who do not always follow fair and ethical journalistic conduct. Exposed to news of varying quality, readers are left to decide on the accuracy and fairness of all the opinions available, and news curators have little control over their choices.

1.3 New opportunities in the age of social media

The current political landscape and the vast, opaque, and elusive nature of social media complicate the op-ed's goal of embodying a moderated space for civil discourse. Meanwhile, social media greatly expands the op-eds' sphere of influence, by making the public more reachable, transparent, and interactive. It opens up the conversation

channel between news curators and readers, and among readers themselves. Multi-directional communication leads to new opportunities to fulfill the op-eds' derivative purpose—initiating and facilitating public dialogues with curated content, democratizing public discourse beyond the constraint of the page. The power of social media also presents unprecedented opportunities for a deeper understanding of readerships. Before the popularization of social media, the public was like a black box. Nowadays, large-scale platforms such as Twitter help to visualize how people react to op-eds, allowing for more accurate assessment of their actual influence on discourse.

A greater understanding of how people experience and react to op-eds contributes to the ongoing exploration of journalism's ever-evolving role in the public sphere. In today's world, journalism exists in an exploded space of information, and there is an urgent need to re-evaluate its function in society and explore new, effective curation techniques for initiating and facilitating civil discourse in the internet space. Under the influence of social media, it is found that op-eds remain an effective influencer of public opinion [15]. It is worth exploring how op-eds can take advantage of the affordances of social media to encourage meaningful dialogues among wider audiences; and whether social media can become a more civil space for social and political discussions under the mediation of op-eds.

It is also important to mention the parallel between the metaphorical promises of the op-ed and social media. As discussed earlier, the op-ed page was created to simulate a robust, dialectic public sphere. Social media, on the other hand, has been conceptualized with the "marketplace of ideas" metaphor, where "truths will flourish and falsity will fail" [49]. This metaphor is proven to be false, since social media is never a free marketplace due to complicating factors such as the irrationality of individuals and manipulative forces damaging the freedom of speech [26]. However, these metaphors highlight a shared ideal and commitment to strengthening democracy through equalizing the field for public discourse, suggesting a potential for social media and op-eds to amplify each other's power.

More engagement with and appreciation for op-eds can potentially bring far-reaching benefits to the media industry, which has experienced moments of crisis in recent years. In 2018, over a thousand journalists were laid off by major news organizations such as BuzzFeed, HuffPost and Gannett [16]. Current politics has also induced increasing distrust towards the press. Gaining new knowledge on how to encourage positive discourse around news raises the hope that the public will re-establish trust for the media industry.

1.4 This work

Taking advantage of the power of social media for understanding readers, this work aims to examine how the op-ed influences discourse on social media and whether it is

fulfilling its external purpose of initiating public discourse. This work focuses on the immediate reactions that op-eds initiate in their readers. An established behavioral platform that provides easy-to-use tools for data collection, Twitter was used as the main platform of observation. Data representing users' immediate responses to op-eds shared by six major English-language news agencies was collected. This work employs both high-level automatic measures and low-level case studies to paint a multi-angled picture of the various reaction patterns around op-eds on Twitter. On the high level, general sentiments towards op-eds were evaluated, and the reaction networks around op-eds were visualized. Case studies explored how the content (political stance) and presentation (caption and authorship) of op-ed tweets correlate with the reaction patterns discovered on the high level.

This work takes a starting step to re-evaluate how the traditional op-ed template functions in today's world, what complicates its goal of promoting civil discourse, and what is the room for adjustment and growth. By offering snapshots of the current reality, this work aims to generate hypotheses for future in-depth investigation and inspire improvement upon the existing op-ed format to better cater to the technological and ideological landscape of the contemporary world.

1.5 Outline

This paper will first review existing works in the intersection of journalism and social media. Then, this paper will justify the choice of the online ethnographic approach and describe the data collection and analysis process. Next, this paper will present the findings of high-level observations and case studies. Lastly, this paper will offer a comprehensive discussion of the results, followed by a reflection on the limitation of this research and directions for future inquiry.

2 Related Works

This work exists in the intersection of internet studies and journalism, drawing from knowledge in academia, think tanks, and the media industry. Scholars in the past have studied Twitter extensively as a behavior platform because of the indispensable role it plays in modern-day communication as well as its functionality as a fertile ground for exploring social networks, discourse, and disinformation. Within the field of Twitter studies, there has been an increasing focus on the platform's influence on journalism. This section will first review works in Twitter studies, followed by those focusing more specifically on journalism in the context of social media.

2.1 Twitter studies

With its large user population and unique affordances, the analysis of Twitter has been established as a foundational program of work in the field of human-computer interaction. Adopting theories and methodologies from psychology, cognitive science, linguistics, sociology, and more, Twitter studies has been viewed as an essential field of work for exploring how humans communicate via technologies today and what kind of new social orders virtual communication platforms may engender [54]. Large-scale qualitative and quantitative studies on the "Twittersphere" have found behavioral patterns and social network patterns that are distinct from other communication environments, proving the need to study Twitter as its own field of work [32].

Researchers in the past have studied individual behaviors on Twitter and how individual behaviors influence information flow on the community or platform level. Studies in the past have explored the motivations behind and the influence of post, retweet, quote, mention, reply, and other features on Twitter. Gerimella found that the addition of the "quote-retweet" feature increased political discourse and information diffusion [19]. Kim and Yoo explored how emotions and pronouns in a tweet influence the rate of retweets and replies that it generates [28]. Lab experiments showed that people are likely to adapt their forwarding behaviors on social media based on their audiences' interests and the information value of the message [48]. Porten-Cheé also contested the "spiral of silence" theory in the context of Twitter, and found that individuals who see themselves in the minority do express their opinions, instead of falling silent [43].

Twitter also provides a new space for exploring information influence. Li analyzed different social influence methods and social influence evaluations [36]. Riquelme and Gonzalez-Cantergiani contributed a meta-analysis of Twitter influence measures and additional measures on popularity and activity [44]. Park studied the characteristics of opinion leaders on Twitter [42]. Lerman studied the effect of latent network structures on information flow on Twitter and Digg [35]. Romero validates the "complex contagion" principle from sociology by observing the way hashtags spread on Twitter [46].

Echo chambers are a common phenomenon on Twitter, reflecting a certain polarizing and antagonizing discourse culture in the society at large. Researchers have studied the formation and constitution of echo chambers on Twitter. Colleoni compares the structures of political homophily among Republicans and Democrats on Twitter using social network analysis and machine learning [14]. Barberá studied echo chambers formed in social media conversations about political and non-political national issues [5]. Goldie discovered the presence of echo chambers in policy debates [23]. Bessi classified the personality traits of users who are active in contained echo chambers on Facebook [8]. Williams compared echo chambers with open forums in climate change discussions on Twitter and analyzed the emotions and attitudes prevalent in these

different discourse networks [57].

2.2 Journalism and social media

The influence of social media on journalism has been frequently studied in recent years. Pew Research has published a report on how Americans use social media for news in 2018, as well as how common biases and concerns relate to demographics and political views [37]. Many new experiments and commentaries on digital journalism are articulated and published regularly by the Neiman Lab. Media bias, a topic that has been explored since the beginning of journalism, is being put in a new light [39]. In the contemporary journalism landscape marked by increasing antagonism and power struggles, scholars argue for a higher need for news professionals to develop and contextualize arguments [11].

Methodologies of social media studies have been employed to examine behaviors of news consumption online. Oeldorf-Hirsch's study on Facebook found that the social affordances of the site has a significant influence on user involvement with news content [40]. Kwak observed that a majority of trending topics on Twitter are headline news or persistent news [32]. On the level of individual news sharing behaviors, it was found that social media users who have received prior gratifications from information seeking, socializing, entertainment, and status seeking are more likely to share news online [33]. An online survey of 1600 Canadians showed that two-fifths of social media users get news from people they follow, while one-fifth from news agencies or journalists [24]. Additionally, news sharing behaviors on social media shine light on individual politics. The use of social media for information seeking can indicate an individual's civic engagement and political participation [58].

The proliferation of fake news and disinformation has far-reaching impact on political systems around the globe, and it has thus become a frequent subject of research. Golbeck contributes a dataset of fake news and satire stories that are manually labeled and verified, as well as an initial content analysis [22]. Bedard found correlation between sociodemographic factors and the ability to distinguish fake news from satire [7]. Researchers have contributed works to automatically distinguish fake news from real news [51] and to understand the potential for communities online to detect and combat fake news among themselves [4] [30].

2.3 This work

Building upon existing works in the intersection of journalism and social media, this work centers around a specific type of journalism: op-eds. Op-eds have been extensively studied in the fields of journalistic practice and communication but rarely in the context of social media. Studies have explored how people select news based on opinions,

and whether opinion pieces enforce ideological segregation [20] [18]. In addition to considering the correlation between op-eds and the opinion of the user, this work takes a more open approach by looking at an op-ed tweet’s presentation, authorship, and other factors that might affect how people react. We consider features surrounding the presence of an op-ed on Twitter, many of which are choices that op-ed curators might have actively made, such as how an op-ed tweet is captioned and who contributed the piece. By putting these observations in context with the op-ed’s history and purpose, this work sets up for a meta-discussion of the societal role of op-eds and invites more in-depth explorations in future works.

3 Methods

This work uses online ethnographic methods to understand interactions between Twitter users and op-eds shared by established news outlets. The reason for taking an online ethnographic approach is for its advantage in “[looking] beyond amounts and distributions,” and “[unearthing] the deeper reasons for behaviors and sentiments (i.e. ‘why?’)” [52]. Modern communication technologies like Twitter cultivate rules, values, cultures, and communities, which deserve close observation and in-depth contextualization which quantitative methods alone are insufficient to realize. The use of qualitative analysis helps avoid making assumptions about individual behavior patterns and community trends that have been proven in “real-world communities” but are not necessarily true on the internet. Combining qualitative methodologies and technological means, the online ethnography perspective offers a unique interdisciplinary framework for in-depth, comprehensive analysis of large-scale internet communities.

Following the online ethnography framework outlined by Jörgen Skågeby in 2011, this section will first declare the researcher’s position and knowledge with respect to the studied community and her way of “entering” the virtual community [52]. Then, this section will describe the data collection and analysis process, which includes a) automatically querying and analyzing public Twitter data around six major English-language news agencies over a 1-month period, and 2) manual observations that zoom in on two specific news agencies over an 11-day period. The combination of automatic and manual observations serves to both make general observations on community-wide patterns, and discover relations between specific behavior patterns and the content and presentation of op-ed tweets. On the high level, we evaluated general sentiments towards op-ed tweets and visualize the reaction networks around them. On the low level, we used case studies to explain how the visible features of op-ed tweets correlate with the reaction patterns discovered on the high level.

3.1 Researcher self-declaration and entry

The main researcher of this work is a frequent consumer of English-language news and has been an active Twitter user since January 2012. To bypass personal preferences and preference-based algorithmic recommendations, a new Twitter account @Joyce-WangNews was set up for the purpose of data collection and online observation.

This account follows 53 news agencies. Created for the purpose of observation rather than interaction, it does not engage with any other Twitter account via likes, retweets, quotes, or direct messages.

3.2 Data collection, preparation, and analysis

All tweets collected are public data accessed either through the Twitter Standard Search API, or through manual collection (copy-and-paste) by the researcher. Two different approaches were taken for the collection and analysis of data.

3.2.1 High-level, automatic data collection and observation

To analyze the general sentiments towards op-ed tweets and what constitute the interaction network around them, all retweets, replies, and quotes around six established English-language news agency were collected over a 1-month period from 1/18/2019 to 2/18/2019.

The six news agencies selected are *The New York Times*, *Al Jazeera English*, *The Washington Post*, *NBC News*, *The Wall Street Journal*, and *China Daily* (shown in Figure 3). These accounts were chosen because they are prominent, established news agencies with global readerships. They all use English as their primary language. They are currently active accounts with a large Twitter following. They also use clear textual identifiers in the caption to indicate whether a tweet contains a link to an op-ed. For example, @nytimes uses “In Opinion” as the marker, while @AJEnglish uses “#AJOpinion.”

This work used a set of custom Python scripts which adapted the Twitter Standard Search API and the Tweepy library [45] to query tweets based on news agency handles. This method of collection was not exhaustive because the Standard API only searches against a sampling of recently published tweets. The query also occasionally collected tweets that were irrelevant to the target news agencies. This issue was resolved by filtering out any tweet that was neither a retweet, quote, reply to a relevant news tweet nor the news tweet itself. Then, all news tweets were separated into the *opinion* network and the *non-opinion* network, based on whether it is linked to an op-ed. The textual markers used by the six news agencies made the task of categorizing straight-forward.

	Tweets	Following	Followers	Likes	Active Since	Opinion tweet identifier
The New York Times	356k	888	43.2M	17.8k	March 2007	"In Opinion", or the mentioning of @nytopinion
The Wall Street Journal	273k	1126	16.5M	1238	April 2007	"Opinion:"
The Washington Post	311k	1516	13.6M	4568	March 2007	"Opinion:"
NBC News	202k	1767	6.49M	767	March 2008	"Opinion "
Al Jazeera English	226k	228	5.13M	3942	April 2007	"#AJOpinion"
China Daily	92.6k	485	3.64M	253	November 2009	"#Opinion:"

Figure 3: Twitter accounts of six established English-language news agencies were selected for data collection.

We measured the sentiments in replies and quotes in this dataset using VADER, an open-source lexicon and rule-based sentiment analysis tool that is specifically attuned to sentiments expressed in social media [25]. We also performed network analysis on the retweet/reply/quote networks using ORA [10], a dynamic meta-network assessment and analysis tool developed by the CASOS Center at Carnegie Mellon University. The results of these experiments will be discussed in the next section.

3.2.2 Case studies with @nytopinion and @postopinions

Automatic measures enable a group-level view of users' reactions to op-eds but are insufficient for illustrating the targets of these reactions or for making more nuanced observations. To complement the automatic measures and provide possible explanations for the results of high-level analysis, this work conduct case studies to zoom in on what Twitter users say in their replies to op-ed tweets, and explore connections between the presentation of a tweet and how people react to it.

The Twitter accounts of *The New York Times'* opinion section (@nytopinion) and *The Washington Post's* opinion section (@postopinions) were selected as the subjects of case studies. These accounts share op-eds, editorials, columns, and reader submissions from the Opinion sections of *The New York Times* and *The Washington Post* respectively. They have fewer followers than the main accounts, which makes manual observation more manageable.

The data collection process was entirely manual and involved the author recording tweets on the timeline of the two selected accounts over the 11-day period from 3/3/2019 to 3/13/2019. Only tweets with at least 50 replies were recorded. In total, 26 tweets by @nytopinion and 20 tweets by @postopinions were recorded.

It is important to note that the news agency accounts studied in this work do not tweet in a single, consistent format. In the case of @nytopinion and @postopinions, most tweets contain a link to an opinion article on the agency's website, while others

may be an image, a video, a retweet, or the start of a thread. Although op-ed is the format that this work focuses on, we recognize that opinion content has evolved significantly since the page was invented, and a great variety of formats now serve the same purpose as op-eds did before. Thus, any tweet not written by members of the editorial board are included in this dataset.

To quantify reactions, the numbers of replies, retweets, and likes of each tweet were recorded. Since reply implies reaction while retweet implies endorsement, the reply-to-retweet ratio was calculated as a measurement of the amount of reaction [29].

For each recorded tweet, the author read the linked article to ensure an accurate understanding of the writer’s actual ideas and stance. The author also selected a random sample of 20 replies for each recorded tweet for qualitative analysis. We examined the correlation between people’s reaction and the caption style, political stance, and authorship of the tweet. Each op-ed tweet was labeled based on their caption style (article title, quote, author’s anecdote, etc.). Each tweet was also labeled as either *left-leaning*, *right-leaning*, or *unclear*, to explore correlations between the tweet’s perceived political stance and people’s reactions. The labeling was based on the researcher’s own judgement and understanding of the current political climate in America, as well as data provided by ISideWith [1], a voting guide website. Any article criticizing Republican politicians were labeled as left-leaning, and any criticizing Democratic politicians as right-leaning. Additionally, the author of each article was recorded for observations about how authorship relates to user reactions.

4 Results

Through high-level observations, we found overall negative sentiments towards op-eds on Twitter. Journalists and news agencies play influential roles in the retweet/quote/reply networks around op-eds. In the case studies, we observed that there is wide-spread negative sentiments targeted at journalists and news agencies, especially those who are more well-known. When the op-ed’s caption seems to take a stance that differs from the news agency’s own political leaning, it generates more reactions as well as criticisms towards the author and the agency. In general, visible information in the caption plays a significant role in influencing Twitter users’ response to an the tweet.

4.1 General sentiment

Observation 1: The general sentiment towards op-eds is negative.

To quantitatively characterize the sentiment towards op-eds, we automatically calculated the percentage of replies and quotes that contain certain linguistic features, such as the use of cuss-words, all-cap words, first-person pronouns, second-person pro-

Quotes to Opinion Tweets

	# of quotes	with cuss words	with emoticons	with all-caps words	with first-person pronouns	with second-person pronouns	average sentiment scores
@AJEnglish	1408	9.38%	2.49%	67.61%	41.97%	14.63%	0.0376
@washingtonpost	28439	9.27%	1.78%	83.04%	21.99%	13.14%	0.0151
@ChinaDaily	54	11.11%	1.85%	51.85%	33.33%	1.85%	-0.0072
@nytimes	4945	16.12%	2.91%	82.12%	19.68%	6.21%	-0.3452
@NBCNews	2322	18.91%	1.98%	72.78%	19.85%	13.82%	-0.0323
@WSJ	5071	12.60%	1.12%	79.55%	23.27%	11.12%	-0.0755
average		12.90%	2.02%	72.83%	26.68%	10.13%	-0.0679

Quotes to Non-opinion Tweets

	# of quotes	with cuss words	with emoticons	with all-caps words	with first-person pronouns	with second-person pronouns	average sentiment scores
@AJEnglish	39921	18.46%	8.90%	69.82%	20.42%	9.59%	-0.0491
@washingtonpost	392545	19.13%	4.33%	82.47%	25.65%	12.01%	-0.0571
@ChinaDaily	5992	19.48%	5.61%	52.69%	14.05%	9.36%	-0.0003
@nytimes	485327	22.15%	1.65%	81.86%	31.01%	8.96%	-0.0853
@NBCNews	305077	14.01%	1.62%	83.10%	15.25%	11.95%	-0.0448
@WSJ	77326	11.02%	1.46%	81.02%	26.16%	15.79%	0.0108
average		17.37%	3.93%	75.16%	22.09%	11.28%	-0.0376

Replies to Opinion Tweets

	# of replies	with cuss words	with emoticons	with all-caps words	with first-person pronouns	with second-person pronouns	average sentiment scores
@AJEnglish	38	18.42%	5.26%	13.16%	18.42%	13.16%	0.0191
@washingtonpost	443	20.54%	1.81%	22.12%	16.70%	12.87%	-0.1432
@ChinaDaily	1	0.00%	0.00%	100.00%	0.00%	0.00%	0.0000
@nytimes	34	8.82%	0.00%	20.59%	11.76%	8.82%	-0.0106
@NBCNews	292	17.47%	4.45%	45.21%	26.37%	28.42%	-0.0752
@WSJ	100	15.00%	3.00%	47.00%	17.00%	12.00%	-0.0915
average		13.38%	2.42%	41.35%	15.04%	12.55%	-0.0502

Replies to Non-opinion Tweets

	# of replies	with cuss words	with emoticons	with all-caps words	with first-person pronouns	with second-person pronouns	average sentiment scores
@AJEnglish	40158	18.83%	5.14%	27.80%	23.38%	16.61%	-0.0035
@washingtonpost	498117	16.94%	3.10%	31.57%	25.12%	20.63%	-0.0236
@ChinaDaily	12211	12.38%	5.84%	22.24%	17.61%	11.10%	0.1275
@nytimes	626254	15.88%	3.64%	34.86%	26.68%	20.82%	-0.0194
@NBCNews	462068	17.66%	3.67%	32.75%	26.21%	21.13%	-0.0354
@WSJ	166457	14.36%	4.28%	39.20%	25.94%	21.58%	0.0099
average		16.01%	4.28%	31.40%	24.15%	18.65%	0.0092

Figure 4: Quotes and replies to opinion tweets in comparison with those to non-opinion tweets. High percentage and low sentiment scores are marked in darker colors.

	Number of op-ed tweets	Number of tweeters	Number of verified tweeters	Number of news agency tweeters	% of journalists or agencies in “super spreaders”	% of journalists or agencies in “super friends”
AJEnglish	10127	7532	55	3	42.9%	40.0%
ChinaDaily	680	516	4	0	28.6%	0.0%
NBCNews	18687	11921	278	20	42.9%	33.3%
The New York Times	15683	13133	319	3	33.3%	12.5%
WashingtonPost	64276	40958	568	20	50.0%	44.4%
WSJ	13754	10369	167	3	33.3%	14.3%

Figure 5: The retweet/quote/reply agent networks around opinions tweets by six news agencies.

nouns, and emoticons. We also calculated the average sentiments in these tweets. The results are shown in Figure 4.

The results were compared in a 2 (replies v.s. quotes)-by-2 (opinion v.s. non-opinion) matrix. We observed negative emotions and the use of personal and conversational tone for both op-ed tweets and non op-ed tweets. The differences between op-ed tweets and non op-ed tweets are minor. The differences are inconsistent between quotes and replies.

As shown in Figure 4, the average sentiment is either negative or minimally positive. The reactions to opinion tweets generally contain fewer cuss-words and fewer emoticons than non op-eds, which suggests that the emotions exhibited towards op-ed are less strong. First-person and second-person pronouns imply a conversational tone and a degree of self-involvement. Quotes of op-eds tweets use more first-person pronouns but fewer second-person pronouns than quotes of non op-ed tweets. Replies of op-eds tweets use fewer first-person pronouns and fewer second-person pronouns than replies of non op-ed tweets.

Despite the lack of consistencies, there are a few cases worth noting. Looking at the row illustrating quotes to opinion tweets by @AJEnglish (Figure 4, first table, first row), we can see that there are relatively high numbers of tweets which use first-person and second-person pronouns. The average sentiment is positive and the number of tweets using cuss-words is relatively low. This suggests the possibility that @AJEnglish initiate conversations where users speak in a more personal, non-aggressive tone.

Another case is the replies to opinion tweets by @NBCNews (Figure 4, third table, fifth row). The combination of high cuss-word usage, negative sentiment, and high usage of first-person and second-person pronouns reflects a high degree of neuroticism and self-involvement [56]. It might be the case that op-eds by @NBCNews initiate conversations marked by criticisms and aggression.

4.2 Twitter agent networks

We analyzed the identities of key influencers in the retweet/quote/reply networks of the six agencies and visualized their influence via network graphs.

Observation 2: News agencies and journalists are top influencers.

News agency and journalist accounts play influential roles in the op-ed networks, acting as *super spreaders* and *super friends*.”

For each agency, we ranked all tweeters based on the following metrics. A tweeter is a *super spreader* if it is ranked in top-3 of any of the following categories.

- Often Mentioned/Retweeted by Others (out-degree centrality)
- Iteratively Mentioned/Retweeted by Others (page rank centrality)
- Often Mentioned/Retweeted by Groups of Others (member of large k-core)

A tweeter is a *super friend* if it is ranked in top-3 of any of the following categories.

- Mentions/Retweets Often (total degree centrality)
- Often Mentions/Retweets with Many Others (total degree centrality, unweighted)
- Mentions/Retweets in Cliques (member of many cliques)
- Mentions/Retweets in Groups (member of large k-core)

As shown in Figure 5, in all networks, at least one news agency or journalist account is a super spreader or a super friend.

The influential role of news professionals in the discourse networks can be further illustrated using network visualization. For example, Figure 6 shows *The Washington Post’s* and *The Wall Street Journal’s* retweet agent networks, where each node represents a distinct Twitter account and each edge represents a retweet between the two accounts. Media industry professionals such as journalists, columnists, and TV show hosts play visibly central roles, illustrating that they get retweeted the most and have a wide reach.

The central role news professionals play in broadcasting op-eds highlight their power in spreading ideologies and affecting discourse. This finding combining with earlier observations about sentiment and language raises the question of whether the negative emotions are aimed at the news professionals, and whether their presence and actions directly contribute to negative emotions.

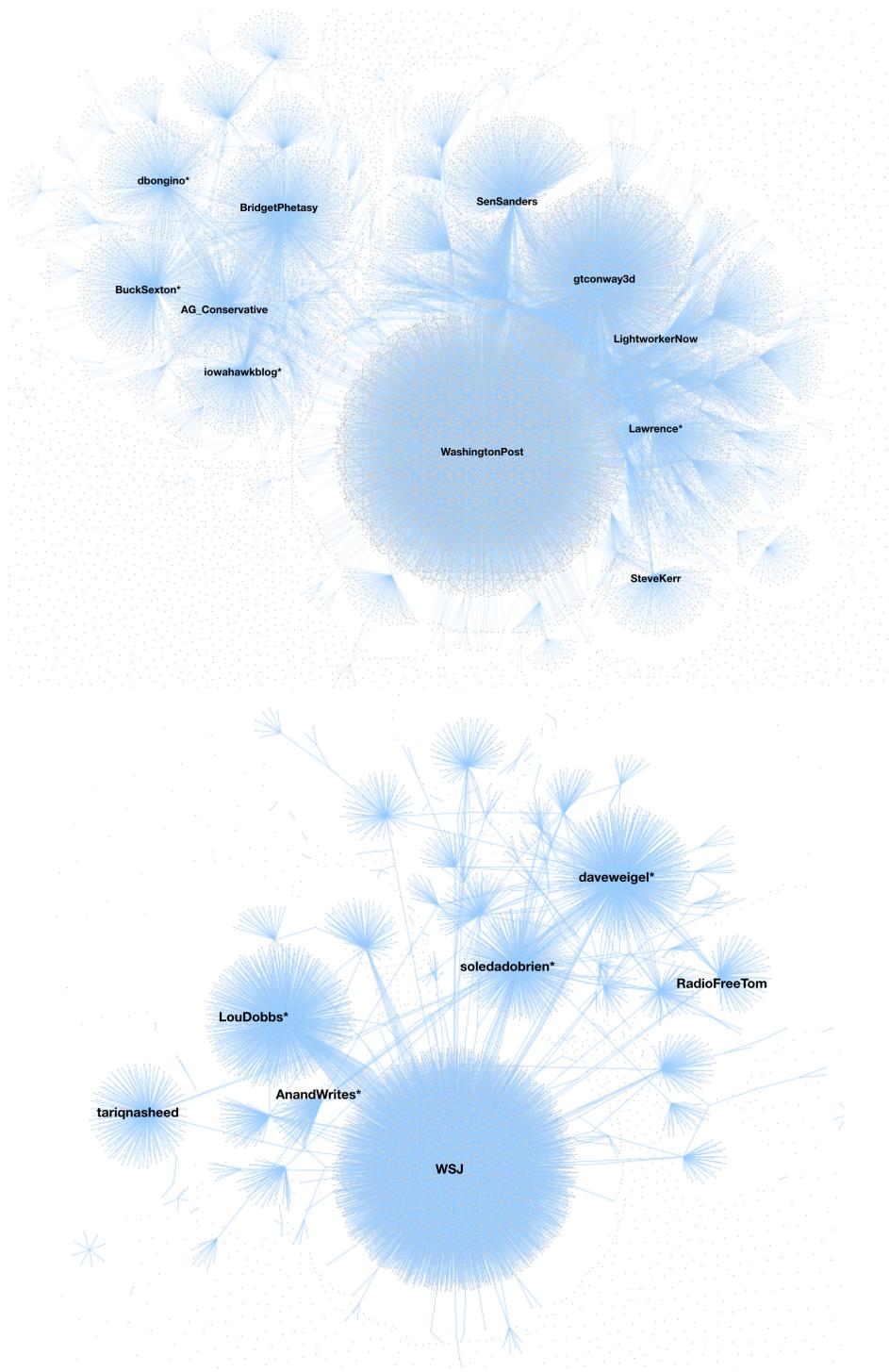


Figure 6: *The Washington Post's* and *The Wall Street Journal's* agent retweet networks. Each node represents a distinct Twitter account and each edge represents a retweet between the two accounts. Twitter handles with * are journalists, columnists, or TV show hosts.

	# of replies across all six agencies	with cuss words	with emoticons	with all-caps words	with first-person pronouns	with second-person pronouns	average sentiment scores
by agents who replied to one agency	844	18.25%	2.73%	31.87%	18.96%	17.30%	-0.1096
by agents who replied to multiple agencies	64	20.31%	4.69%	32.81%	29.69%	21.88%	-0.0263

Figure 7: Sentiments of tweeters who replied to multiple agencies in comparison to the sentiments of those who replied to only one agency.

There is also the possibility that some agents in the networks are "trolls" who regularly post inflammatory messages that target at journalists and news agencies. To explore this possibility, we compared the sentiments of agents who replied to multiple agencies and the sentiments of those who replied to only one agency. As shown in Figure 7, agents who reply to multiple agencies use more cuss words, emoticons, all-cap words, and first- and second-person pronouns. These people express negative and stronger sentiments across different news sources, which is a troll-like behavior.

4.3 Case studies

Case studies suggest that Twitter audiences' reaction to an op-ed is linked to its authorship, the stance implied in the caption, and the style of the caption. There exist wide-spread criticisms towards well-known opinion writers and news agencies in the replies. We also observed that people's reactions to a tweet reflect a certain familiarity with and expectation for the author and the agency in terms of their politics. When a tweet containing an opinion piece does not seem to align with what is believed to be the outlet's political leaning, it generates more reactions as well as criticisms towards the author and the agency. The specific language in people's replies also differ based on how a tweet is captioned.

Observation 3: Negative sentiments often target the author or the news agency.

In general, the opinion tweets we found in both the @nytopinion and @postopinions datasets received a considerable amount of criticisms towards the writer of the piece and the news agency that published it. For the purpose of this study, we marked a reply as "targeted criticism" if it contains negative comment or abusive language that directly addresses the author or the agency, rather than the opinion itself. Three example replies are shown in Figure 8, where the first one is not a targeted criticism and the other two are. In the dataset of 26 tweets by @nytopinion, on average, 3.1 out of 20 replies to a tweet are targeted criticisms. In the dataset of 20 tweets by @postopinions, on average, 2.9 out of 20 replies to a tweet are targeted criticism.



Figure 8: replies to a tweet by *The Washington Post* columnist Henry Olsen, which is captioned “Wake up Democrats! Ilhan Omar is your Steve King: Deal with her anti-Semitism before it’s too late.” The first reply is not a targeted criticism. The second reply is a targeted criticism towards the author, and the third is towards the news agency.

Observation 4: User replies reflect their knowledge and opinion of the author outside the context of the tweet.

The New York Times and *The Washington Post* both have well-known contributors, and the replies to their pieces reflect the audience’s familiarity with their work and stance. In the @postopinions dataset, there are two pieces written by public-figures: one by Cynthia Nixon titled “Mike Pence isn’t ‘decent.’ He’s insidious.” and another one by James Comey titled “Republicans are wrong. Transparency is possible in the Mueller investigation.” Both discussed topical subjects and were originally posted via their personal Twitter accounts and then retweeted by @postopinions for a wider audience. Figure 9 and 10 provide examples of replies to these tweets.

It was noticed that many reader replies referred to these well-known authors’ previous activities and work, which were not necessarily relevant to the op-ed linked in the tweet. In Figure 9 on the left, a user expresses their thankfulness towards Cynthia Nixon’s political campaign in 2018. In Figure 10 on the left, a user talks about James Comey’s book; on the right, a user criticizes Comey’s actions in previous events.

Users also react directly to renowned columnists. In an editorial by *The New York Times* in 2017 titled “The Op-Ed Pages, Explained,” James Dao, the Op-Ed editor overseeing the daily columnists, described the columnists as “the pillar of the opinion section... they have huge fan bases and they’re loyal fans... If they go missing one week for vacation, people write us about it” [55].

While some columnists have fan bases, they might also have groups of readers who hold consistently negative opinions of them and their views. Some of these negative views are reflected in the replies to their tweets. Two columnists with such negative followings that stood out in our observation was Max Boot for *The Washington Post*



Figure 9: Replies to Cynthia Nixon’s tweet captioned “Mike Pence isn’t ‘decent.’ He’s insidious.”



Figure 10: Replies to James Comey’s tweet captioned “Republicans are wrong. Transparency is possible in the Mueller investigation.”

and David Brooks for *The New York Times*. The replies to their tweets reflected a degree of familiarity with their career and political stands. Figure 11 and 12 provide examples of replies to these tweets.

The opinion writer’s public image has an effect on how their piece is received and how people discuss it. When the writer is well-known, people tend to reply with sentiments that they already feel towards them, or refer to information that is not directly relevant to the tweet or the opinion article. These additional pieces of information that users contribute to the discourse may be beneficial by contextualizing the article, but it might also distract the discussion from the source and stimulate biased sentiments.

The motivations of these people who reply with negative and aggressive sentiments are unclear. Using this small dataset, it is difficult to infer the motivations of tweeters. Some of them might be considered “online trolls” who regularly post inflammatory and off-topic messages, while others might be normal readers who hold legitimate complaints about the columnists and wish to express their views on the internet. Regardless of their motivations, we see that the celebrity of opinion writers provoke reactions.

Observation 5: When a tweet does not represent the outlet’s perceived political leaning, it generates more reactions as well as criticisms towards the author and the agency.

Most news outlets in the US are perceived to have a certain political leaning,



Figure 11: Replies to Max Boot’s tweet captioned “I’ll be on @AC360 with @andersoncooper to discuss @IlhanMN and anti-Semitism. My @PostOpinions column argues that Ilhan is guilty of anti-Semitism and by not doing more to call her out, Democrats show they can be as tribal as Republicans.”

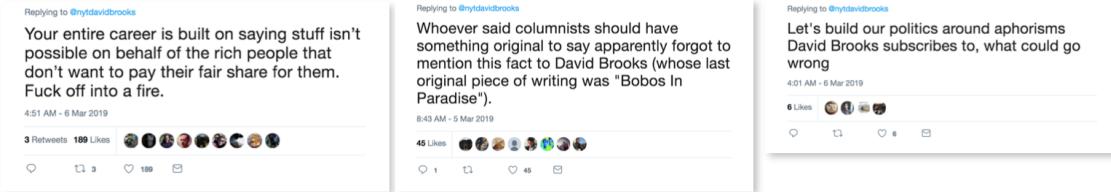


Figure 12: Replies to David Brook’s tweet captioned “Whoever said politics is the art of the possible forgot to mention this fact to Bernie Sanders.”

and so are *The New York Times* and *The Washington Post*. Both news outlets have predominantly left-leaning audiences, so we assume that a majority of their audiences expect content that align with liberal and left-leaning ideas [38].

We observed that when a tweet does not represent the outlet’s perceived political leaning, it generates more reactions. We calculated the ratio of replies over retweets to measure the amount of reaction. Reply implies reaction while retweet implies endorsement, so their ratio is a relative indicator of the amount of active reaction towards the tweet [29].

In the @postopinions dataset, the top five tweets with the highest reply-to-retweet ratio are the following.

1. Wake up Democrats! Ilhan Omar is your Steve King (9.04)
2. Rep. Ilhan Omar is the Steve King of the left (8.57)
3. Democrats are having an awful week—and Howard Schultz is having a good one (6.03)
4. My @PostOpinions column argues that Ilhan is guilty of anti-Semitism and by not doing more to call her out, Democrats show they can be as tribal as Republicans (4.23)

5. The dishonest smearing of Ilhan Omar (3.08)

1, 2, 4, and 5 talk about the same controversy concerning Ilhan Omar, a newly elected U.S. Representative from the Democratic party. The articles linked by 1, 2, 4 express criticisms towards her.

In the @nytopinion dataset, the top five tweets with the highest reply-to-retweet ratio are the following.

1. Whoever said politics is the art of the possible forgot to mention this fact to Bernie Sanders. (8.95)
2. Do Democrats even remember the political thumping they took in 2010? Why are they walking into that again—times 10. (2.59)
3. Ilhan Omar, Aipac and Me (2.21)
4. Socialism, a word reborn, has none of the red-scare potency in Europe that it carries in the United States. It's part of life. It's not Venezuelan misery. (2.07)
5. Democrats who can't embrace the c-word—Capitalism—are handing Trump a priceless political gift for 2020 (2.07)

1, 2, 3, and 5 are critical of the Democratic party or individuals in the party.

As shown above, it is more likely for tweets criticizing Democratic politicians to receive high reply-to-retweet ratio. This implies that audiences have more reactions when left-leaning media publishes op-eds that criticize left-leaning politicians.

Figure 13 provides another illustration of how political stance affects the amount of reactions. For both @nytopinion and @postopinions, two left-leaning news outlets, tweets labeled as right-leaning generate more replies, more retweets, higher reply-to-retweet ratio, and more criticisms towards the author or the news agency. This further demonstrates that when a tweet does not represent the outlet's perceived political leaning, users react more actively and more negatively.

It is important to note that the controversial and viral nature of the topic can contribute to the relatively large number of replies. “Shock factors” can cause increase in the number of interactions with the tweet. Future works should test out these claims using large datasets that cover a variety of topics and events in order to minimize the effect of shock factors.

Observation 6: Users are responsive to the format of the caption.

@postopinions always captions a tweet with the title of the op-ed article, whereas @nytopinion captions in a variety of ways. We categorize @nytopinion tweets in six

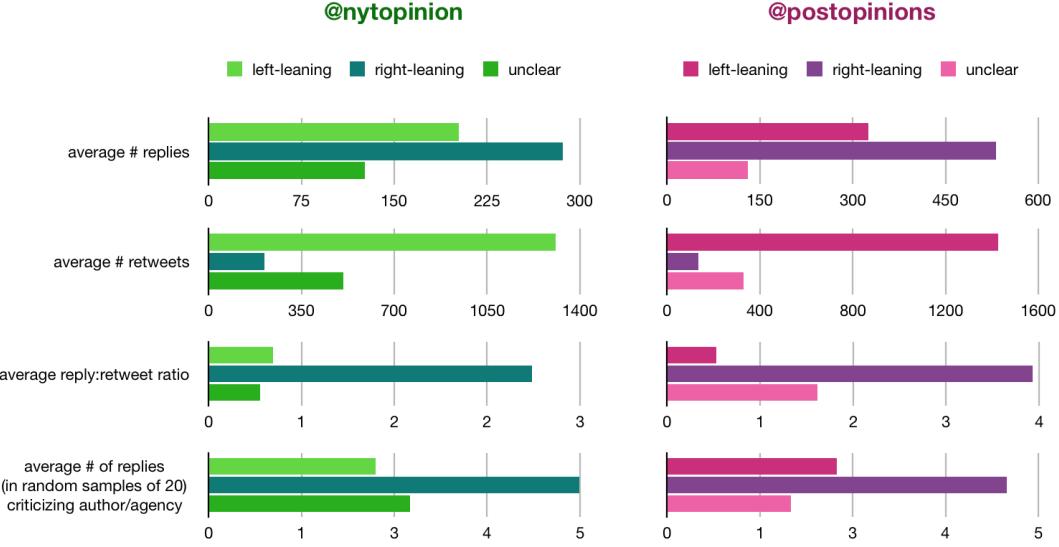


Figure 13: How political leaning of a tweet affects people’s reactions.

categories: question, author’s anecdotal account, author’s idea, quote in article, title, and no caption. We observed that questions and anecdotal accounts are mostly like to generate direct responses.

The author labeled a reply as a *direct response* based on whether it directly addresses content in the tweet. A reply is labeled as such if it

1. finishes a sentence in the tweet,
2. uses second-person pronouns to address the author or the agency,
3. includes phrases in the tweet, or
4. answers a question in the tweet

As shown in Figure 14, tweets whose captions are questions and anecdotal accounts generate the most direct responses. It was found that when a tweet poses a direct question, users tend to respond with an answer to this question. Additionally, when an author contextualizes their op-ed with a personal account, (i.e., an anecdote, where and when they wrote it, etc.), people tend to share personal stories as well (example).

Simply by looking at the replies, it is unclear whether users actually read the op-ed. This shows a need for future research investigating into whether Twitter exposure leads

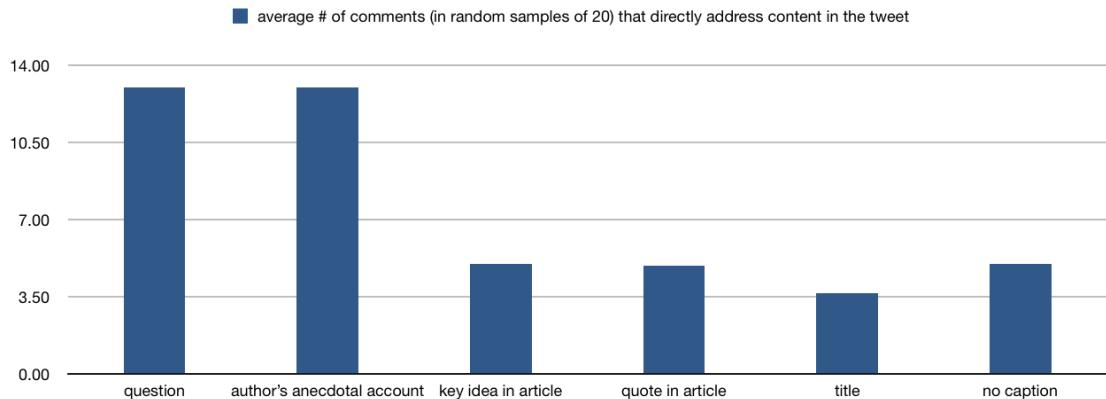


Figure 14: Different caption formats and average number of direct responses they generate.

to the user reading the full article, and whether the caption plays a role in influencing such behaviors.

5 Discussion

The observations made in this study expose a continuation of old challenges from the era of print media, and the emergence of new challenges as a result of the recent popularization of social media and the digitization of journalism. These challenges demonstrate a need for re-evaluating the traditional op-ed template—how it functions in the digital space today, and whether it is still capable of fulfilling its stated purpose of embodying, initiating, and facilitating public discourse.

Legacy problem with curating diverse opinions

Designed to include a variety of voices and opinions, the op-ed page has always struggled with representing diversity without alienating or angering its audience. As shown by our observations, this struggle is still present today. Currently, op-eds on Twitter generate significant amount of negative responses, and much of the negativity comes from the fact that people do not like to read opinions that differ from their own political views. Specifically, this work found that when an op-ed takes a stance that diverges from the stance that the news outlet normally takes, people are more likely to respond negatively, often blaming the author and the agency. This may seem intuitive, because people tend to prefer content that aligns with their own views, and it is understandable that they would complain when they read views on the opposite side. However, when we consider the purpose of the op-ed page articulated throughout history, this reality highlights a dysfunction. The op-ed was invented as a moderated

public forum that welcomes controversy. It is by design that they present divergent views about controversial topics. Just as audiences decades ago complained about the discordance between views of columnists and those of the news agency, audiences today suffer from a similar confusion, criticizing news agencies and opinion writers for views that are not representational of their usual stance, missing the point that a mixture of views from opposite sides has always been intentional.

Thus, the difficulty with representing diverse viewpoints is a legacy problem for the op-ed page. What makes a difference is that Twitter is making this problem more transparent by allowing readers to express their responses and affect each other. It is possible that the overwhelmingly negative sentiments around op-eds would aggravate the problem by antagonizing certain news outlets or authors, and reinforcing the misconception that op-ed writers and news outlets should hold a consistent set of views.

New challenges specific to digital platforms

Our observations also reveal new challenges that are direct results of the digitization of journalism and the popularization of social media. In an environment where print is no longer popular, social media becomes the cheap and easy way for people to access news content. What further encourages this is that most news agencies implement pay walls to restrict free access to their website. Thus, there is less and less incentive for people to read and engage with the op-ed section in its traditional, complete, and curated format.

The special affordances of social media platforms like Twitter are accountable for the rapid and sound-bite nature of news consumption today. By opening up the communication channel between writers and readers, social media has transformed the relationship between these cohorts. This work found that journalists, columnists, and agencies play a central role in spreading op-eds in the Twitter readership network. Opinion contributors and curators—especially those who are well-known—are frequent targets of criticism and aggression. Before the popularization of social media, readers could express their dissent through submitting “Letters to the Editor,” whereas today they can achieve the goal by simply replying to a tweet.

As communication becomes rapid, people consume information in broken-down sound bites. This work found that captions—superficial information immediately visible to readers—play a huge role in influencing how people react. People’s replies are related to how they interpret the political stance of the caption. When people see familiar op-ed authors, their reactions are often dictated by their pre-conceived ideas of these authors. Caption style plays a role in influencing the language which people use in the replies to op-ed tweets. The superficial nature of social media is more damaging to the op-eds than to objective news, because understanding the ideas of an op-ed usually requires reading the entire article, whereas objective news articles have titles that summarize the important points. Only reading op-ed headlines would lose the

point of this form of journalism.

Another problem with social media is that echo chambers can grow around certain topic. Although this work did not analyze the echo chambers around the six news agencies, existing works have found that echo chambers are common on Twitter and can exacerbate emotions within groups to a level way greater than it ever would have been pre-social media [17].

Re-envisioning op-eds

Internet users' inability to appreciate diverse opinions, their often abusive relationship with authors and agencies, and the sound-bite nature of social media platforms signify a possible reality where people are losing touch with what op-eds really are—its definition, its design, its intention, and how people are supposed to engage with it. Under the new social order created by social media platforms, there is a need to reflect upon the op-ed's functionality in today's society, and whether its current template—online and in print—still serves its purpose.

There currently exists widespread skepticism towards the value of having online comments for news in general. Many people believe that social media is a lost cause for discourse because it seems impossible to control, and past efforts of censoring toxic content have made little improvement on the platform level [12] [34]. However, this work wants to argue that there would be a miss of opportunity and even a danger if we were to dismiss the value of social media for journalism because of the difficulty in understanding and controlling it.

This work wants to emphasize that the negative discourse around op-eds on social media is actually a valuable source of insights. It reflects a problematic reality constituted of problems from past and present, and exposes a misalignment between the old format and a new public. Instead of deeming the digital space as simply damaging to journalism, a more productive approach may be to improve upon traditions and cater to the present, redefining what the op-ed is under a re-definition of the public sphere at large. There are opportunities to revamp the op-ed format—fostering new relationships between writers and readers, expanding the boundary of journalistic practices, offering new ways for audiences to respond and discuss.

Meanwhile, it is also important to recognize that content creators (like news agencies) and platforms (like Twitter) share accountability in fostering a dialect, robust public sphere in the digital space. Collaboration is needed to find solutions from both the top-down and the bottom-up.

Our observations suggest possible curation techniques that would help initiate dialogues while reducing triggers for aggression. Since people tend to respond directly to information immediately visible in the tweet, there exists opportunities to make more deliberate choices in the caption, such as posing questions to direct the dialogue,



Figure 15: Patrick Healy, a politics editor for *The New York Times*, has been using threads to explain the intentions and contexts behind news stories.

and contextualizing the piece by introducing who the author is and why they wrote this piece. Due to the limited information volume that a tweet can possibly contain, it is inevitable that a tweet cannot convey the full complexity of an op-ed. Thus, it is especially crucial to make deliberate decisions about what goes in the immediate “view” of a tweet.

Some journalists have been experimenting with different ways to share their pieces on Twitter. Patrick Healy, a politics editor for *The New York Times*, has been using threads to explain the intentions and contexts behind how a story was written, as shown in Figure 15 [41]. In his threads, he shares information about what prompted the story, who has been involved in the reporting, and what the reporting timeline looks like. He also shares screenshots of the article, which breaks away from Twitter’s character count limitation.

Another example is Paul Waldman, an opinion writer for *The Washington Post*, as shown in Figure 16. After @PostOpinions shared his article titled “The dishonest smearing of Ilhan Omar,” the tweet received a large amount of negative feedback. He subsequently started a new thread articulating the reasoning in his op-ed, and presenting facts to support his claims. Tweets in the new threads received nearly a thousand retweets and over two thousand likes, which imply attitudes of endorsement from the



Figure 16: Paul Waldman, an opinion writer for *The Washington Post*, used a thread to explain the ideas in his op-ed.

readers. The replies to the thread were overwhelmingly positive, with users saying “Thank you” and “excellent analysis.” This example suggests that extra explanation in the form of threads encourages readers to read into the complexity of the op-ed piece, instead of simply responding to the sound bite.

These writers’ self-motivated engagement with readers have had positive outcomes in the specific context of their tweets, leading way for future experimentation with untraditional reader interactions.

6 Limitations and Future Works

The open-ended question of op-eds’ evolving role in public discourse invites far more angles than what this work has taken, which is to analyze how Twitter users react to op-eds via retweets, replies, and quotes. In this work, the automatic measures and the case studies offer high- and low-level observations. These observations remain hypotheses whose truthfulness and generalizability require more rigorous proof and examination.

A major limitation with this study is the dataset. The data collection scheme employed by the author captured a shallow, sampled Twitter network. The inability to collect the complete Twitter stream means important network structure may be lost or distorted. There was little control over how many levels of retweet, reply, and quote was being reached, which means that the thread structure may not be reflected

in the collected network. More rigorous network analysis exploring questions such as echo-chamberness and troll behaviors would benefit from larger and more complete datasets, which may be accomplished through more powerful API's as well as longer period of collection.

In the case studies, due to the time-consuming nature of manual observation, only a very small dataset was labeled and analyzed. Even though the author compared the observations between two news outlets (@nytopinion and @postopinions), it is still likely that these observations cannot generalize across agencies, time periods, or topics. Thus, future works should expand the datasets to make more generalizable observations. Additionally, the hand-labeling of tweets—especially with determining the political stance of a particular tweet or opinion—suffers from personal biases of the author and the reductionist binary view of "left" versus "right" political stances. Future works should improve the labeling scheme by consulting multiple opinions and representing the nuances of politics.

While the preferences of online news consumers have been explored in this work, there are other important agents in the picture—op-ed curators, opinion writers—whose goals and strategies deserve questioning and analyzing. By the time this report is completed, the author's attempts in reaching out to op-ed editors and social media strategists have unfortunately been futile. Future works would benefit greatly from interviews with news professionals to discover the actual goals and strategies behind the scene, and whether the current reader responses are seen as signs of success, failure, or neither.

Finally, the interdisciplinary subject matter of this research requires interdisciplinary theories and methodologies. Questions regarding op-eds, journalism, discourse, and social media are inherently questions of people, culture, technologies, and design. Thus, future research exploring similar subject matters should emphasize collaboration across expertise in ethnographic research, design research, and other areas of computing, social sciences, and the humanities. Since this work has found that the captioning of tweets influences how people perceive and respond to the op-ed, intervention techniques can be used to experiment with different captioning strategies. For example, a mock news aggregator account can be set up, and when it shares an op-ed, it also posts a question related to the article, prompting Twitter users to read into the article and answer the question on the platform.

The contribution of this work lies in the dialectic of past and present. By providing a multi-angled view of the op-ed's evolution from the 1900s to today, from print to social media, this work illustrates a nuanced reality which generates new questions and hypotheses, inviting future works to take deeper dives. As individuals in the era of social media, our agency to consume, create, and share ideas is as great as it is elusive. Collective knowledge on the interplay of journalism, social media, politics and discourse is vital as we try to build a sustainable and robust public sphere.

References

- [1] America's most popular voting guide for elections, political issues, candidates, and poll data.
- [2] The oped project.
- [3] A woman's plea: Let's raise our voices! *The New York Times*, Jan 2019.
- [4] Matthew Babcock, David M Beskow, and Kathleen M Carley. Beaten up on twitter? exploring fake news and satirical responses during the black panther movie event. In *International Conference on Social Computing, Behavioral-Cultural Modeling and Prediction and Behavior Representation in Modeling and Simulation*, pages 97–103. Springer, 2018.
- [5] Pablo Barberá, John T Jost, Jonathan Nagler, Joshua A Tucker, and Richard Bonneau. Tweeting from left to right: Is online political communication more than an echo chamber? *Psychological science*, 26(10):1531–1542, 2015.
- [6] James Bassett. The battle of the analysts. *The Los Angeles Times*, page 6, Nov 1967.
- [7] Michele Bedard and Chianna Schoenthaler. Satire or fake news. *Companion of the The Web Conference 2018 on The Web Conference 2018 - WWW 18*, 2018.
- [8] Alessandro Bessi. Personality traits and echo chambers on facebook. *Computers in Human Behavior*, 65:319–324, 2016.
- [9] Craig Calhoun. *Habermas and the public sphere*. vii. MIT Press, 2011.
- [10] Kathleen M Carley. Ora.
- [11] Matt Carlson. The information politics of journalism in a post-truth age. *Journalism Studies*, 19(13):1879–1888, 2018.
- [12] Brian X. Chen. The internet trolls have won. sorry, there's not much you can do., Aug 2018.
- [13] Cheryl K. Chumley. Making sense of ana navarro and other fake conservatives, Aug 2018.
- [14] Elanor Colleoni, Alessandro Rozza, and Adam Arvidsson. Echo chamber or public sphere? predicting political orientation and measuring political homophily in twitter using big data. *Journal of communication*, 64(2):317–332, 2014.
- [15] Alexander Coppock, Emily Ekins, and David Kirby. The long-lasting effects of newspaper op-eds on public opinion. *Quarterly Journal of Political Science*, 13(1):59–87, 2018.
- [16] Oliver Darcy, Tom Kludt, and CNN Business. Media industry loses about 1,000 jobs as layoffs hit news organizations. *CNN*, Jan 2019.

- [17] Michela Del Vicario, Gianna Vivaldo, Alessandro Bessi, Fabiana Zollo, Antonio Scala, Guido Caldarelli, and Walter Quattrociocchi. Echo chambers: Emotional contagion and group polarization on facebook. *Scientific reports*, 6:37825, 2016.
- [18] Seth Flaxman, Sharad Goel, and Justin M. Rao. Ideological segregation and the effects of social media on news consumption. *SSRN Electronic Journal*, 2013.
- [19] Kiran Garimella, Ingmar Weber, and Munmun De Choudhury. Quote rts on twitter: Usage of the new feature for political discourse. In *Proceedings of the 8th ACM Conference on Web Science*, pages 200–204. ACM, 2016.
- [20] R. Kelly Garrett. Echo chambers online?: Politically motivated selective exposure among internet news users. *Journal of Computer-Mediated Communication*, 14(2):265–285, 2009.
- [21] Carl Gershman. The “times” op-ed page: Both ends against the middle. *Commentary*.
- [22] Jennifer Golbeck, Jennine B. Everett, Waleed Falak, Carl Gieringer, Jack Graney, Kelly M. Hoffman, Lindsay Huth, Zhenya Ma, Mayanka Jha, Misbah Khan, and et al. Fake news vs satire. *Proceedings of the 10th ACM Conference on Web Science - WebSci 18*, 2018.
- [23] David Goldie, Matthew Linick, Huriya Jabbar, and Christopher Lubienski. Using bibliometric and social media analyses to explore the “echo chamber” hypothesis. *Educational Policy*, 28(2):281–305, 2014.
- [24] Alfred Hermida, Fred Fletcher, Darryl Korell, and Donna Logan. Share, like, recommend. *Journalism Studies*, 13(5-6):815–824, 2012.
- [25] C.J. Hutto. Vader (valence aware dictionary and sentiment reasoner).
- [26] Stanley Ingber. The marketplace of ideas: a legitimizing myth. *Duke Lj*, page 1, 1984.
- [27] Cherilyn Ireton and Julie Posetti. *Journalism, ‘Fake News’ Disinformation*.
- [28] Jihie Kim and Jaebong Yoo. Role of sentiment in message propagation: Reply vs. retweet behavior in political communication. In *2012 International Conference on Social Informatics*, pages 131–136. IEEE, 2012.
- [29] Jihie Kim and Jaebong Yoo. Role of sentiment in message propagation: Reply vs. retweet behavior in political communication. pages 131–136, 12 2012.
- [30] Jooyeon Kim, Behzad Tabibian, Alice Oh, Bernhard Schölkopf, and Manuel Gomez-Rodriguez. Leveraging the crowd to detect and reduce the spread of fake news and misinformation. In *Proceedings of the Eleventh ACM International Conference on Web Search and Data Mining*, WSDM ’18, pages 324–332, New York, NY, USA, 2018. ACM.
- [31] Robert Knight. Deep state conservatives, Oct 2018.

- [32] Haewoon Kwak, Changhyun Lee, Hosung Park, and Sue Moon. What is twitter, a social network or a news media? In *Proceedings of the 19th international conference on World wide web*, pages 591–600. ACM, 2010.
- [33] Chei Sian Lee and Long Ma. News sharing in social media: The effect of gratifications and prior experience. *Computers in Human Behavior*, 28(2):331–339, 2012.
- [34] Kalev Leetaru. Is social media becoming too toxic?, Jul 2018.
- [35] Kristina Lerman and Rumi Ghosh. Information contagion: An empirical study of the spread of news on digg and twitter social networks. In *Fourth International AAAI Conference on Weblogs and Social Media*, 2010.
- [36] Kan Li, Lin Zhang, and Heyan Huang. Social influence analysis: models, methods, and evaluation. *Engineering*, 4(1):40–46, 2018.
- [37] KATERINA EVA MATSA and ELISA SHEARER. News use across social media platforms 2018, Sep 2018.
- [38] Amy Mitchell, Jocelyn Kiley, Jeffrey Gottfried, and Katerina Eva Matsa. Political polarization and media habits. *Pew Research Center*, Oct 2014.
- [39] Fred Morstatter, Liang Wu, Uraz Yavanoğlu, Stephen R. Corman, and Huan Liu. Identifying framing bias in online news. *ACM Transactions on Social Computing*, 1(2):1–18, 2018.
- [40] Anne Oeldorf-Hirsch and S. Shyam Sundar. Posting, commenting, and tagging: Effects of sharing news stories on facebook. *Computers in Human Behavior*, 44:240–249, 2015.
- [41] Laura Hazard Owen. The new york times politics editor is building trust by tweeting context around political stories, Jan 2019.
- [42] Chang Sup Park and Barbara K Kaye. The tweet goes on: Interconnection of twitter opinion leadership, network size, and civic engagement. *Computers in Human Behavior*, 69:174–180, 2017.
- [43] Pablo Porten-Cheé and Christiane Eilders. Spiral of silence online: How online communication affects opinion climate perception and opinion expression regarding the climate change debate. *Studies in communication sciences*, 15(1):143–150, 2015.
- [44] Fabián Riquelme and Pablo González-Cantergiani. Measuring user influence on twitter: A survey. *Information Processing & Management*, 52(5):949–975, 2016.
- [45] Pablo Rivera. Tweepy.
- [46] Daniel M Romero, Brendan Meeder, and Jon Kleinberg. Differences in the mechanics of information diffusion across topics: idioms, political hashtags, and complex contagion on twitter. In *Proceedings of the 20th international conference on World wide web*, pages 695–704. ACM, 2011.

- [47] Steven Rosenbaum. Curation, community and the future of news, Jun 2011.
- [48] Anja Rudat, Jürgen Buder, and Friedrich W Hesse. Audience design in twitter: Retweeting behavior between informational value and followers' interests. *Computers in human behavior*, 35:132–139, 2014.
- [49] Jared Schroeder. Toward a discursive marketplace of ideas: Reimaging the marketplace metaphor in the era of social media, fake news, and artificial intelligence. *First Amendment Studies*, 52(1-2):38–60, 2018.
- [50] David Shipley. And now a word from op-ed. *The New York Times*, Feb 2004.
- [51] Kai Shu, Amy Sliva, Suhang Wang, Jiliang Tang, and Huan Liu. Fake news detection on social media: A data mining perspective. *SIGKDD Explor. Newsl.*, 19(1):22–36, September 2017.
- [52] Jörgen Skågeby. *Online ethnographic methods: Towards a qualitative understanding of virtual community practices*, volume 1, pages 410–428. 01 2011.
- [53] Michael J. Socolow. A profitable public sphere: The creation of the new york times op-ed page. *Journalism Mass Communication Quarterly*, 87(2):281–296, 2010.
- [54] Peter Tolmie, Rob Procter, Mark Rouncefield, Maria Liakata, and Arkaitz Zubiaga. Microblog analysis as a program of work. *ACM Transactions on Social Computing*, 1(1):2, 2018.
- [55] Remy Tumin. The op-ed pages, explained. *The New York Times*, Dec 2017.
- [56] Walter Weintraub. *Verbal behavior in everyday life*. Springer Publishing Co, 1989.
- [57] Hywel TP Williams, James R McMurray, Tim Kurz, and F Hugo Lambert. Network analysis reveals open forums and echo chambers in social media discussions of climate change. *Global Environmental Change*, 32:126–138, 2015.
- [58] Homero Gil De Zuniga, Nakwon Jung, and Sebastián Valenzuela. Social media use for news and individuals social capital, civic engagement and political participation. *Journal of Computer-Mediated Communication*, 17(3):319–336, 2012.