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When News Meets the Audience: How Audience Feedback Online Affects News Production and Consumption

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Innovations in communication technology have changed the way news is produced and consumed. Various digital platforms, ranging from news websites to social media sites to personal blogs, have enabled news users to indicate how much they like the news they have read, to share it with others, and to leave comments. News users' mouse clicks are automatically recorded and aggregated by computational systems and made publicly visible (e.g., "Most Read Articles"). This essay reviews the ever-growing research on how audience feedback online, a hybrid form of interpersonal and mass communication, alters various stages of news production and influences the way people select, process, and make sense of the news. Future research agendas are proposed.

News, arguably the most prototypical form of mass communication, has traditionally been produced for and consumed by largely heterogeneous and disconnected mass audiences. However, developments in information and communication technology have fundamentally changed the very nature of news production and consumption. The digitization of news has not only increased individual users' control over news consumption but also enabled them to participate in computer-mediated conversations with news producers as well as other users through various feedback options (Bucy, 2004). These changes have further strengthened participatory journalism, which highlights the collaborative and collective nature of news production facilitated by users' active engagement with news via comment sections, discussion forums, recommendation systems, social media, and personal blogs (Singer et al., 2011). Such participation, however, does not simply foster communication between those inside and outside the newsroom and affect what becomes news; it also allows

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communication among those outside the newsroom, shaping how news is selected, processed, and interpreted.

This essay reviews how audience feedback online has changed two critical processes related to journalism: news production and news consumption. We define audience feedback online as news users' reactions to news, communicated through various Internet-based platforms, such as news websites, social news aggregators, and news organizations' or individual users' social media pages. It can be verbal (e.g., user comments) or nonverbal (e.g., numerical ratings, mouse-click to view) messages left with or without the user's intention to communicate with others (Walther & Jang, 2012). Individuals' reactions can then also be aggregated by the computational system, comprising system-generated feedback (e.g., the number of views, average ratings) that the system displays along with the news and subsequently affects various facets of news production and news consumption. In the following, we first review how audience feedback influences journalists' selection, placement, and evaluation of news stories. Then, we turn to how audience feedback shapes the ways in which news users select, process, and make sense of news. Finally, we propose future research agendas focusing on the melding of interpersonal and mass forms of communication.

Audience feedback and news production

Forms of audience feedback

Traditionally, journalists paid scant attention to direct feedback from the news audience. Their understanding of audiences was mostly based on their limited conversations with family, friends, fellow journalists, and superiors at work, affecting which topics they prioritized and reported (Gans, 1979). Some feedback also came from a subset of the audience through phone calls made to the newsroom and letters sent to editors (Schlesinger, 1978). These conversations sometimes provided journalists with leads to news stories and additional perspectives on current issues. Some letters to the editor ended up in the newspaper, but journalists exclusively controlled this process, as editors selected which letters to publish and which to disregard based on a number of criteria, such as issue relevance and entertainment value (Wahl-Jorgensen, 2002). Newspapers and broadcast companies also relied on readership surveys and broadcast ratings to understand their audiences' news consumption patterns, but journalists seldom used these forms of audience feedback, as they came only from a tiny subset of the actual audience (Beam, 1995).

The digitization of news gave rise to new forms of audience feedback. News websites now allow audiences to leave comments, which are also visible to other users, right next to news articles and videos. Unlike letters to the editor that are often placed in a separate section and published only a few days after the original articles had been published, if ever, user comments become visible to other readers instantaneously, especially when comments are left unmoderated (Craft, Vos, & Wolfgang, 2016). Individual readers also publish their opinions about news events and issues on their social media accounts; post comments on online discussion forums (Lou, 2014); or use their

personal blogs to engage in press criticism, questioning news accounts and calling out what they perceive as transgressions of how journalism ought to be (Vos, Craft, & Ashley, 2012).

In addition to verbal messages, journalists also receive numeric feedback to their stories aggregated by computer systems. For example, web analytics programs monitor the real-time popularity of particular stories online (Tandoc, 2015). They automatically record a website visitor's location, time spent on the site, the website that referred the visitor, among other data, and then aggregate the information and present it to journalists. Social media platforms such as Twitter and Facebook also provide lists of trending topics determined by algorithms tracking what people are posting and sharing, along with real-time data on a post's number of likes, comments, and shares (Hermida, 2011; Tandoc & Vos, 2016).

Compared with traditional forms, these new forms of audience feedback are (a) faster, as they are recorded and reported in real-time; (b) more automatic, as both deliberate and incidental feedback are recorded; (c) more inclusive, as they come from a much larger number of audience than before; (d) more comprehensive, as they entail both textual and numeric forms; and (e) more public, as they are visible not just to journalists but also to other Internet users. Faced with a decreasing audience size for news globally, journalists are increasingly turning to these new forms of audience feedback to understand better and cater to what audiences want (Tandoc, 2014). This opens news production processes to the influence of the audience.

Changes in news production
The availability and abundance of information about the audience have changed existing journalistic practices and introduced new ones. Quick and constant access to audience feedback has created new roles in the newsroom, such as the social media editor tasked to monitor constantly and engage social media users through viral content (Tandoc & Vos, 2016). Studies have identified three facets of news production affected by audience feedback online: topic selection, story placement, and performance evaluation.

First, topic selection refers to the process of determining whether an event, issue, or piece of information will be reported. Traditionally, journalists shielded this process from external influence to protect their editorial autonomy (Gans, 1979), but now, they turn to audience feedback to guide their topic selection. Meetings to plan a day's news coverage usually begin with a discussion of trending topics on social media from which editors determine the events, issues, or topics in which online audiences might be interested (Tandoc & Vos, 2016). Topics that have attracted a lot of clicks in the past tend to be covered more often (Welbers, van Atteveldt, Kleinnijenhuis, Ruigrok, & Schaper, 2016). Since stories with photos or videos tend to draw more clicks, editors also make sure that articles they upload online include visual complements (Tandoc, 2014). Some editors proactively ask social media users to post photos or information about ongoing events and encourage their social media followers to tweet questions they want to be asked during upcoming interviews (Tandoc & Vos, 2016). Studies have

found that audience interest in particular topics, reflected in search query volumes (Ragas, Tran, & Martin, 2014) or public discussions in online forums (Lou, 2014), subsequently influences news coverage. These findings suggest a reversal to traditional notions of agenda setting, as journalists respond to the topics in which audiences are interested, not the other way around.

Second, story placement refers to editorial decisions concerning a news website's layout. Using longitudinal data, Lee, Lewis, and Powers (2014) showed that audience clicks affected the subsequent placement of stories on news websites, but not vice versa. Since news sites limit the number of stories on their homepages to avoid clutter and homepages have to be constantly updated to attract readers, journalists need to decide not only which stories to keep and where, but also which ones to replace (i.e., de-selection; Tandoc, 2014). These decisions rely largely on numbers supplied by web analytics. Placement can also be extended into journalists' decisions about which stories to distribute on social media other than the news organization's website. Often, popular stories get distributed on social media more, with editors hoping to attract more readers to their websites by promoting clickbait stories (Tandoc, 2014).

Finally, performance evaluation refers to how journalists measure success in their day-to-day work. Several news organizations have introduced pay-per-click schemes, giving additional pay to writers when their stories exceed a particular number of views (Fischer, 2014). Since aggregated audience feedback is now generated for individual news stories and news writers, newsrooms can easily identify which article, reporter, and section attracted the most clicks, comments, and shares.

Collectively, these new forms of audience feedback have amplified the influence of news audiences in news production, challenging the assumptions of established mass communication theories, such as gatekeeping and agenda-setting. For example, studies have referred to "greater audience engagement in the gatekeeping process" (Lee et al., 2014, p. 505), which turns agenda-setting online into a "reciprocal process" instead of originating only from the news media (Ragas et al., 2014, p. 57). However, considering that online audiences tend to click on celebrity and sports stories (Boczkowski, 2010), efforts to give news audiences what they want, rather than what they need, may marginalize public affairs stories and potentially jeopardize social functions of journalism, such as informing the public and bridging communities (Tandoc & Thomas, 2015). For example, after Facebook replaced its trending topics editors with an algorithm that relies on web analytics, the algorithm started pushing out fake news stories (Thielman, 2016). In the absence of editors who could discern information quality from information virality, algorithms based solely on audience metrics failed to filter out misinformation.

Audience feedback and news consumption

Audience feedback not only affects the production and dissemination of news; it also affects other users' exposure and their reactions to news. The following section summarizes how publicly accessible audience feedback affects news users during various

stages of news consumption, from news selection to news processing to postexposure reactions.

Pre-exposure: News selection

Individuals' decision to read a particular story, even with no intention to influence others, can nonetheless affect others' news selection when their choices are aggregated and displayed in the form of "Most Read" stories on news websites (Yang, 2016). Similarly, more positive average user ratings of a news article lead individuals to spend more time reading the article (Knobloch-Westerwick, Sharma, Hansen, & Alter, 2005). The power of user recommendation is robust enough to override selective exposure, the well-known preference for ideologically congenial information (Messing & Westwood, 2014). It remains unclear why audience feedback affects news selection. It may be because people mindlessly choose what seems to be popular among others (Sundar, 2008) or because people see greater informational utility of the news endorsed by many others and make a calculated decision (Messing & Westwood, 2014). Regardless, just as journalists used to tell people what to think about by handpicking news stories to appear in the front page, real-time audience feedback now tells readers what to read and think about, once again altering the traditional direction of agenda-setting.

During exposure: News processing

Once readers have chosen a particular news story, audience feedback juxtaposed with the story can affect how they process, perceive, and evaluate it. First, user comments can highlight certain elements of the news, thereby guiding (i.e., priming) subsequent cognitive processes. For example, user comments on a crime news story that invoked regional stereotypes—attributing the reported crime to the local residents' predispositions—enhanced the participants' recall of the crime location, not only for the focal article associated with the comments, but also for a subsequent, yet unrelated, article (Lee, Kim, & Cho, 2017).

Second, audience feedback can bias readers' perceptions of a news story's editorial position. Even though independent entities author user comments and a news article, when presented with user comments incongruent (vs. congruent) with their personal opinion, readers perceive the news article to be more hostile to their own position (Lee, 2012). Readers' perception of the hostility of public opinion partially mediates this effect, suggesting that hostile media perception, the well-known tendency for partisans to perceive balanced news stories as biased against their own position, stems from the defensive processing triggered by the fear of losing ground (Gunther & Liebhart, 2006).

Third, audience feedback alters readers' evaluation of a news story's quality. Exposure to low-quality user comments devoid of evidence and reasoning (vs. no comments) leads news readers to evaluate the information quality of the news from unknown outlets more negatively, and uncivil comments lower the perceived formal quality of the news story (Prochazka, Weber, & Schweiger, in press). Such results

replicate the earlier finding that news users rate the news article more negatively when associated user comments contain vulgar language and personal attacks (Kim & Sun, 2006). Collectively, these findings suggest that people may (mis)attribute the characteristics of user feedback to the news itself, failing to distinguish between the two sources of information.

Lastly, audience feedback affects readers' inference about media influence. User comments that counter a news story's position reduce the degree of influence that readers expect the news to exert on other Internet users' opinions (Lee & Jang, 2009), and among those high in need for cognition, seeing high user disapproval ratings (vs. no ratings) also lowers perceived influence of a news story on public opinion (Lee & Jang, 2010). These findings indicate that audience feedback serves as a direct cue to the opinion climate, and thus can attenuate persuasive press inference, the tendency to assume a significant impact of media coverage on others and infer public opinion from media content (Gunther, 1998).

Postexposure: Cognitive and attitudinal changes

Audience feedback can also affect individuals' personal opinions about news events as well as their willingness to express opinions. Albeit limited to readers with lower need for cognition, exposure to user comments (vs. no comments) led participants to endorse an opinion in line with those comments (Lee & Jang, 2010). Similarly, those exposed to prejudiced (vs. antiprejudiced) comments against Asian students expressed more negative attitudes toward Asian students and were more likely to post prejudiced comments themselves (Hsueh, Yogeeswaran, & Malinen, 2015).

A common explanation for such effects is social influence; that is, people infer public opinion from user comments (Lee, 2012; Lee & Jang, 2010) and conform to what they believe others think. As people move toward the direction they believe the public approves, their potentially erroneous perception of opinion climate becomes a self-fulfilling prophecy. The finding that people polarize their opinion after reading user comments congruent with their preexisting opinion, but only if they infer congenial public opinion from the comments (Eliders, Porten-Cheé, Lee, & Jang, 2017), suggests that user comments have the power to sway readers' personal opinions because they are taken as a proxy of the public opinion (see also Shah et al., 2017).

Audience feedback affects not only readers' opinion about news events, but also their perception of reality. After reading user comments on crime news stories, which blamed the local residents for being more crime-prone, participants estimated the crime rate to be higher in the featured area (Lee et al., 2017). Although it remains to be tested whether such effects stem from their acceptance of the prejudiced account of the news event (framing) or mere association between the region and the crime (priming), user comments shape news readers' world views.

Moving forward

A volume of research has explored how technology-enabled audience feedback on news has altered journalistic practices as well as readers' news experience. Still, there is much more awaiting future investigation.

Why audiences choose to provide feedback

Most research on audience feedback online has examined how it affects readers, but what prompts people to like, share, and write comments on news in the first place? Some message features, such as story frames (episodic vs. thematic; gain vs. loss) (Holton, Lee, & Coleman, 2014) and the topic and the sources quoted (Coe, Kenski, & Rains, 2014), alter the volume and the content of user comments. User comments that contain uncertainty, controversy, negativity, and personalization are also more likely to beget responses from other users (Ziegele, Breiner, & Quiring, 2014). However, it remains relatively unknown what motivates people to initiate and engage in online commenting and news sharing. Considering that public affairs news stories get more user comments but are less likely to be e-mailed than non-public affairs stories (Boczkowski & Mitchelstein, 2012), comment writing and news sharing may serve different communicative functions for participating individuals.

Moreover, given that communication changes not just the message recipients, but the senders as well (Pingree, 2007), it begs the question of what kinds of cognitive, affective, and behavioral changes people may experience after liking, sharing, and commenting on news. Possibly, the act of news sharing may help people better retain the news information. People may also become more committed to their issue position after leaving a comment for public viewing and more willing to engage in interpersonal conversation on the topic. These, as well as other possibilities, demand systematic investigation.

Why journalists listen to audience feedback

A recurring explanation for journalists' accommodation of audience feedback online is the pressing need to survive amid the financial strain that many news organizations are facing. Indeed, the more editors perceive economic benefits from getting high readership, the more willing they are to change editorial decisions based on web analytics (Vu, 2013). Editors in highly competitive markets also tend to use web analytics more often than those in less competitive areas (Tandoc, 2015).

But another explanation may come from the hybrid nature of these new forms of audience feedback—how they merge interpersonal and mass forms of communication. In contrast to phone calls to the newsroom or letters to the editor, which remained private encounters between the journalist and the news reader, both journalists and other audiences see audience feedback online. Perhaps it is their presumption that audience feedback would exert influence on other audiences, which drives journalists to remain vigilant to audience feedback and consider these inputs when they make editorial decisions. More research on journalists' perceptions of and

assumptions about audience feedback would help elucidate why they now attend to audience feedback in ways and degrees they have never done before.

Not all feedback is created equal

Online audience feedback comes in all shapes and sizes, and may elicit different reactions. In this regard, several properties of online audience feedback—simultaneity, inclusivity, and publicness—can each be conceptualized as testable variables. Does audience feedback presented simultaneously with a news article affect news processing differently than feedback given at a later time (simultaneity)? Does aggregated audience feedback from thousands of people induce different reactions from that coming from just a few individuals (inclusivity)? Do readers process user comments left on a news website with a mass audience differently from those on a personal blog or social media with relatively limited reach (publicness)?

In fact, inconsistency in research findings raises the possibility that the platform through which audience communicates feedback may make a difference. For instance, user comments posted on a Facebook page of a news organization had no significant effect on perceived public opinion (Winter, Brückner, & Krämer, 2015), contradicting the previously documented effects of user comments on news websites (e.g., Lee, 2012; Lee & Jang, 2010). Similarly, while user comments on news websites induced assimilation bias, with low-quality user comments lowering the readers' evaluations of news quality (Kim & Sun, 2006; Prochazka et al., in press), a balanced news story was rated to be more credible when embedded in an uncivil rather than civil partisan political blog post, suggesting contrast bias (Thorson, Vraga, & Ekdale, 2010).

Because of multiple methodological strategies that confound comparisons between studies, we cannot conclude that the inconsistent findings are attributable to the platform differences. Still, it seems plausible that user comments on news sites are believed to be more diagnostic of public opinion than those on a news organization's Facebook page, because the former draws more numerous and diverse visitors than the latter. Also, personal blogs may render the source more salient than anonymous user comments do, making it easier to distinguish between the news content and audience feedback, thereby suppressing assimilation bias. Therefore, when comparing different forms of audience feedback, it would be worthwhile to conceptualize audience feedback as a "mix of attributes" (Eveland, 2003, p. 395) and systematically vary its specific attributes in a single study to uncover their respective effects.

Are user comments any special?

Among various forms of audience feedback, user comments are most popular and have spawned most research. When comments versus no-comments conditions are compared to identify the effects of user comments; however, we cannot tell (a) to what extent the observed differences represent the unique effects of user comments as a particular form of communication, independent of their content and (b) why such effects emerge. By manipulating message-related features, such as civility (e.g., Shi, Messaris,

& Cappella, 2014) and negativity (e.g., Winter et al., 2015), as potential moderators of comment effects, researchers further identified when and how user comments influence news readers, but not why.

Two possibilities may explain why user comments, authored by a few individuals and normally lacking any sound arguments or solid evidence, shape news readers' perception of public opinion as well as their personal opinion. First, people may conceive of user comments as a reflection of *vox populi* because they are presumably from lay citizens just like themselves, as opposed to professional commentators or experts. Second, user comments may be taken as an accurate reflection of reality, because they are not filtered or edited by a third party. Indeed, when a news organization's moderation of the comment section was made salient, participants agreed less with user comments that were congruent with the news (Sherrick & Hoewe, in press). If so, when the same messages are presented as interviewees' quotes in a news article, for example, they may trigger different reactions than the user comments published outside the journalist's gatekeeping do. Addressing these possibilities would help to uncover unique effects of user comments and explain why such effects emerge.

Advancing theories

The constant presence of audience feedback on news websites and social media urges communication researchers to revisit long-standing assumptions of existing mass communication theories, mostly designed to explain fundamentally one-way message transmission by mass media. For example, the influence of presumed influence (IPI) model postulates that people, in the absence of relevant information, assume that media messages would have significant influence on others, and conform to the anticipated changes (Gunther & Storey, 2003). After viewing high disapproval ratings of the news article, however, those with high need for cognition lowered their estimates of media influence, compared to when no audience feedback was attached (Lee & Jang, 2010), suggesting that the IPI model may not be well-suited to explain online news users' reactions. Likewise, once considered as "common sense" knowledge about media preference (Knobloch-Westerick, 2012, p. 640), selective exposure no longer seems to be a dominant factor that determines individuals' news selection when user recommendations drive their choices (Messing & Westwood, 2014).

With respect to the changes to news production, agenda-setting theory that centers on the power of news media to dictate public agendas may also need to shift its focus "from what issues the media tell people to think about to what issues people tell the media they want to think about" (Chaffee & Metzger, 2001, p. 375), as journalists have become more responsive to audience feedback. As a theory of news selection, gatekeeping theory has also been updated to incorporate the increasing influence of news audiences, who now function as another channel through which information about current affairs passes to other audiences (Shoemaker & Vos, 2009). With audience feedback becoming an increasingly common component of

the changing news environment, taken-for-granted notions about news production, media use, and effects need to be critically assessed.

Conclusion

The emergence of participatory journalism has drastically changed the way news is produced and consumed. Online audience feedback not only guides news organizations' editorial decisions concerning what to report and how to report it, but also tells news readers what to read, how to read, and how to respond to it. In particular, user comments have been at the center of communication scholars' attention, partly because they represent a hybrid form of mass and interpersonal communication; they are produced by a single individual (source) to express his or her unembellished, spontaneous personal feelings and thoughts (message), and yet distributed over the Internet (channel) with the potential to reach a mass audience (receiver). Although user comments may not qualify as interpersonal communication in its traditional sense, Chaffee's (1986) classification of the relationships between mass and interpersonal communication seems useful to understand the relationship between audience feedback and the news: competitive, convergent, and complementary.

Although Chaffee (1986) claimed that the information from mass media and interpersonal sources rarely contradicts each other, it is not uncommon to find user comments that directly refute the news report (competitive), as people are more likely to leave comments on the news stories with which they disagree (Chung, Munno, & Moritz, 2015). If user comments directly opposing the news position lead people to evaluate the news as less accurate, reliable, and trustworthy (Lee & Jang, 2009), repeated exposure to negative audience feedback may cultivate media skepticism over time. By contrast, favorable audience feedback (convergent), often signaled by a large number of likes and shares, may make fake news more believable, serving as a heuristic with which people judge the veracity of information; that is, "If a story is viral, truth may be taking a beating" (Somaiya & Kaufman, 2013). Lastly, user comments can make salient a subset of the news story and provide additional information (complementary), thereby guiding readers' interpretation and causal attribution of the news event (Lee et al., 2017). In so doing, audience feedback may attenuate journalists' long-held control over "the pictures in our heads" (Lippmann, 1922, p. 9). Technology-enabled audience feedback, which is produced, aggregated, and distributed at an unprecedented scale, has already changed how news is produced and consumed, thereby forcing communication scholars to rethink communication theories as we know them.

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